

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ROKU, INC.,
Petitioner,

v.

UNIVERSAL ELECTRONICS INC.,
Patent Owner.

Case IPR2022-01289
Patent No. 9,847,083

PETITION FOR *INTER PARTES* REVIEW

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	MANDATORY NOTICES UNDER 37 C.F.R. §42.8.....	3
	A. Real Party-In-Interest	3
	B. Related Matters.....	3
	C. Lead and Back-up Counsel, and Service Information	4
III.	PAYMENT OF FEES	4
IV.	REQUIREMENTS FOR IPR	4
	A. Grounds for Standing	4
	B. Identification of Challenge.....	5
V.	BACKGROUND	6
	A. '083 Patent.....	6
	B. Prosecution History of the '083 Patent	13
VI.	LEVEL OF ORDINARY SKILL IN THE ART.....	19
VII.	CLAIM CONSTRUCTION	20
VIII.	GROUND OF UNPATENTABILITY.....	20
	A. Ground 1: Claims 1-6, 8-10, and 12-18 are rendered obvious over Aginsky in view of Stammler	20
	B. Ground 2: Claims 7, 11, and 19 are rendered obvious over Aginsky in view of Stammler and further in view of Dresti.....	60
	C. Ground 3: Claims 1-6, 8-10, and 12-18 are rendered obvious over Aginsky in view of Hanson.....	66
	D. Ground 4: Claims 7, 11, and 19 are rendered obvious over Aginsky in view of Hanson.....	80
IX.	SECONDARY CONSIDERATIONS	80
X.	CONCLUSION.....	81

LIST OF EXHIBITS

Exhibit ("EX")	Description
1001	U.S. Patent No. 9,847,083 ("083")
1002	File History of U.S. Application No. 13/298,629, which led to U.S. Patent No. 9,847,083
1003	Declaration of Mr. Bruce McNair ("McNair")
1004	U.S. Patent No. 8,995,981 ("Aginsky")
1005	U.S. Patent No. 6,839,670 ("Stammmler")
1006	U.S. Patent Application Publication No. US 2012/0271639 ("Hanson")
1007	U.S. Patent Application Publication No. US 2003/0103088 ("Dresti")
1008	U.S. Provisional Patent Application No. 61/422,537 ("Aginsky Provisional")
1009	Claim Chart Showing <i>Aginsky</i> is Entitled to the Priority Date of <i>Aginsky Provisional</i>
1010	Roberto Pieraccini, <i>From AUDREY to Siri. Is speech recognition a solved problem?</i> (presentation), International Science Institute at Berkeley (archived Jun. 26, 2013) (accessed Apr. 6, 2022), available at https://web.archive.org/web/20130626012955/https://www1.icsi.berkeley.edu/pubs/speech/audreytosiri12.pdf
1011	<i>Pioneering Speech Recognition</i> , IBM (accessed Apr. 6, 2022), available at https://www.ibm.com/ibm/history/ibm100/us/en/icons/speechreco/transform/
1012	B.H. Juang & Lawrence R. Rabiner, <i>Speech Recognition, Automatic: History</i> , in <i>ENCYCLOPEDIA OF LANGUAGE & LINGUISTICS</i> 806-819 (2d ed. 2006)
1013	<i>History of Speech & Voice Recognition and Transcription Software</i> , Dragon Naturally Speaking (archived Mar. 19, 2005) (accessed Apr. 6, 2022), available at https://web.archive.org/web/20050319025603/http://www.dragon-medical-transcription.com/history_speech_recognition.html
1014	Xuedong Huang & Li Deng, <i>An Overview of Modern Speech Recognition</i> , in <i>HANDBOOK OF NATURAL LANGUAGE PROCESSING</i> 339, 339-363 (2d ed. 2010) (accessed June 12, 2022), available at

Exhibit ("EX")	Description
	https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/Book-Chap-HuangDeng2010.pdf
1015	[Intentionally omitted]
1016	<i>Lecture 12: An Overview of Speech Recognition</i> , available at https://web.archive.org/web/20210423171339/https://www.cs.rochester.edu/u/james/CSC248/Lec12.pdf
1017	Scanlon et al., Using Broad Phonetic Group Experts for Improved Speech Recognition, IEEE TRANSACTIONS ON AUDIO SPEECH & LANGUAGE PROCESSING (Mar. 2007), available at https://academiccommons.columbia.edu/doi/10.7916/D84F219Z/download
1018	Latanya Sweeney & Patrick Thompson, Speech Perception Using Real-Time Phoneme Detection: The BeBe System (1997), available at https://web.archive.org/web/20100712042339/http://publications.csail.mit.edu/lcs/pubs/ps/MIT-LCS-TR-736.ps
1019	Cheng et al., Voice-to-Phoneme Conversion Algorithms for Voice-Tag Applications in Embedded Platforms, EURASIP J. ON AUDIO SPEECH & MUSIC PROCESSING (2008), available at https://asmp-eurasipjournals.springeropen.com/articles/10.1155/2008/568737
1020	U.S. Patent Application Publication No. 2008/0059193 ("Huang-193")
1021	U.S. Patent No. 6,584,439 ("Geilhufe")
1022	U.S. Patent No. 7,689,417 ("Huang-417")
1023	U.S. Patent No. 7,944,370 ("Harris")
1024	U.S. Patent No. 5,247,580 ("Kimura")
1025	International Patent Publication No. WO2008096944 ("Lee")
1026	U.S. Patent No. 6,397,186 ("Bush")
1027	U.S. Patent Application Publication No. 2006/0235701 ("Cane")
1028	U.S. Patent Application Publication No. US 2006/0041655 ("Holloway")
1029	U.S. Patent Application Publication No. US 2009/0254778 ("Huang-778")
1030	U.S. Patent Application Publication No. US 2005/0216606 ("Hayes")
1031	European Patent No. 1,209,661 ("Hayes-661")
1032	U.S. Patent No. 6,748,361 ("Comerford")
1033	U.S. Patent Application Publication No. 2002/0095286 ("Ross")
1034	U.S. Patent Application Publication No. 2008/0133244 ("Bodin")

Exhibit ("EX")	Description
1035	U.S. Patent Application Publication No. US 2007/0052549 ("Le")
1036	U.S. Patent No. 7,259,710 ("Kisliakov")
1037	U.S. Patent No. 7,046,161 ("Hayes-161")
1038	GROTH ET AL., NETWORK+ STUDY GUIDE DELUXE EDITION (2d ed. 2005), available at https://www.google.com/books/edition/Network+_Study_Guide/eldC-w9SN-0C?hl=en&gbpv=1
1039	Declaration of Gordon MacPherson in support of the public accessibility of: Scanlon et al., Using Broad Phonetic Group Experts for Improved Speech Recognition, IEEE TRANSACTIONS ON AUDIO SPEECH & LANGUAGE PROCESSING (Mar. 2007), available at https://academiccommons.columbia.edu/doi/10.7916/D84F219Z/download
1040	Affidavit of Nathaniel E Frank-White
1041	Declaration of Dr. Gretchen Hoffman
1042	Declaration of Dara Del Rosario

I. INTRODUCTION¹

Petitioner Roku, Inc. (“Petitioner”) respectfully requests IPR of Claims 1-19 (“Challenged Claims”) of U.S. Patent No. 9,847,083 (EX1001, “’083”) in accordance with §§311-319 and §42.100 et seq.

At the time of ’083’s filing, it was well-known to use unique codesets (*i.e.*, data structures) to control the function of various electronic device makes and models. *See* ’083, 1:19-2:11; McNair, ¶¶31-32, 57-79. Consistent with that goal, ’083 adds voice commands to the **codeset**. *E.g.*, ’083, 2:29-51, 6:28-40, 9:20-28. Such voice commands may be received by a **controlling device** (such as a remote control) programmed with the **codeset record**, and the **controlling device** may transmit a signal in accordance with corresponding information in the **codeset record** appropriate for commanding the function of a **controllable appliance**. *See, e.g., id.*, 8:34-9:49, 10:47-11:3. It is this voice command-augmented **codeset record**² that is fundamental to ’083’s alleged novelty.

¹ All emphasis/annotations added unless otherwise noted.

² The term “data structure” is synonymous with “codeset record” by PO’s own admission. *See, e.g.*, EX1002, 255, 282 (using “data structure” to describe a “codeset record”).

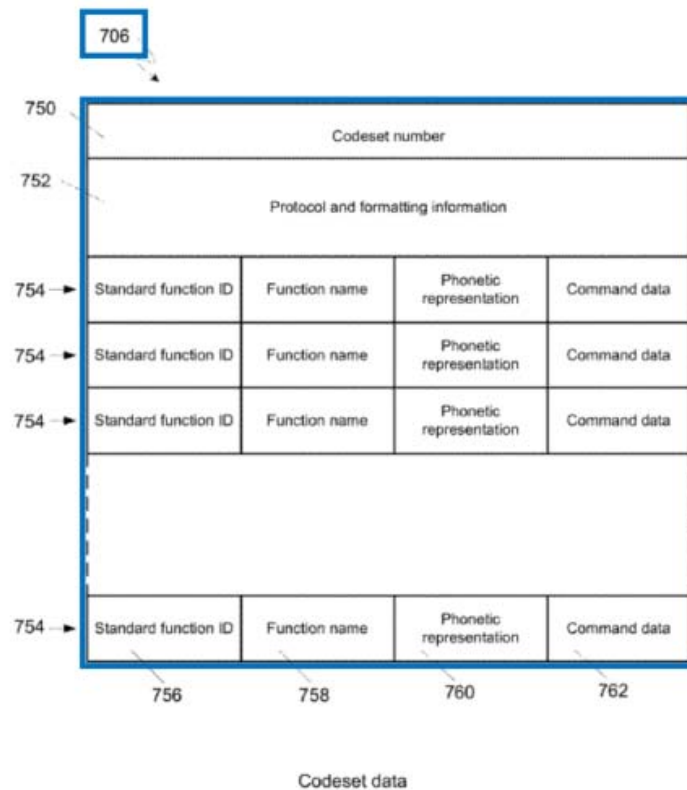


Figure 7b

'083, Fig. 7b.

Yet, voice command augmented codesets were well-known by the time of the '083 patent filing. Indeed, the Examiner consistently found that all claim limitations of '083, as presented in the claimed combination, were already known and/or obvious. *See generally* EX1002. The *only* claim elements that the Examiner identified in the Challenged Claims as allegedly novel related to ancillary information contained within the **codeset record**, such as phonetic representations of voice commands, and protocol and formatting information. *Id.*, 437-438. However, at the time of the '083 filing, such information was also known to be

included within **codeset records**. McNair, ¶¶ 31-32, 57-79. In fact, those very elements are found in Petitioner's cited art herein. **Aginsky** discloses a system including **data structure(s)** provisioned to a **remote device** for use in controlling the function of a **controllable device**. See, e.g., Aginsky, 2:31-40, 3:50-4:11, 4:65-5:1, 8:21-45, Fig. 1A-1C; McNair, ¶¶ 101-112. **Aginsky's data structure(s)** includes command function entries, command data, and protocol and formatting information in its data structure, and further discloses voice command as a method of user input (e.g., Aginsky, 6:7-26, 7:58-9:33, 13:34-43, Fig. 1B-1C); and both secondary references **Stammler** and **Hanson** provide details on how to implement phonetic representations and synonyms within a **data structure** in association with voice commands. See, e.g., Stammler, Abstract, 1:1-5, 2:60-3:16, 5:65-6:19, 8:53-55, 15:19-16:26; Hanson, ¶¶ [0023], [0037], [0033], [0040].

This Petition demonstrates that the Challenged Claims are unpatentable over the prior art. Petitioner has a reasonable likelihood of prevailing with respect to same.

II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

A. Real Party-In-Interest

Pursuant to 37 C.F.R. §42.8(b)(1), Petitioner identifies Roku, Inc. as real party-in-interest.

B. Related Matters

Petitioner is not aware of any related matters.

C. Lead and Back-up Counsel, and Service Information

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Petitioner consents to electronic service of documents to the email addresses of the counsel identified above.

III. PAYMENT OF FEES

The undersigned authorizes the Office to charge the fee required by 37 C.F.R. §42.15(a) and any additional fees to Deposit Account No. 18-1945, under Order No. 111813-0032-653. Any additional fees that might be due are also authorized.

IV. REQUIREMENTS FOR IPR

A. Grounds for Standing

Pursuant to §42.104(a), Petitioner certifies '083 is available for IPR and Petitioner is not barred or estopped from requesting IPR on the following grounds.

B. Identification of Challenge

Pursuant to §42.104(b), Petitioner requests IPR of the Challenged Claims and that the Board cancel the same as unpatentable.

1. The Specific Art on Which the Challenge is Based

Name	Exhibit	Filed	Published	Prior Art ³
Aginsky	1004	7/29/2011	3/31/2015	§102(e)
Stammler	1005	9/9/1996	1/4/2005	§102(a),(b),(e)
Hanson	1006	4/20/2011	10/25/2012	§102(e)
Dresti	1007	11/6/2002	6/5/2003	§102(a),(b),(e)

(a) Aginsky is entitled to an earlier priority date

U.S. Patent No. 8,995,981 (“**Aginsky**”) issued from U.S. Patent Application No. 13/194,307, filed 7/29/2011, which qualifies **Aginsky** as prior art under pre-AIA §102(e). Additionally, **Aginsky** claims priority to U.S. Provisional Patent Application No. 61/422,537, filed 12/13/2010 that provides a second, earlier §102(e) date. See EX1008. **Aginsky** is entitled to Aginsky Provisional’s filing date of 12/13/2010 because Aginsky Provisional’s disclosure provides support for at least one claim of **Aginsky** in compliance with §112. McNair ¶¶324-340; EX1009; see *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1376, 1379-82 (Fed. Cir. 2015).

³ ’083 was filed on 11/17/2011. Therefore, pre-AIA law applies.

(b) §314(a) is inapplicable

§314(a) does not apply. While the parties are involved in ongoing litigations, PO has not asserted '083 against Petitioner. Accordingly, the Board should not exercise its discretion and deny institution of this Petition under §314(a).

2. Statutory Grounds on Which the Challenge is Based

Petitioner respectfully requests cancelation of the Challenged Claims on the following grounds:

Ground	Statute	Claim(s)	Prior Art
1	§103	1-6, 8-10, 12-18	Aginsky in view of Stammmler
2	§103	7, 11, 19	Aginsky in view of Stammmler and in further view of Dresti
3	§103	1-6, 8-10, 12-18	Aginsky in view of Hanson
4	§103	7, 11, 19	Aginsky in view of Hanson and in further view of Dresti

See §VIII.

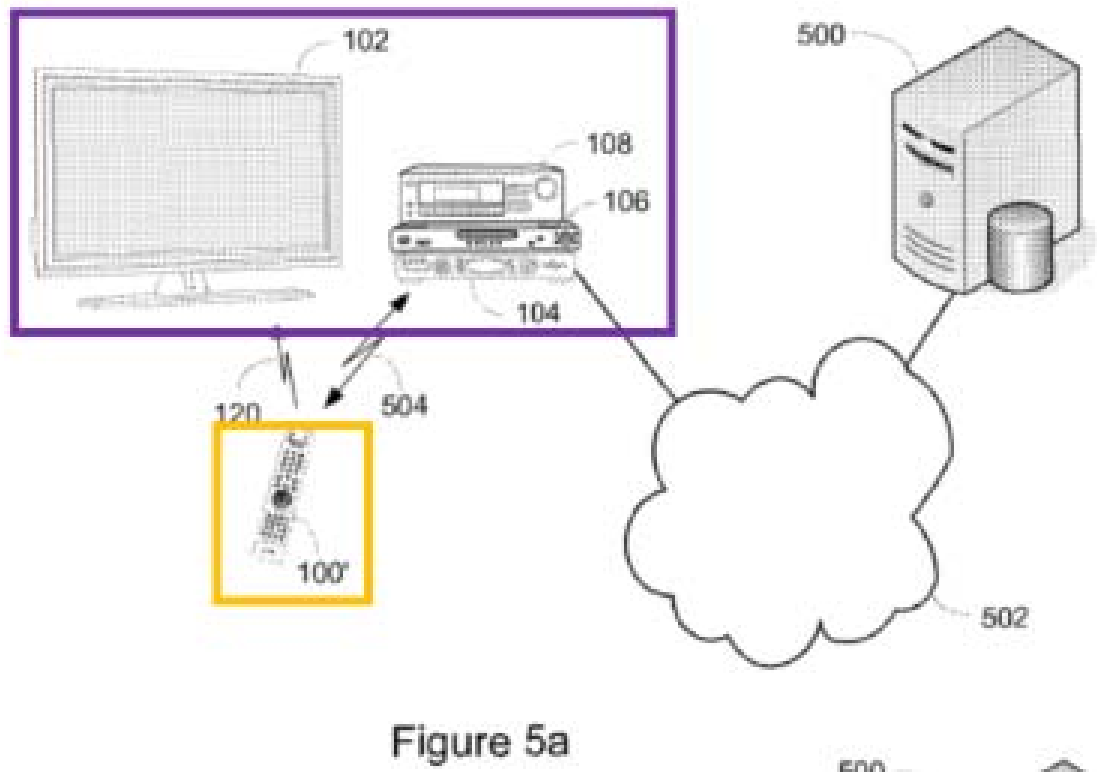
V. BACKGROUND

A. '083 Patent

It was well-known to use unique **codesets** in universal remotes to control the function of various electronic device makes and models. See '083, 1:19-2:11; McNair, ¶¶31-32, 57-79. Consistent with that goal, '083 adds voice commands as

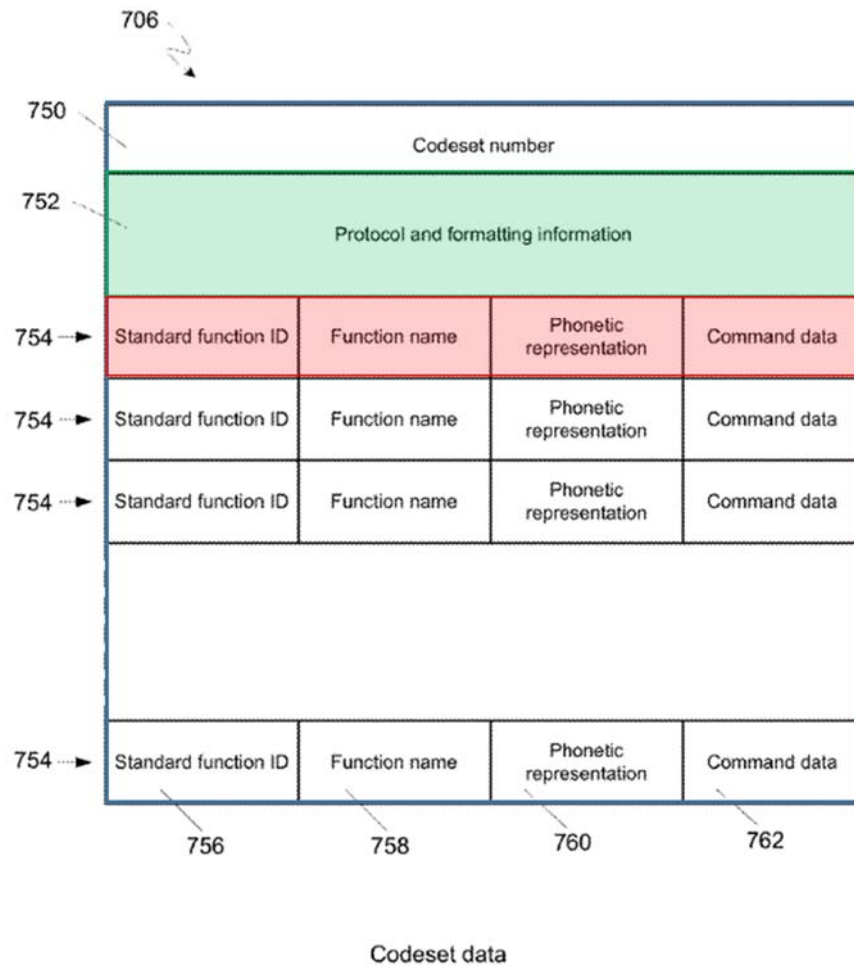
part of a **codeset record**. *E.g.*, '083, 2:29-51, 6:28-40, 9:20-28. This enables a **controlling device 100** to control the function of a **controllable appliance** such as **television 102** with a user's spoken commands. *Id.*, 3:20-24, 10:47-67, Figs. 1a, 5a, 7b.

'083 describes how a user may issue voice commands to the system, and these voice commands are processed by “speech recognition means” that may be located in the **controlling device 100**, the **controllable appliance**, or a remote server. *E.g.*, *id.*, 2:29-51, 6:28-40, 9:20-28. Such voice commands may control the **controllable appliance** through corresponding information contained within the **codeset record** appropriate for commanding the function of the particular **controllable appliance**. *See, e.g., id.*, 8:34-9:49, 10:47-11:3; McNair, ¶80.



'083, Fig. 5a.

Fundamentally, '083's alleged novelty is the composition of the **codeset record 706** provisioned to the **controlling device 102**. **Codeset record 706** may include "a multiplicity of command codes and protocols suitable for controlling various appliances—also referred to as sets of command data or codesets," as described in detail further below. *Id.*, 4:65-5:2. '083 discloses such a **codeset record 706** in Fig. 7b (shown below). McNair, ¶81.

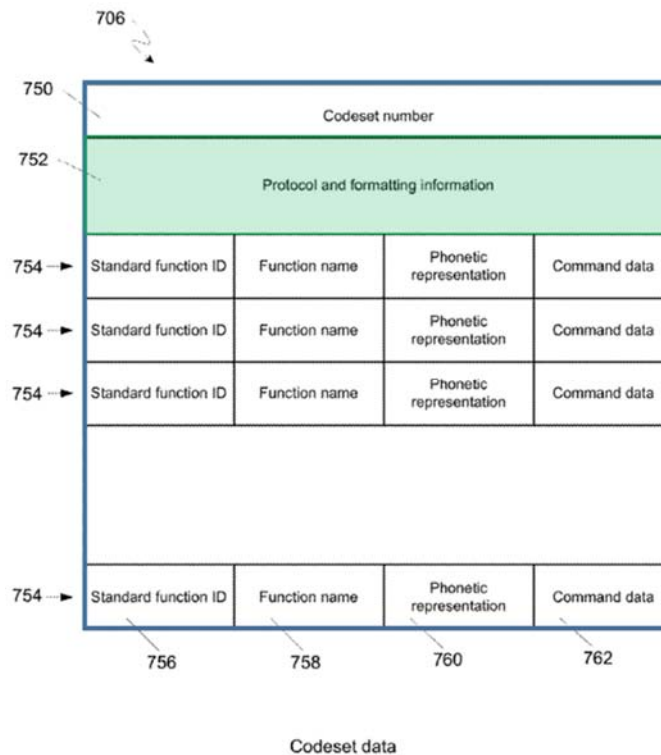


'083, Fig. 7b. **Codeset record 706** may be provisioned to the **controlling device** by, among other methods, downloading **codeset record 706** directly from the **controllable appliance**. *Id.*, 6:3-14, 6:28-34, 7:25-40; *see also id.*, 9:38-43, 11:4-13. Ultimately, once the **codeset record** is provisioned to **controlling device 102**, **controlling device 102** may use the **codeset record** to issue command functions to the **controllable appliance**. *Id.*, 10:47-11:3; McNair, ¶81.

1. Protocol and Formatting Information

Codeset record 706 includes **protocol and formatting information 752**.

'083, 10:47-49.



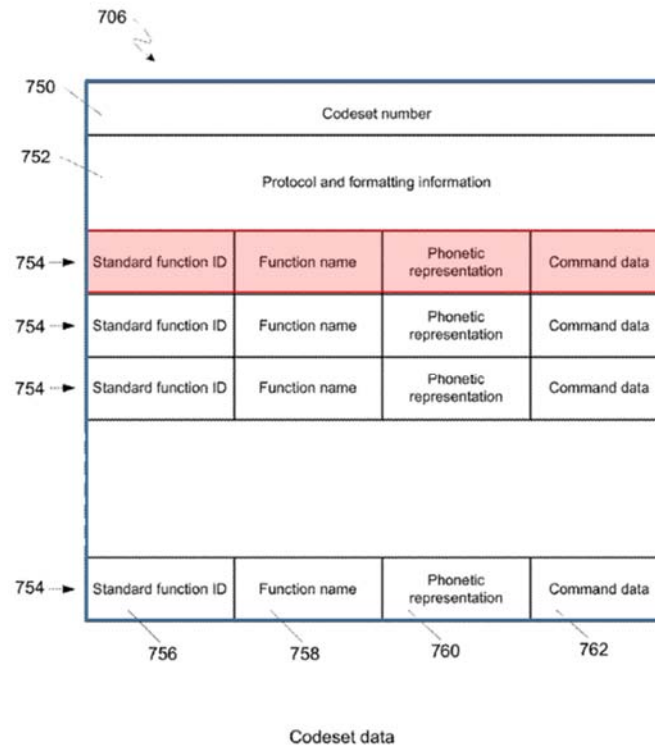
Id., Fig. 7b. **Protocol and formatting information 752** “may describe the physical protocol requirements for transmitting the command data elements which comprise this codeset, including for example items such as carrier frequency, bit encoding, data frame size and structure, appliance address parity or CRC requirements, etc.”

Id., 10:49-54; McNair, ¶82.

2. Command Function Entries

Codeset record 706 further includes **individual command function entries 754**, shown as rows following **protocol and formatting information 752**. '083,

10:47-11:3. **Individual command function entries 754** include various types of information, including **command data 762**, **standard function ID 756**, **phonetic representation 760**, and **function name 758**. *Id.*; McNair, ¶83.



(a) Command Data

Command data 762 “when transmitted...will command the [controllable] appliance to perform [an] indicated action.” ’083, 10:65-67; McNair, ¶84.

(b) Standard Function Identifier

Standard function ID 756 “may be a normalized tag indicative of the function or operation invoked by [a] command (i.e. so that within universal remote control system the same functionality may be mapped to a key regardless of any variations in appliance manufacturer-specific nomenclature, for example as may be

seen in Table 2 [below]).” ’083, 10:56-62; McNair, ¶85. For example, the standard function ID for a “fast forward” function could be “FF.” McNair, ¶85.

(c) Phonetic Representation Data of a Function Name

Function name 758 “correspond[s] to the name by which that function is commonly referenced by [an] appliance’s manufacturer together with its **phonetic representation 760**.” ’083, 10:62-65. Table 1a (below) provides several examples of potential **function names 758**:

TABLE 1a		
DVD player standard functions		
Power on	Fast forward	Menu
Power off	Fast reverse	Up/down
Digits 0-9	Skip forward	Left/right
Play	Skip reverse	Select
Pause	Stop	Open/close

’083, 8:1-8; *see also* 7:59-64. Based on Table 1a, one function name could be “fast forward.” McNair, ¶86.

Phonetic representation 760 may “compris[e] digitized phoneme templates, cepstral coefficients or vectors, etc., as appropriate for the speech recognition algorithms of a particular embodiment.” *Id.*, 10:3-6, 11:1-3; McNair, ¶87.

(d) Phonetic Representation Data of Synonyms of a Function Name

Table 2 (below) provides an example of **function name 758** (“Last channel”) and numerous potential **synonyms**, such as “alternate channel,” “last channel,” or “return”:

TABLE 2

“Last channel” synonyms		
Alternate channel	Go back	Quick view
Back	Jump	Recall
Channel recall	Last channel	Return
Channel return	Previous channel	Revue
Flashback	Swap	R-Tune

’083, 8:48-55; McNair, ¶88.

B. Prosecution History of the ’083 Patent

’083 issued from U.S. Application No. 13/298,629, filed 11/17/2011. *See generally* EX1002; McNair, ¶89.

The Examiner issued numerous Office Actions rejecting the presented claims, forcing the Applicant to amend or cancel the presented claims, or present entirely new claims. EX1002, 82-98, 115-123, 128-145, 164-173, 181-196, 217-225, 230-246, 390-398. On 10/3/2013, the Examiner rejected all pending claims—claims 1, 8-9, 11, 13-15, 22, and 24 (issued as claims 1, 5-7, 12-14, and 18-19) over U.S. Pub. No. 2009/0254778 (“Huang”), and claims 2-7, 12, 16-21, and 25 (issued as claims 2-4, 9-11, and 15-17) over Huang in further view of U.S. Patent No. 7,944,370

(“Harris”). *Id.*, 84-96. On 12/19/2013, Applicant responded by canceling certain claims and amending others to recite, among other things, “mapping a select one or more command codes from within the codeset to each of a plurality user input elements of the controlling device” and “causing the controlling device to transmit a command communication corresponding to a generically labeled command code from within the codeset in response to the speech recognition engine receiving voice data.” *Id.*, 116. Applicant argued that Huang does not disclose, teach, or suggest the newly added limitations. *Id.*, 122; McNair, ¶90.

On 4/9/2014, the Examiner rejected all pending claims in a Final Office Action—claims 1, 8-9, 11, 13-15, 22 and 24 (issued as claims 1, 5-7, 12-14, and 18-19) over Huang in further view of U.S. Pub. No. 2006/0235701 (“Cane”), and claims 2-7, 12, 16-21 and 25 (issued as claims 2-4, 9-11, and 15-17) over Huang and Cane and in further view of Harris. EX1002, 130-144. In response, on 6/4/2014, Applicant amended claim 1 to eliminate the “a brand of the target appliance” limitation and added “the provisioned codeset record comprising protocol and formatting information and a series of individual command function entries wherein each of the series of individual function entries comprises command data,” arguing that neither Huang nor Cane disclose “using protocol and formatting information and command data of a one of a plurality of individual command function entries

from within a codeset provisioned to a controlling device.” Id., 165-173 (emphasis in original); McNair, ¶91.

On 7/14/2014, the Examiner again rejected all pending claims over Huang in further view of U.S. Pub. No. 2008/0059193 (“Huang193”). EX1002, 183-196. On 10/10/2014, Applicant amended the presented claims, including adding a “unique one of a plurality of function name synonyms” to claim 1’s recited codeset, arguing that neither Huang nor Huang193 disclosed the use of synonyms. *Id.*, 217-225; McNair, ¶92.

On 11/10/2014, the Examiner rejected all pending claims in a Final Office Action over Huang in view of Huang193 and further in view of US Patent No. 6,748,361 (“Comerford”). EX1002, 230-246. On 1/8/2015, Applicant filed a Response After Final arguing that none of the prior art references disclose “providing *individual command function entries* within a codeset record, i.e., a data structure that also provides protocol and formatting information as well as command data as claimed, with a phonetic representation of a unique one of a plurality of function name synonyms *by which each of the one or more of the series of individual command function entries is to be referenced.*” *Id.*, 253-256 (emphasis in original); McNair, ¶93.

On 1/22/2015, the Examiner issued an Advisory Action Before the Filing of an Appeal Brief, rejecting Applicant’s arguments. EX1002, 260-262. On 2/3/2015,

Applicant filed a Request for Pre-Appeal Review, again arguing that the prior art does not disclose “individual command function entries within a codeset record having a phonetic representation of a unique one of a plurality of function name synonyms by which each of the one or more of the series of individual command function entries is to be referenced.” *Id.*, 265-268 (emphasis in original); McNair, ¶94.

On 3/19/2015, Applicant filed an Appeal Brief with the Board presenting a substantially similar argument as on 2/3/2015. EX1002, 277-291. The Examiner maintained his rejections, and the Board adopted the Examiner’s findings, denying Applicant’s Request. *Id.*, 362-367, 377-380; McNair, ¶¶95-96.

On 3/29/2017, Applicant filed another RCE, amending claim 1 to include “a *plurality* of individual command function entries...,” arguing that the prior art does not disclose this limitation. EX1002, 390-398; McNair, ¶¶96.

On 4/24/2017, the Examiner rejected all pending claims over Huang in view of U.S. Pub. No. 2012/01271639 (“**Hanson**”) and further in view of Huang193. EX1002, 400-417. On 7/21/2017, Applicant responded, arguing that **Hanson** does not disclose “a plurality of individual function entries within a codeset record...wherein each of the plurality of individual function entries with the codeset record comprises” the recited data fields. *Id.*, 425-426 (emphasis in original). Applicant specifically argued that Hanson discloses “provid[ing] speech data 230 to

an application 252 such that a speech command *can be enunciated to a user to thereby assist a user in discovering/learning the command*” rather than “provid[ing command mapping 240] to activate a particular command.” *Id.*, 426-427 (emphasis in original); McNair, ¶97.

On 8/14/2017, the Examiner withdrew his rejections and mailed a Notice of Allowance. EX1002, 432-440. In his attached Statement of Reasons for Allowance, the Examiner simply quoted Applicant’s arguments from the previous Response. *Id.*, 437-438; McNair, ¶98.

C. §325(d) is Inapplicable

Aginsky, Stammler, and Dresti are the only prior art references relied on in Grounds 1-2. Considering the two-part framework discussed in *Advanced Bionics*, the Board should not exercise its §325(d) discretion to deny institution on these Grounds because they do not present the same or substantially the same art or arguments raised during ’083 prosecution. The art was not before the Examiner, cited in an IDS, or utilized in a rejection of the claims; further, the Examiner did not consider the combinations of references, or the testimony of Mr. Bruce McNair (EX1003, referred to herein as “McNair”) cited in Grounds 1-2.

Even if the art and arguments cited in Grounds 1-2 were substantially the same as those previously presented (they are not), the Examiner erred in a manner material to the patentability of the claims. For example, the Office allowed the Claims

because the prior art of record purportedly “does not disclose, teach, or suggest ‘a plurality of individual function entries within a codeset record, i.e., a record in which command data as well as protocol and formatting information for use in generating an appliance command communication is stored, wherein each of the plurality of individual function entries within the codeset record comprises’” particular data fields. EX1002, 437-438 (emphasis original). But as explained *infra*, §VIII, all claimed features were well-known by the time of filing. **Aginsky** discloses a codeset record, including individual command function entries, command data, and protocol and formatting information, as well as using voice commands as a method of user command input; **Stammeler** teaches the desirability of including phonetic representations and synonyms within a codeset record. The Examiner did not consider these prior art disclosures, alone or in combination with other prior art, in allowing the Claims of '083. The Board should not exercise its discretion and deny institution of this Petition under §325(d).

With respect to grounds 3-4, the Examiner never considered **Aginsky** or **Dresti** in combination with **Hanson**. While the Examiner cited **Hanson**, he clearly erred in adopting Applicant’s mischaracterization that **Hanson**’s command mapping was limited to enunciation to a user only. Specifically, the Examiner adopted Applicant’s argument that “command mapping 240 disclosed in Hanson is intended to be used to provide speech data 230 to an application 252 such that a speech

command *can be enunciated to a user to thereby assist a user in discovering/learning the command.* (¶0022).” EX1002, 427 (emphasis in original), 438. As explained herein, while **Hanson** indeed teaches discovery of voice commands upon manual action of a control by a user, of course, the entire point of that “command discovery” process is to teach the user the appropriate “voice command” so that the manual process can be avoided in the future by utilizing the enunciated voice command. That is, a microphone receives a voice command, the voice command is transmitted to a speech engine, and command mapping 240 and command data 246 are used to execute phonetic algorithms designed to recognize the voice commands. Hanson, ¶¶[0021], [0017], [0019], [0040]; *see infra*, §VIII.C.1. Because the Examiner erred in a manner material to the patentability of the Claims in citing to the wrong teachings of **Hanson**, the Board should not exercise its discretion and deny institution of this Petition under §325(d).

VI. LEVEL OF ORDINARY SKILL IN THE ART

On or before 11/17/2011, a POSITA would have had a bachelor’s degree in computer science, in electrical engineering, or a related field, and approximately three years of experience or equivalent study in voice-controlled devices in universal remote controlled systems. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education. McNair, ¶¶24-30.

VII. CLAIM CONSTRUCTION

Claim terms subject to IPR are construed according to the *Phillips* standard applied in district court. §42.200(b). Petitioner applies the plain and ordinary meanings of terms. Only terms necessary to resolve the controversy must be construed. *Nidec Motor v. Zhongshan Broad Ocean Motor*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). No terms require construction at this time. McNair, ¶¶21-23.

VIII. GROUNDS OF UNPATENTABILITY

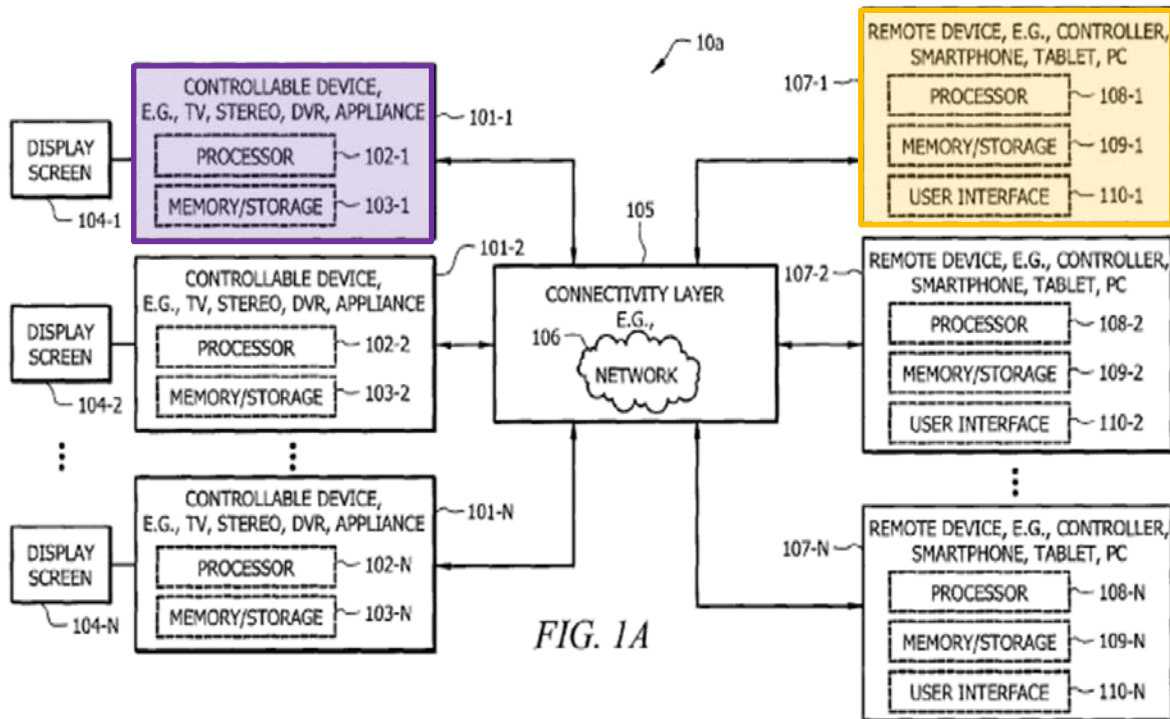
A. Ground 1: Claims 1-6, 8-10, and 12-18 are rendered obvious over Aginsky in view of Stammler

1. Overview of Aginsky

Aginsky discloses a universal remote control system where a remote device receives a data structure from a controllable device allowing the remote device to control the function of the controllable device. *Aginsky, Abstract*. **Aginsky** recognizes deficiencies in prior art universal remotes designed to control various brands and types of appliances. *See id.*, 1:15-2:15. For example, **Aginsky** explains that different manufacturers have different proprietary internal structures, with functions and data structures varying from device to device, making them user-unfriendly. *Id.*, 1:43-57; McNair, ¶¶100-101.

To this end, **Aginsky** discloses a system in which **remote device 107-1** controls specific functions of **controllable device 101-1**. *Aginsky*, 3:50-4:4, 7:57-8:62. **Remote device 107-1** may be a remote control, smartphone, computer, or any other programmable processor-based device. *Id.*, 5:47-48. **Controllable device**

101-1 may be a TV, computer, automobile, or other device. *Id.*, 2:59-61; Fig. 1A; McNair, ¶102.



Aginsky, Fig. 1A.

Controllable device 101-1 stores data structure(s)⁴ in memory/storage 103-1. *Id.*, 4:65-5:1; Fig. 1B. Aginsky’s **data structures** are represented by **tables 115'-116'** of Fig. 1B. *Id.*, 7:58-8:8.

⁴ The term “data structure” is synonymous with “codeset record” by PO’s own admission. *See, e.g.*, EX1002, 255, 282.

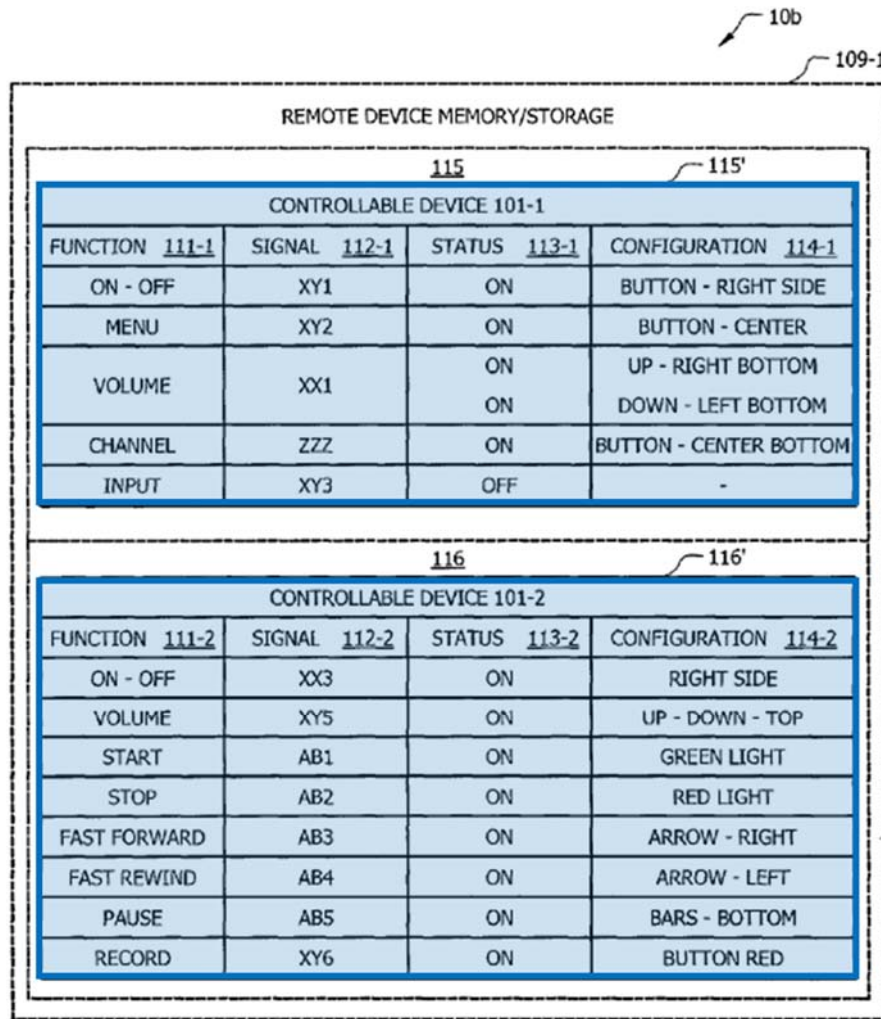


FIG. 1B

Id., Fig. 1B. As discussed in further detail below, the transmitted data structures within **tables 115'-116'** include various types of data related to the commands. Indeed, “any number of rows and columns can be used to store specialized information, preferences, associations, and/or restrictions,” and “any desired function, signal, and/or other structure” may be included. *Id.*, 9:30-33, 13:34-36; McNair, ¶103.

Aginsky discloses that a TV (“controllable device”) transfers data structures in tables 115'-116' to a smartphone (“remote device”) through connectivity layer 105. Aginsky, 8:38-41, 4:57-65. Figure 3 (below) depicts an exemplary process by which a controllable device transmits a data structure. *Id.*, 12:15-30; McNair, ¶104.

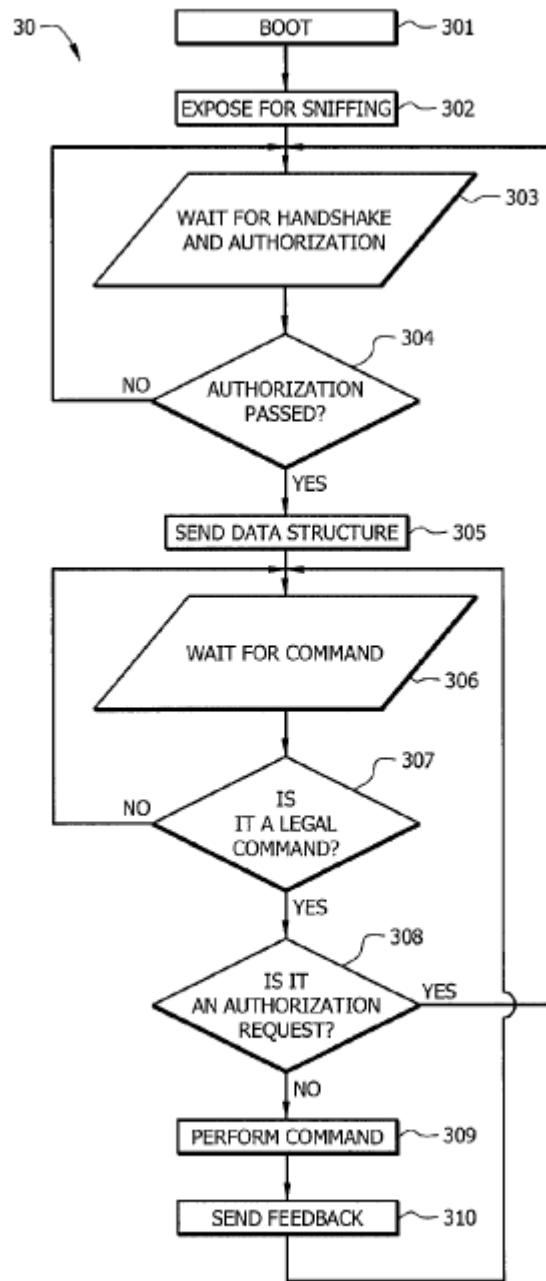


FIG. 3

Aginsky, Fig. 3.

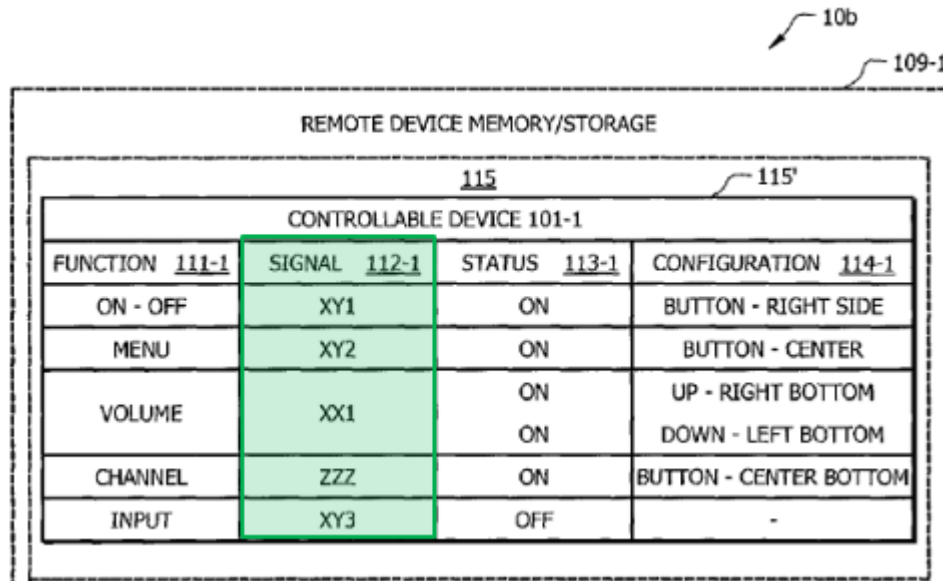
To execute a function, a user may speak or enter a command listed in FUNCTION column 111-1 of an exemplary **data structure**, such as “turn **TV** on.”

Aginsky, 8:38-45. The **remote device** converts the command to command signal XY1, based on the **data structure**. *Id.* **Remote device** then sends command signal XY1 to the TV causing it to turn on. *Id.*; McNair, ¶105.

Finally, while **Aginsky** assumes that user input is through physical manipulation of buttons, it also broadly teaches “voice commands...can be used for one or more of the functions performed by the remote device,” and explicitly discloses that **remote device 107-1** allows for voice command of **controllable devices**. Aginsky, 9:60-65, 6:2-6, 8:8-12. **Aginsky** otherwise leaves it to a POSITA to implement known methods of interpreting voice commands and integrating voice command-relevant information into the **data structure**, and makes clear that the **data structure** may be customized to include information allowing **remote device 107-1** to execute the disclosed functions. *Id.*, 9:30-33, 13:34-36; McNair, ¶106; *see also* McNair, ¶¶31-78.

(a) Protocol and Formatting Information

Aginsky discloses that the command signals of **SIGNAL columns 112-1 and 112-2** “can be any type of signal required for control purposes” such as a frequency set, a coded IR signal, or a Bluetooth signal. Aginsky, 8:63-9:7. **Aginsky** additionally discloses that the “**SIGNAL columns 112-1 and 112-2**” of the data structures “denote the type of signal as well as the code or code sequence of the [command] signal.” *Id.*, 9:7-10; McNair, ¶107.



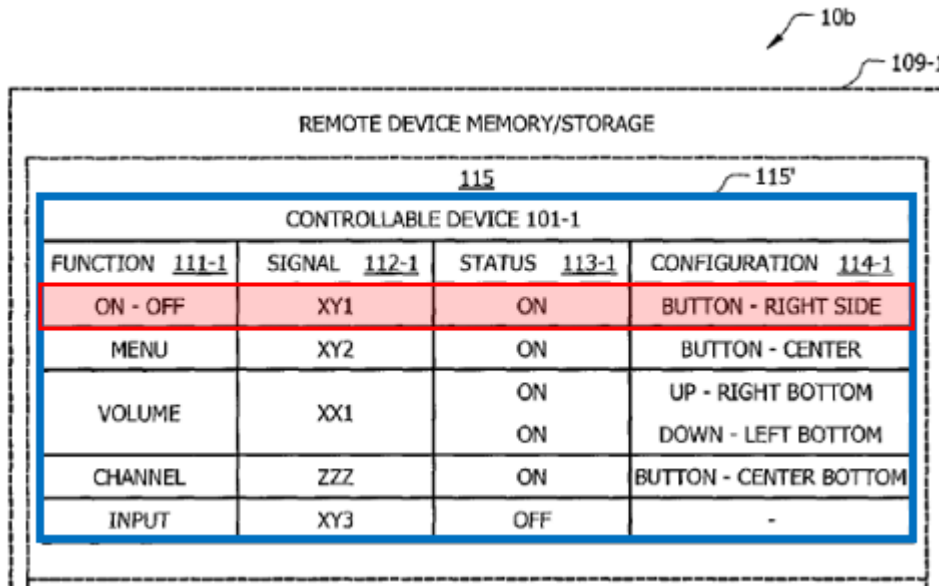
Aginsky, Fig. 1B (partial).

Further, **Aginsky** discloses “the exchanged **data structure** may be more robust and include **protocols, rules, or other information** useful to carrying out remote control of the controllable device.” *Id.*, 13:34-43, 9:30-33. In fact, **Aginsky** expressly discloses the types of protocol and formatting data described by ’083, namely frequency and device address and identification. *Compare id.*, 9:7-10, with ’083, 10:47-54. Based on these disclosures, **Aginsky** teaches protocol and **formatting information** in the **data structure**. McNair, ¶108&n.3.⁵

⁵ To the extent argued **Aginsky** does not teach protocol and formatting information in the same data structure as described by ’083 (for example, whether structured in a row or column), ’083’s claims do not require that the recited information be

(b) Command Function Entries

Each row in **table 115'** represents an **individual command function entry** within that data structure. Aginsky, 8:21-37; Fig. 1B; McNair, ¶109.



10b

109-1

REMOTE DEVICE MEMORY/STORAGE

115

115'

CONTROLLABLE DEVICE 101-1

FUNCTION 111-1	SIGNAL 112-1	STATUS 113-1	CONFIGURATION 114-1
ON - OFF	XY1	ON	BUTTON - RIGHT SIDE
MENU	XY2	ON	BUTTON - CENTER
VOLUME	XX1	ON	UP - RIGHT BOTTOM DOWN - LEFT BOTTOM
CHANNEL	ZZZ	ON	BUTTON - CENTER BOTTOM
INPUT	XY3	OFF	-

Aginsky, Fig. 1B (partial).

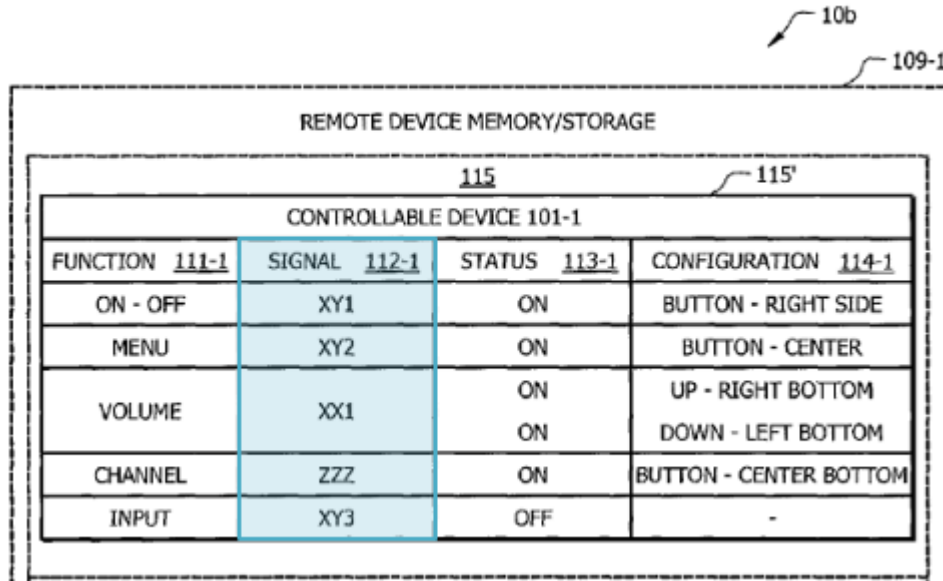
Each **command function entry** includes data related to a particular function or command, signal, status, and configuration—all information used to control the functions of a controllable device. *Id.*, 8:21-37; Fig. 1B; McNair, ¶110. For example, **Aginsky** discloses “the data structure in **table 115'** identifies a plurality of exemplary functions or commands...associated with a plurality of exemplary command signals...that when sent from **remote device 107-1** to **controllable device**

stored in a particular structure. '083, cl. 1; *see infra*, §VIII.A.4.(a); McNair, ¶108n.3.

101-1, the function/command is carried out.” Aginsky, 8:21-37. Thus, these individual entries or rows in the data structure of **table 115'** command the function of **controllable device 101-1**. *Compare id.* 2:31-40, 3:64-4:11, 8:21-45, Fig. 1B with '083, 10:47-11:3, Fig. 7b; McNair, ¶110.

(i) Command Data

When **remote device 107-1** sends a command to **controllable device 101-1**, **controllable device 101-1** then carries out an associated function/command. Aginsky, 8:21-37. Aginsky explains that when a user selects a command, **remote device 107-1** “convert[s the command] to a **command signal**” that causes **controllable device 101-1** to execute the indicated function. *Id.*, 8:38-42. As shown below, signal “XY1” is associated with the function “ON – OFF”; when a user selects the function “ON – OFF,” “[c]ommand signal XY1 is therefore sent to the **TV (controllable device 101-1)** causing the **TV** to turn on.” *Id.*, 8:44-45. A POSITA would have recognized that the signal XY1 contains underlying **data** that commands the **TV** to turn on, and this tracks '083's definition of “command data.” *Compare id.*, 8:38-42 with '083, 10:65-67; McNair, ¶111.



REMOTE DEVICE MEMORY/STORAGE			
115			
CONTROLLABLE DEVICE 101-1			
FUNCTION 111-1	SIGNAL 112-1	STATUS 113-1	CONFIGURATION 114-1
ON - OFF	XY1	ON	BUTTON - RIGHT SIDE
MENU	XY2	ON	BUTTON - CENTER
VOLUME	XX1	ON	UP - RIGHT BOTTOM DOWN - LEFT BOTTOM
CHANNEL	ZZZ	ON	BUTTON - CENTER BOTTOM
INPUT	XY3	OFF	-

Aginsky, Fig. 1B (partial).

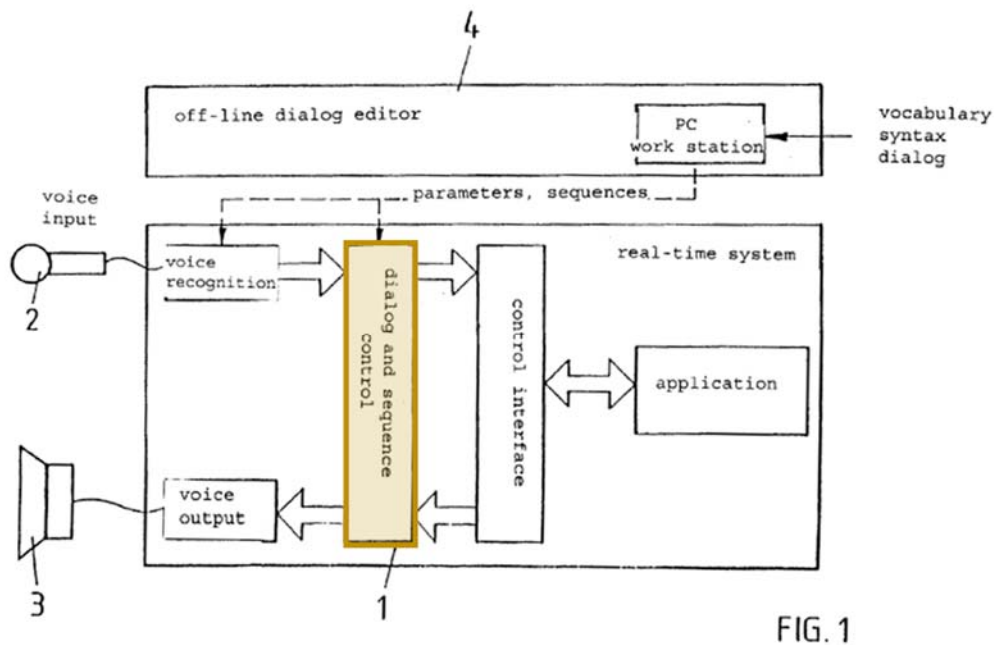
(ii) Standard Function Identifier

Aginsky discloses that the configuration for each function could include an “**identification marker** related to the operation of that function control.” *Aginsky*, 9:34-35. This **identification marker** may be the same across all controllable devices. *Id.*, 9:36-39. For example, **Aginsky** discloses associating a “FF” tag with a fast-forward function across controllable devices. *Id.*, 9:39-47; *McNair*, ¶112. Therefore, a POSITA would have understood that **Aginsky** broadly teaches use of a marker for managing similar functionality across codesets. *Compare Aginsky*, 9:34-47 *with* ’083, 10:56-58; *McNair*, ¶112.

2. Overview of Stammer

In the same field of endeavor, **Stammer** discloses a speech dialog system for automatic control or operation of one or more devices by voice commands. *E.g.*,

Stammler, *Abstract*, 1:1-20, 2:25-33, 15:19-16:26. Specifically, **Stammler** discloses a speech dialog system characterized by a “fixed syntax structure and a fixed command structure as well as by a combination of fixed vocabulary” and “freely definable vocabulary.” *Id.*, 5:65-6:10. **Stammler** explains that this framework “is a precondition for a high recognition capacity with an extensive vocabulary.” *Id.* In turn, this “extensive vocabulary of admissible commands” “is used to increase the user friendliness by using **synonymous words** or different variations in pronunciation.” *Id.*, 2:60-65, 5:65-6:10. **Stammler** further discloses that “[p]**redetermined synonymous words** can be used,” and “[t]he same function can be realized through commands with a different number of words.” *Id.*, 16:17-20. **Stammler** also teaches that, due to its larger vocabulary, such a system is more usefully based “on **phonetic word subunits**” such as phonemes, diphones (double phonemes), or phoneme transitions. *Id.*, 8:53-57. Further still, due to **Stammler**’s extensive vocabulary, “a plurality of functions for each language can be operated.” Stammler, 6:33-35; McNair, ¶113.



Stammler, Fig. 1.

3. Motivation to Apply Stammler's Teachings to Aginsky

As explained above, **Aginsky** broadly discloses “systems and methods in which a controllable device transfers to [a] remote device...a data structure identifying various functions that can be controlled by a remote device.” **Aginsky**, Abstract. The disclosed data structure includes information that enables remote control, such as the names of functions (*i.e.*, commands) and signals related to transmission of each function, amongst others. *See supra*, §VIII.A.1.(a)-(b). **Aginsky** further discloses that “voice commands...can be used for one or more of the functions performed by the remote device” through a user interface “that allow[s] a user to control operation of a paired controllable device by various methods,

including...voice.” *Id.*, 6:2-6, 9:60-65; *see also id.* 8:8-12. However, **Aginsky** left it to a POSITA to implement a data structure to execute its disclosed voice-control, and in the same field of endeavor, **Stammler** specifically teaches data structure inputs that would allow **Aginsky**’s system and methods to advantageously implement voice control. McNair, ¶114; *see* McNair, ¶¶33-78.

Stammler teaches that it is advantageous for a voice command system to have a large vocabulary. Stammler, 5:65-6:10. To realize a larger, expanded vocabulary, **Stammler** teaches a cost-effective system which uses “*phonetic word subunits*,” such as phonemes, to understand an “extensive vocabulary of admissible commands.” *Id.*, 8:53-57, 2:56-67; McNair, ¶115. As such, a POSITA would have been motivated to modify **Aginsky** with the teachings of **Stammler** to include phonetic representations and synonyms as elements of **Aginsky**’s dataset to facilitate an extensive range of voice commands and map them to the correct remote command functionality. McNair, ¶115; *see id.*, ¶¶33-78. This is because **Stammler** teaches that prior speech dialog systems suffered from limited vocabularies resulting in higher user dissatisfaction and modifying **Aginsky** with **Stammler** would better improve upon **Aginsky**’s goal of providing a more flexible and customizable universal remote programming method. *Id.* (citing Hanson, ¶¶[0017], [0021], [0023], [0033], [0037], [0040]); *see KSR*, 550 U.S. at 420. In fact, the advantages of voice control were well-known, and a POSITA would have understood that voice

control was becoming increasingly expected in consumer devices to replace the known drawbacks suffered by awkward, user-unfriendly interfaces. McNair, ¶115.

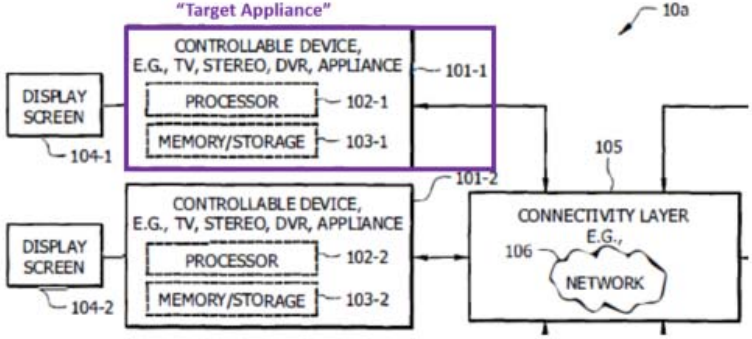
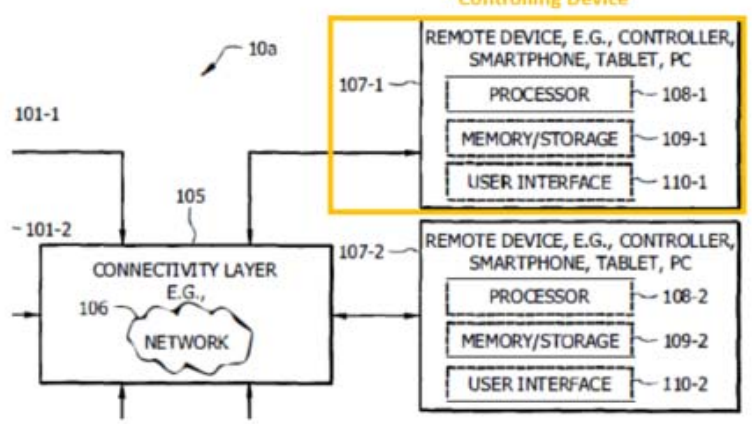
Modifying **Aginsky**’s data structure with voice command function in mind with the teachings of **Stammler** would have been well within the ability of a POSITA given **Stammler**’s guidance, and **Aginsky**’s open data structure design that specifically contemplates a “data structure [with] any desired function, signal, and/or other structure” (Aginsky, 13:34-35)—indeed, a POSITA would have had a reasonable expectation of success in so applying **Stammler**’s teachings to **Aginsky**’s flexible data structure. McNair, ¶116. Applying the teachings of **Stammler** to **Aginsky** would yield the predictable result of enabling **Aginsky**’s universal remote to control the function of a variety of devices manufactured by various brands through the use of numerous different voice commands. McNair, ¶116; *see id.*, ¶¶33-78; *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

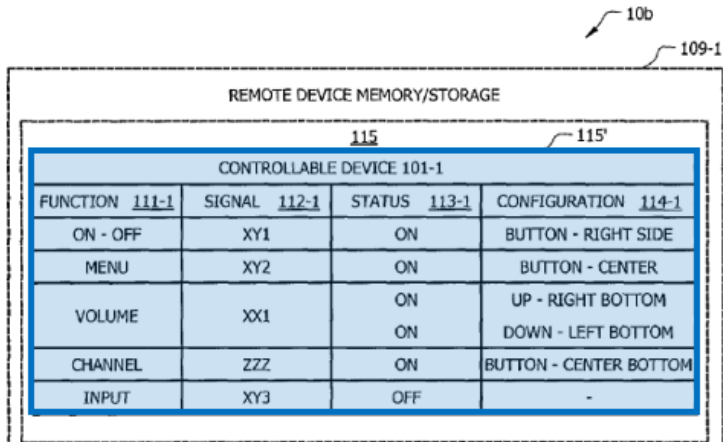
As explained herein, the claimed methods and systems would have been obvious to a POSITA. McNair, ¶¶100-117, 219.

4. Claim Chart

(a) Independent Claims

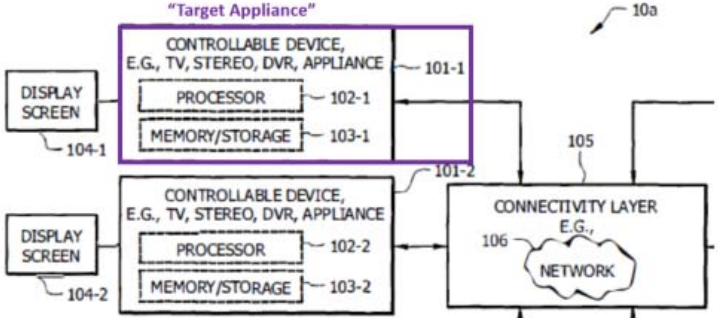
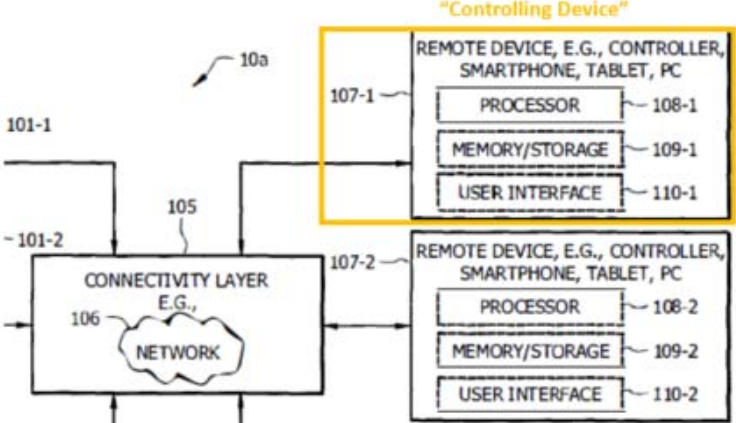
Limitation	Aginsky in view of Stammler
[1.pre] A method for configuring a controlling device to command functional	To the extent the preamble is limiting, Aginsky discloses a method for configuring a controlling device (<i>e.g.</i> “a remote device”) to command functional operations of a target appliance (<i>e.g.</i> , “methods in which a controllable device transfers to the remote device...a data structure

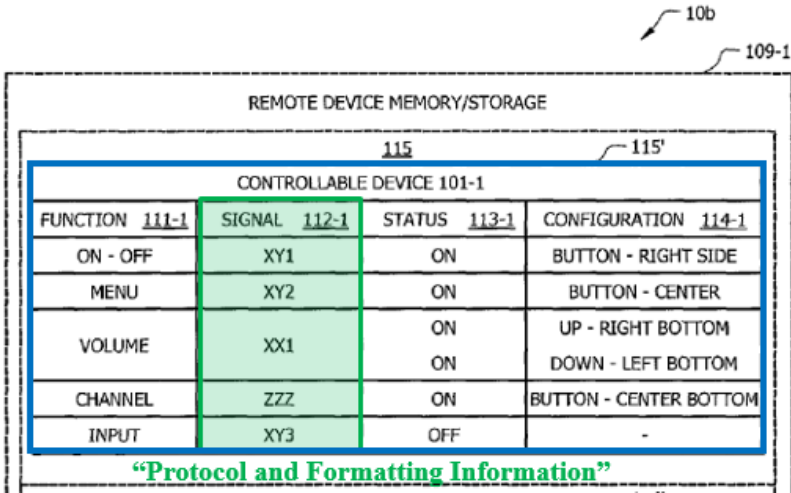
Limitation	Aginsky in view of Stammler
operations of a target appliance, the method comprising:	identifying various functions that can be controlled by a remote device”). Aginsky discloses systems and methods in which controllable device 101-1 is paired with remote device 107-1 such that remote device 107-1 may control specific operations and functions of one or more controllable device 101-N. Aginsky, 3:66-4:4; McNair, ¶¶118-119.  Aginsky, Fig. 1A (partial).  Aginsky, Fig. 1A (partial). McNair, ¶¶118-119.
[1.a.1] causing a codeset record to	Aginsky discloses causing a codeset record (e.g. “a data structure”) to be provisioned to the controlling device for use in commanding functional operations of the target appliance (e.g. “data structures that are available for communication to one or more remote devices” “such that a

Limitation	Aginsky in view of Stammler
be provisioned ⁶ to the controlling device for use in commanding functional operations of the target appliance,	remote device may be used to control specific operations and functions of the controllable device”). Aginsky discloses pairing controllable device 101-1 to remote device 107-1 such that remote device 107-1 may control specific operations and functions of controllable device 101-1. <i>Aginsky</i>, 3:66-4:4. Aginsky discloses that controllable device 101-1 can be a TV, DVR, computer, kitchen appliance, or automobile, among other devices. <i>Id.</i>, 2:59-61, Fig. 1A. Aginsky also discloses that controllable device 101-1 store “data structures,”⁷ in the form of tables 115'-116' in memory/storage. <i>Id.</i>, 4:65-5:1. <i>McNair</i>, ¶121.  The diagram shows a dashed box labeled 109-1 representing 'REMOTE DEVICE MEMORY/STORAGE'. Inside is a solid box labeled 115 representing 'CONTROLLABLE DEVICE 101-1'. Within box 115 is a table labeled 115'. The table has four columns: FUNCTION 111-1, SIGNAL 112-1, STATUS 113-1, and CONFIGURATION 114-1. The rows are: ON - OFF (XY1, ON, BUTTON - RIGHT SIDE), MENU (XY2, ON, BUTTON - CENTER), VOLUME (XX1, ON, UP - RIGHT BOTTOM / DOWN - LEFT BOTTOM), CHANNEL (ZZZ, ON, BUTTON - CENTER BOTTOM), and INPUT (XY3, OFF, -). <i>Aginsky</i>, Fig. 1B (partial). Aginsky further discloses a process by which a data structure is provisioned to remote device 107-1. <i>Id.</i>, 12:26-27, Fig. 3. Specifically, Aginsky teaches that

⁶ '083 broadly explains that “[a]s appropriate for the particular implementation, provisioning may comprise downloading the data itself, supply of a pointer to an entry in a local database, etc.” '083, 9:40-43.

⁷ “Data structure” is synonymous with “codeset record” by PO’s admission during prosecution. *See, e.g.*, EX1002, 255, 282.

Limitation	Aginsky in view of Stammler
	controllable device 101-1 selects a data structure based upon the brand, model, etc. of remote device 107-1, and delivers the data structures to remote device 107-1 through connectivity layer 105. <i>Id.</i>, 5:22-38, 8:57-65; McNair, ¶122. The data structures may be provisioned on an as-needed basis from controllable device 101-1 (e.g., Aginsky, 2:41-44), or they can be “programmed” to remote device 107-1 and provisioned from local memory/storage 109-1 (e.g., Aginsky, 7:58-63). McNair, ¶122.  Aginsky, Fig. 1A (partial).  Aginsky, Fig. 1A (partial). McNair, ¶¶57-78, 120-122.
[1.a.2] the provisioned codeset record comprising protocol and	Aginsky discloses the provisioned codeset record comprising protocol and formatting information (e.g. “SIGNAL columns 112-1 and 112-2” “denote the type of signal”).

Limitation	Aginsky in view of Stammler
formatting information	Aginsky teaches that “SIGNAL columns 112-1 and 112-2” “can be any type of signal required for control purposes” such as a frequency set, a coded IR signal, or a Bluetooth signal. Aginsky, 8:63-9:7. Aginsky further discloses that the “SIGNAL columns 112-1 and 112-2” of the data structures “denote the type of signal as well as the code or code sequence of the [command] signal.” <i>Id.</i>, 9:7-10; McNair, ¶124.  Aginsky, Fig. 1B (partial). Aginsky additionally explains that SIGNAL 112-1 may typically be a coded IR signal, which includes a coded (format) protocol (IR); moreover, a POSITA would have recognized that Bluetooth also includes a protocol and format as defined in the ‘083 patent. Aginsky, 8:63-9:3; McNair, ¶124. Accordingly, a POSITA would have understood that Aginsky’s examples—frequency set, IR, and Bluetooth—require protocol and formatting information as defined in ‘083. ‘083, 10:47-54; McNair, ¶124. McNair, ¶¶64-65, 123-124.
[1.a.3] and a plurality of individual command function entries	Aginsky discloses a plurality of individual command function entries (e.g. “a plurality of exemplary functions or commands” and corresponding signals, statuses, and configurations). Aginsky discloses data structures in tables 115' and 116'. Aginsky, 7:58-63, Fig. 1B. Each row of the data structures

Limitation	Aginsky in view of Stammler																																												
	represents an individual command function entry, which includes information such as function or command, signal, status, and configuration—all information related to a particular command. <i>Id.</i>, 8:21-37, Fig. 1B; McNair, ¶126. <table><tr><th colspan="4">116</th></tr><tr><th colspan="4">CONTROLLABLE DEVICE 101-2</th></tr><tr><th>FUNCTION 111-2</th><th>SIGNAL 112-2</th><th>STATUS 113-2</th><th>CONFIGURATION 114-2</th></tr><tr><td>ON - OFF</td><td>XX3</td><td>ON</td><td>RIGHT SIDE</td></tr><tr><td>VOLUME</td><td>XY5</td><td>ON</td><td>UP - DOWN - TOP</td></tr><tr><td>START</td><td>AB1</td><td>ON</td><td>GREEN LIGHT</td></tr><tr><td>STOP</td><td>AB2</td><td>ON</td><td>RED LIGHT</td></tr><tr><td>FAST FORWARD</td><td>AB3</td><td>ON</td><td>ARROW - RIGHT</td></tr><tr><td>FAST REWIND</td><td>AB4</td><td>ON</td><td>ARROW - LEFT</td></tr><tr><td>PAUSE</td><td>AB5</td><td>ON</td><td>BARS - BOTTOM</td></tr><tr><td>RECORD</td><td>XY6</td><td>ON</td><td>BUTTON RED</td></tr></table> “Individual Command Function Entries” “Codeset Record” FIG. 1B Aginsky, Fig. 1B (partial). For example, Aginsky discloses that “the data structure in table 115' identifies a plurality of exemplary functions or commands...associated with a plurality of exemplary command signals...that when sent from remote device 107-1 to controllable device 101-1, the function/command is carried out.” <i>Id.</i>, 8:21-37. This mirrors '083's disclosure that individual command function entries 754 simply includes a row of information related to a command. '083, 10:47-11:3; McNair, ¶127. McNair, ¶¶66-78, 125-127.	116				CONTROLLABLE DEVICE 101-2				FUNCTION 111-2	SIGNAL 112-2	STATUS 113-2	CONFIGURATION 114-2	ON - OFF	XX3	ON	RIGHT SIDE	VOLUME	XY5	ON	UP - DOWN - TOP	START	AB1	ON	GREEN LIGHT	STOP	AB2	ON	RED LIGHT	FAST FORWARD	AB3	ON	ARROW - RIGHT	FAST REWIND	AB4	ON	ARROW - LEFT	PAUSE	AB5	ON	BARS - BOTTOM	RECORD	XY6	ON	BUTTON RED
116																																													
CONTROLLABLE DEVICE 101-2																																													
FUNCTION 111-2	SIGNAL 112-2	STATUS 113-2	CONFIGURATION 114-2																																										
ON - OFF	XX3	ON	RIGHT SIDE																																										
VOLUME	XY5	ON	UP - DOWN - TOP																																										
START	AB1	ON	GREEN LIGHT																																										
STOP	AB2	ON	RED LIGHT																																										
FAST FORWARD	AB3	ON	ARROW - RIGHT																																										
FAST REWIND	AB4	ON	ARROW - LEFT																																										
PAUSE	AB5	ON	BARS - BOTTOM																																										
RECORD	XY6	ON	BUTTON RED																																										
[1.a.4] wherein each of the plurality of individual function entries within the codeset record comprises command data,	Aginsky discloses wherein each of the plurality of individual function entries within the codeset record comprises command data (<i>e.g.</i>, native command data underlying “SIGNAL 112-1”). Aginsky discloses “data structure in table 115' identifies a plurality of exemplary functions or commands...associated with a plurality of exemplary command signals.” Aginsky, 8:21-30. When these command signals are sent from the remote device to the controllable device, the function/command is carried out. <i>Id.</i>; McNair, ¶129.																																												

Limitation	Aginsky in view of Stammler																																								
	Aginsky teaches that a user may speak or enter a command, such as “FAST FORWARD,” into remote device 107-1. See Aginsky, 8:38-45. Remote device 107-1 converts this command to a command signal. <i>Id.</i> Based on the data structure of the controllable device, the proper command signal for ‘fast forward’ is AB3. <i>Id.</i>, Fig. 1B. A POSITA would have recognized that the signal AB3 must contain underlying native command data that commands controllable device 101-1 to execute a fast forward function, and this tracks ’083’s definition of “command data.” Compare <i>id.</i>, 8:38-42 with ’083, 10:65-67; McNair, ¶130. Command signal AB3 is therefore sent to the applicable controllable device and the underlying native command data causes the controllable device to fast forward. <i>Id.</i>; McNair, ¶130. 116 116' <table><tr><th colspan="4">CONTROLLABLE DEVICE 101-2</th></tr><tr><th>FUNCTION 111-2</th><th>SIGNAL 112-2</th><th>STATUS 113-2</th><th>CONFIGURATION 114-2</th></tr><tr><td>ON - OFF</td><td>XX3</td><td>ON</td><td>RIGHT SIDE</td></tr><tr><td>VOLUME</td><td>XY5</td><td>ON</td><td>UP - DOWN - TOP</td></tr><tr><td>START</td><td>AB1</td><td>ON</td><td>GREEN LIGHT</td></tr><tr><td>STOP</td><td>AB2</td><td>ON</td><td>RED LIGHT</td></tr><tr><td>FAST FORWARD</td><td>AB3</td><td>ON</td><td>ARROW - RIGHT</td></tr><tr><td>FAST REWIND</td><td>AB4</td><td>ON</td><td>ARROW - LEFT</td></tr><tr><td>PAUSE</td><td>AB5</td><td>ON</td><td>BARS - BOTTOM</td></tr><tr><td>RECORD</td><td>XY6</td><td>ON</td><td>BUTTON RED</td></tr></table> FIG. 1B Aginsky, Fig. 1B (partial). McNair, ¶¶66-68, 128-130.	CONTROLLABLE DEVICE 101-2				FUNCTION 111-2	SIGNAL 112-2	STATUS 113-2	CONFIGURATION 114-2	ON - OFF	XX3	ON	RIGHT SIDE	VOLUME	XY5	ON	UP - DOWN - TOP	START	AB1	ON	GREEN LIGHT	STOP	AB2	ON	RED LIGHT	FAST FORWARD	AB3	ON	ARROW - RIGHT	FAST REWIND	AB4	ON	ARROW - LEFT	PAUSE	AB5	ON	BARS - BOTTOM	RECORD	XY6	ON	BUTTON RED
CONTROLLABLE DEVICE 101-2																																									
FUNCTION 111-2	SIGNAL 112-2	STATUS 113-2	CONFIGURATION 114-2																																						
ON - OFF	XX3	ON	RIGHT SIDE																																						
VOLUME	XY5	ON	UP - DOWN - TOP																																						
START	AB1	ON	GREEN LIGHT																																						
STOP	AB2	ON	RED LIGHT																																						
FAST FORWARD	AB3	ON	ARROW - RIGHT																																						
FAST REWIND	AB4	ON	ARROW - LEFT																																						
PAUSE	AB5	ON	BARS - BOTTOM																																						
RECORD	XY6	ON	BUTTON RED																																						
[1.a.5] a standard function identifier,	Aginsky discloses wherein each of the plurality of individual function entries within the codeset record comprises...a standard function identifier” (<i>e.g.</i> “each function could further include a code or other identification marker related to the operation of that function control.”).																																								

Limitation	Aginsky in view of Stammler
	Aginsky discloses that the configuration for each function could include an “identification marker” related to the operation of that function control.” Aginsky, 9:34-35. For example, Aginsky discloses that for a fast-forward function, a tag such as “FF” would be associated with the fast-forward function across controllable devices. <i>Id.</i>, 9:39-47. A POSITA would have understood that Aginsky broadly teaches use of an identification marker for managing similar functionality across codesets. <i>Compare</i> Aginsky, 9:34-47 with ’083, 10:56-58; McNair, ¶132. McNair, ¶¶69-70, 131-132.
[1.a.6] data which comprises a phonetic representation of a function name corresponding the standard function identifier,	Aginsky as modified by Stammler teaches wherein each of the plurality of individual function entries within the codeset record comprises...data which comprises a phonetic representation of a function name corresponding the standard function identifier. See [1.a.5]—Aginsky discloses that data structures include FUNCTION columns 111-1 and 111-2 identifying various exemplary functions. Aginsky, 4:4:6-11, 8:21-37, Fig. 1B. Each function has a name, such as “FAST FORWARD” which may correspond to an identification marker (<i>i.e.</i>, standard function identifier), such as “FF.” <i>Id.</i>, 8:21-62; McNair, ¶134. Aginsky teaches that “voice commands...can be used for one or more of the functions performed by the remote device.” Aginsky, 9:60-65; <i>see also id.</i>, 6:2-6, 8:8-12. While Aginsky does not explicitly disclose that its data tables include information related to voice commands, Aginsky broadly teaches that any desirable information may be included within the data structures. <i>Id.</i>, 9:30-33, 13:34-36; McNair, ¶135. Thus, Aginsky at least teaches a data structure with voice command function in mind, and it would have been obvious to modify the data structure to include phonetic representations of each command such that voice command is enabled. McNair, ¶136. To the extent argued otherwise,

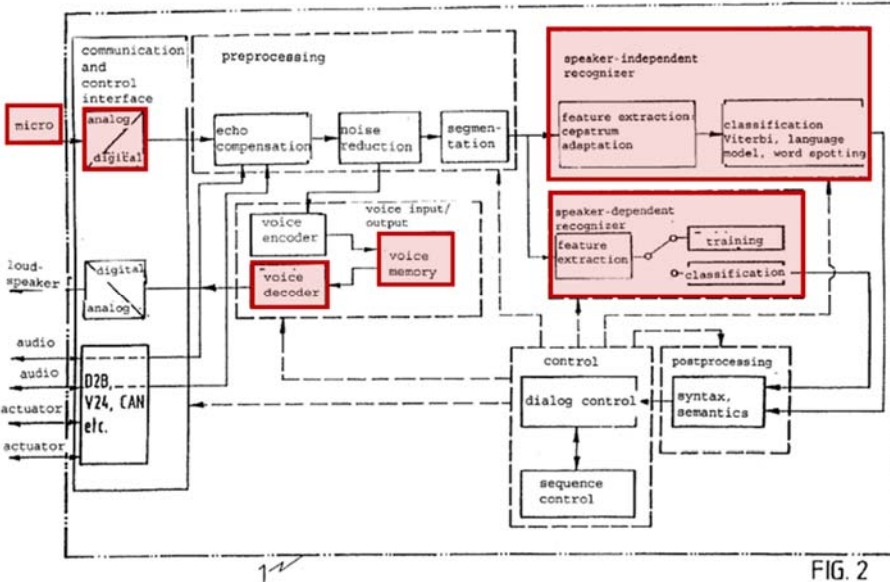
Limitation	Aginsky in view of Stammler
	modifying Aginsky’s data structure with the teachings of Stammler would have been well within the ability of a POSITA given Stammler’s guidance, and its applicability to Aginsky’s design. <i>Id.</i>, ¶136 (citing Hanson, ¶¶[0017], [0021], [0023], [0033], [0037], [0040]). Stammler teaches that “reliable control or operation of devices by speech command or real-time speech dialog is possible with relatively low expenditure must be seen as the essential advantage of the invention.” Stammler, 2:56-59; McNair, ¶137. Importantly, Stammler explicitly discloses storing phonetic representations in memory by which it may recognize voice commands, and a POSITA would have been motivated to apply Stammler’s teachings in implementing Aginsky’s data structure(s) to enable voice commands. Stammler, 12:19-27; McNair, ¶137. Indeed, Stammler discloses a speech dialog system for automatic control of one or more devices by voice commands that may be recognized according to “phonetic word subunits” such as phonemes. Stammler, 1:1-5, 3:9-16, 8:53-57, Fig. 1; McNair, ¶137. As discussed above, Stammler specifically teaches advantageous methods for speech recognition systems for voice-activated control of various devices, such as using phonetic word subunits, including phonemes, to realize speech recognition. <i>See supra</i>, §VIII.A.2. A POSITA would have been motivated to apply Stammler’s teachings in implementing Aginsky’s data structure because doing so would allow Aginsky to enable its disclosed voice control over multiple devices responsive to a variety of voice command inputs. This in turn would further Aginsky’s goal of providing a more flexible and customizable universal remote programming method. Aginsky, 1:43-45, 2:15-30, 3:50-63; <i>see KSR</i>, 550 U.S. at 420; <i>see also supra</i>, §VIII.A.3; McNair, ¶138. McNair, ¶¶33-56, 71-73, 133-138.
[1.a.7] and a plurality of data	Aginsky as modified by Stammler teaches wherein each of the plurality of individual function entries within the

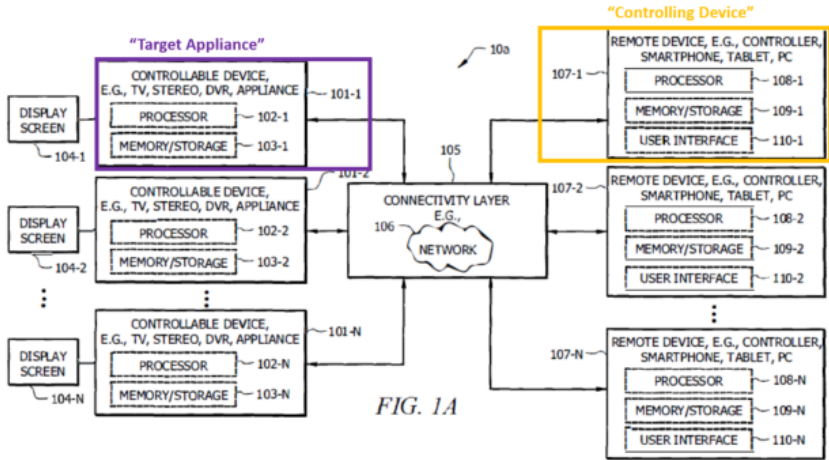
Limitation	Aginsky in view of Stammer
each of which comprises a phonetic representation of a unique one of a plurality of synonyms of the function name;	codeset record comprises...a plurality of data each of which comprises a phonetic representation of a unique one of a plurality of synonyms of the function name. Aginsky—either by itself or in combination with Stammer—teaches “a phonetic representation” within its data structure(s). <i>See supra</i> [1.a.6]. Aginsky does not, however, expressly teach or suggest using a unique one of a plurality of synonyms of the function name. It would have been obvious to a POSITA to apply Stammer’s teachings of using synonyms, and phonetic representations thereof, in Aginsky’s systems and methods in order to allow a user to use alternate words or phrases to activate a particular command. McNair, ¶140. As discussed above, <i>see supra</i> §VIII.A.2, Stammer remedies deficiencies in the prior art by disclosing a system characterized by a “fixed syntax structure and a fixed command structure as well as by a combination of fixed vocabulary” and “freely definable vocabulary,” explaining that this framework “is a precondition for a high recognition capacity with an extensive vocabulary.” <i>Stammer</i>, 1:66-2:2, 5:65-6:10. This “extensive vocabulary of admissible commands” stored in memory “is used to increase the user friendliness by using synonym words or different variations in pronunciation.” <i>Id.</i>, 2:60-65, 5:65-6:10. Stammer further teaches that “[p]redetermined synonymous words can be used,” and “[t]he same function can be realized through commands with a different number of words.” <i>Id.</i>, 16:17-20. Stammer teaches that such an “approach to a solution proves to be advantageous.” <i>Id.</i>, 6:18-19; McNair, ¶141. As explained above, a POSITA would have been motivated to apply Stammer’s speech dialog system utilizing synonyms in implementing Aginsky’s data structure in order to improve command recognition accuracy and user friendliness. <i>Stammer</i>, 6:8-10; <i>see supra</i>, §VIII.A.3; McNair, ¶142.

Limitation	Aginsky in view of Stammler																								
	McNair, ¶¶74-78, 139-142.																								
[1.b.1] causing less than all of the individual command function entries from within the provisioned codeset record to each be matched to one or more of a plurality of user input elements of the controlling device	Aginsky teaches causing less than all of the individual command function entries from within the provisioned codeset record (e.g. “the data structure...may include only a subset of all possible functions” or be “restricted by a protocol”) to each be matched (e.g. “a plurality of exemplary functions or commands associated with a plurality of exemplary command signals”) to one or more of a plurality of user input elements of the controlling device (e.g. “buttons, bars, and arrows, whether hard or programmable, that are physically pushed or touched by the user,” “voice commands,” or “[a]ny type of input from the user”). See [1.a.3]—Aginsky discloses a plurality of individual command function entries in each row of a data structure. McNair, ¶144. 10b 109-1 REMOTE DEVICE MEMORY/STORAGE 115 115' CONTROLLABLE DEVICE 101-1 <table><tr><th>FUNCTION 111-1</th><th>SIGNAL 112-1</th><th>STATUS 113-1</th><th>CONFIGURATION 114-1</th></tr><tr><td>ON - OFF</td><td>XY1</td><td>ON</td><td>BUTTON - RIGHT SIDE</td></tr><tr><td>MENU</td><td>XY2</td><td>ON</td><td>BUTTON - CENTER</td></tr><tr><td>VOLUME</td><td>XX1</td><td>ON</td><td>UP - RIGHT BOTTOM DOWN - LEFT BOTTOM</td></tr><tr><td>CHANNEL</td><td>ZZZ</td><td>ON</td><td>BUTTON - CENTER BOTTOM</td></tr><tr><td>INPUT</td><td>XY3</td><td>OFF</td><td>-</td></tr></table> “Codeset Record” “Individual Command Function Entries” Aginsky, Fig. 1B. Aginsky further discloses that “function controls (for inputting commands)” are illustrated in the data structure tables by way of “CONFIGURATION columns 114-1 and 114-2 of FIG. 1B.” Aginsky, 6:16-17. These configuration columns represent the user input, which could be “buttons, bars, and arrows, whether hard or programmable, that are physically pushed or touched by the user,” “voice commands,” or “[a]ny type of input from the user.” <i>Id.</i>,	FUNCTION 111-1	SIGNAL 112-1	STATUS 113-1	CONFIGURATION 114-1	ON - OFF	XY1	ON	BUTTON - RIGHT SIDE	MENU	XY2	ON	BUTTON - CENTER	VOLUME	XX1	ON	UP - RIGHT BOTTOM DOWN - LEFT BOTTOM	CHANNEL	ZZZ	ON	BUTTON - CENTER BOTTOM	INPUT	XY3	OFF	-
FUNCTION 111-1	SIGNAL 112-1	STATUS 113-1	CONFIGURATION 114-1																						
ON - OFF	XY1	ON	BUTTON - RIGHT SIDE																						
MENU	XY2	ON	BUTTON - CENTER																						
VOLUME	XX1	ON	UP - RIGHT BOTTOM DOWN - LEFT BOTTOM																						
CHANNEL	ZZZ	ON	BUTTON - CENTER BOTTOM																						
INPUT	XY3	OFF	-																						

Limitation	Aginsky in view of Stammler
	9:56-65, 8:38-41. As shown in Fig. 1B, CONFIGURATION 114-1 includes entries for several functions that correlate to buttons. McNair, ¶¶144-145. However, the “INPUT” row of Table 115' does not have a corresponding CONFIGURATION column 114-1 entry, indicating that there is not a physically pushed or touched button (<i>i.e.</i>, “input elements of the controlling device”) related to the “INPUT” function. See Aginsky, 9:56-10:2; McNair, ¶146. Accordingly, a POSITA would have understood that the “INPUT” function is not matched to a physical user input element such as a button, located on remote device 107-1, and therefore, less than all of the individual command functions are matched to a user input. McNair, ¶146. McNair, ¶¶143-146.
[1.b.2] whereupon a subsequent activation of a one of the plurality of user input elements will cause the controlling device to transmit a command communication by using the protocol and formatting information and the command data of a one or more of the plurality of individual command function entries from within the provisioned	Aginsky discloses whereupon a subsequent activation of a one of the plurality of user input elements (<i>e.g.</i> “pressing a...button”) will cause the controlling device to transmit a command communication by using the protocol and formatting information and the command data (<i>e.g.</i> “command will be converted to a command signal” and “sent to the TV”) of a one or more of the plurality of individual command function entries from within the provisioned codeset record that was mapped to the one of the plurality of user input element activated (<i>e.g.</i> “data structures” containing “a plurality of exemplary functions or commands associated with a plurality of exemplary command signals”). See [1.a.2], [1.a.3], [1.a.4], and [1.b.1]—Aginsky discloses that activation of a user input element will cause remote device 107-1 to transmit a command communication by using protocol and formatting information and command data. Aginsky, 8:21-62. Aginsky discloses that a user may use remote device 107-1 to enter a command, such as “turn TV on,” by pressing or touching a button on the smartphone’s user interface. <i>Id.</i>, 8:38-45. Further, Aginsky broadly teaches user input elements may be “buttons, bars,

Limitation	Aginsky in view of Stammer
codeset record that was mapped to the one of the plurality of user input element activated; and	and arrows, whether hard or programmable, that are physically pushed or touched by the user,” “voice commands,” or “[a]ny type of input from the user.” <i>Id.</i>, 9:56-65; McNair, ¶148. Once such a user input is activated, a command correlated to the user input is converted to the proper command signal based on the data structure and sent to controllable device 101-1, causing the controllable device 101-1 to execute the command. Aginsky, 8:38-62, 9:61-65; McNair, ¶148. Further, Aginsky discloses that it uses the information in SIGNAL columns 112-1 and 112-1 (<i>i.e.</i>, “protocol and formatting information”; <i>see</i> [1.a.2]) and data transmitted with a SIGNAL (<i>i.e.</i>, “command data”; <i>see</i> [1.a.4]) related to an activated input element to transmit a command to controllable device 101-1. McNair, ¶148. McNair, ¶¶147-148.
[1.c] causing the controlling device to transmit a command communication by using the protocol and formatting information and the command data of a one of the one or more of the plurality of individual command function entries from within the provisioned codeset record having a phonetic representation of the function name	Aginsky as modified by Stammer teaches causing the controlling device to transmit a command communication by using the protocol and formatting information and the command data of a one of the one or more of the plurality of individual command function entries from within the provisioned codeset record having a phonetic representation of the function name or a synonym of the function name which corresponds to voice data provided to a speech recognition engine. <i>See</i> [1.a.6] and [1.a.7]—As discussed, Stammer discloses a speech dialog system for automatic control of one or more devices by voice commands which utilizes phonetic representations and synonyms. Stammer, 1:1-20, 2:25-33, 5:65-6:10, 8:53-55, 15:19-16:26; McNair, ¶150. As part of that system, Stammer discloses a microphone (“micro,” below) that receives voice commands that are converted into digital signals (via an analog/digital, or A/D, converter) with underlying speech data (<i>i.e.</i>, “voice data”). Stammer, 3:56-58, 11:49-58; McNair, ¶151. The speech data are then transmitted to a “speech recognizer” (<i>i.e.</i>,

Limitation	Aginsky in view of Stammler
or a synonym of the function name which corresponds to voice data provided to a speech recognition engine.	“speech recognition engine”). <i>See, e.g., id.</i>, 2:26-54, 11:44-58, 15:15-16:25, Figs. 1-2, cl. 1. This allows Stammler’s disclosed system to correlate and recognize speech commands. <i>Id.</i>, 2:29-33; McNair, ¶151.  Stammler, Fig. 2. McNair, ¶¶149-151.
[12.pre] A system for configuring a controlling device to command functional operations of a target appliance, the system comprising:	<i>See</i> [1.pre]. McNair, ¶¶118-119, 181-182.
[12.a.1] a processing device having associated instructions stored on a non-transient readable media	Aginsky discloses a processing device having associated instructions stored on a non-transient readable media which instructions, when executed by the processing device (<i>e.g.</i> “any one or combination of various types of processor-controlled programmable electronic devices”).

Limitation	Aginsky in view of Stammler
which instructions, when executed by the processing device, cause a codeset record to be provisioned to the controlling device for use in commanding functional operations of the target appliance	See [1.a]-[1.c]—As explained above, Aginsky discloses that controllable device 101-1 provisions a codeset record to remote device 107-1, and that such instructions are used to command the operation of controllable device 101-1. Aginsky further discloses that controllable device 101-1 “may be any one or combination of various types of processor-controlled programmable electronic devices.” <i>Aginsky</i>, 4:12-38. Controllable device 101-1 includes processor 102-1 and memory/storage 103-1. <i>Id.</i> Processors execute various logical operations of controllable devices and are well-known to operate on an instruction set. <i>Id.</i>; <i>McNair</i>, ¶184.  <i>FIG. 1A</i> <i>Aginsky</i>, Fig. 1A. <i>McNair</i>, ¶¶120-151, 183-184.
[12.a.2] wherein the provisioned codeset record comprises protocol and formatting information	See [1.a.2]. <i>McNair</i>, ¶¶123-124, 185-186.
[12.a.3] and a plurality of individual	See [1.a.3]. <i>McNair</i>, ¶¶125-127, 187-188.

Limitation	Aginsky in view of Stammler
command function entries	
[12.a.4] wherein each of the plurality of individual function entries within the codeset record comprises command data,	See [1.a.4]. McNair, ¶¶128-130, 189-190.
[12.a.5] a standard function identifier,	See [1.a.5]. McNair, ¶¶131-132, 191-192.
[12.a.6] data which comprises a phonetic representation of a function name corresponding to the standard function identifier,	See [1.a.6]. McNair, ¶¶133-138, 193-194.
[12.a.7] and a plurality of data each of which comprises a phonetic representation of a unique one of a plurality of synonyms of the function name;	See [1.a.7]. McNair, ¶¶139-142, 195-196.
[12.b.1] cause less than all of the individual command codes from within the provisioned	See [1.b.1]. McNair, ¶¶143-146, 197-198.

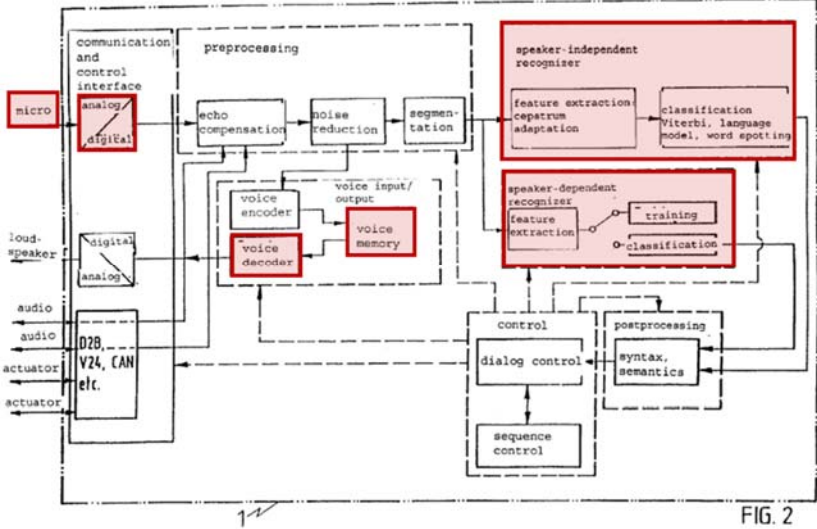
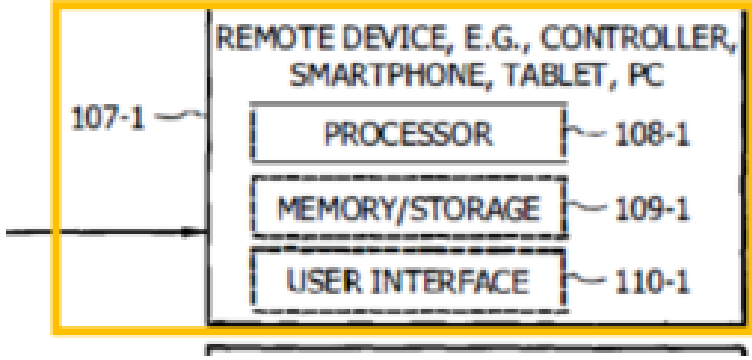
Limitation	Aginsky in view of Stammler
codeset record to each be mapped to one or more of a plurality of user input elements of the controlling device	
[12.b.2] wherein a subsequent activation of a one of the plurality of user input elements will cause the controlling device to transmit a command communication by using the protocol and formatting information and the command data of a corresponding one or more of the plurality of individual command function entries from with the provisioned codeset record that was mapped to the one of the plurality of user input elements activated,	See [1.b.2]. McNair, ¶¶147-148, 199-200.

Limitation	Aginsky in view of Stammler
[12.c] and cause the controlling device to transmit a command communication by using the protocol and formatting information and the command data of a one of the one or more of the plurality of individual command function entries from within the provisioned codeset record having a phonetic representation of the function name or a synonym of the function name which corresponds to voice data provided to a speech recognition engine.	See [1.c]. McNair, ¶¶149-151, 201-203.

(b) Dependent Claims

Limitation	Aginsky in view of Stammler
[2.] The method as recited in claim 1, wherein the	Aginsky as modified by Stammler teaches wherein the controlling device comprises a microphone for receiving voice input used in creating the voice data

Limitation	Aginsky in view of Stammer
controlling device comprises a microphone for receiving voice input used in creating the voice data.	(e.g. “microphone,” “two speech recognizers,” and “a postprocessing unit...for the syntactical-grammatical and semantical processing of the recognizer output signals” and “speech data”). Aginsky discloses that remote device 107-1 receives voice input (e.g. “voice commands”). Aginsky, 9:60-65. Aginsky does not explicitly disclose how remote device 107-1 receives voice input or creating voice data. A POSITA would have understood that a voice-controlled device such as Aginsky’s would have implemented a microphone to receive voice input that may be used to create voice data. McNair, ¶153. To the extent argued that Aginsky does not teach a “microphone” or “creating the voice data,” a POSITA would have been motivated to apply Stammer’s teachings to Aginsky’s systems and methods. McNair, ¶154. See [1.c]—Stammer discloses using “voice data.” Further, Stammer discloses a speech dialog system for automatic control of one or more devices by voice commands. Stammer, 1:1-20, 2:25-33, 15:19-16:26. As part of that system, Stammer discloses a microphone for receiving speech input, which is then processed as voice data. See <i>id.</i>, 3:36-4:9, 6:40-49, 7:25-11:2, Figs. 1-2; McNair, ¶¶149-151, 155. Stammer teaches that a microphone is connected to a system comprising various components including a speaker-independent compound word speech recognizer and a speaker-dependent speech recognizer, which are in turn connected on the output side to a postprocessing unit for the syntactical-grammatical and semantical processing of the recognizer output signals. Stammer, 3:56-4:1, 15:19-25, Fig. 1, Fig. 2 (microphone denoted by “micro”); McNair, ¶156.

Limitation	Aginsky in view of Stammler
	 FIG. 2 Stammler, Fig. 2. McNair, ¶¶152-156.
[3.] The method as recited in claim 1, wherein the controlling device comprises a processing device and instructions for providing the speech recognition engine.	Aginsky as modified by Stammler teaches wherein the controlling device comprises a processing device and instructions for providing the speech recognition engine. Aginsky discloses that remote devices 107-1 “include[s] a processor 108-1 [and] memory/storage 109-1.” Aginsky, 5:46-51; McNair, ¶158. “Controlling Device”  Aginsky, Fig. 1A (partial). Aginsky expressly teaches that the processors of remote devices 107-1 may include circuitry and other components “as is well-known in the art for executing

Limitation	Aginsky in view of Stammler
	various logical operations...of controllable devices.” <i>Id.</i>, 4:12-38. Further still, Aginsky discloses that “[o]ther instructions can also be sent to remote device 107-1 to assist in controlling controllable device 101-1.” <i>Id.</i>, 11:22-23. Thus, a POSITA would have understood that processor 108-1 teaches a “processing device,” that operates in accordance with local instructions, or instructions provided via memory/storage 109-1 stores instructions as is well-known in the art. <i>Id.</i>, 5:51-6:2; 11:22-28; McNair, ¶159. While Aginsky does not expressly require “instructions for providing the speech recognition engine,” it would have been obvious to a POSITA that such instructions are taught to realize Aginsky’s voice command capabilities. McNair, ¶160. To the extent argued otherwise, it additionally would have been obvious to apply Stammler’s teachings of recognizing speech, as explained above, and it would have been obvious to a POSITA to provide instructions to Stammler’s processor (<i>i.e.</i>, Stammler’s controller in conjunction with the speech engine), or Stammler’s speech engine alone, to enable such speech recognition. <i>See</i> [1.c], [2]; McNair, ¶160. It would have been a matter of implementation whether a POSITA would have a stand-alone speech processor, or circuitry that operates in conjunction with a system processor—and Stammler broadly teaches design flexibility on control processing. <i>Stammler</i>, 7:1-10, 12:10-18, 20:21-56; McNair, ¶160. McNair, ¶¶157-160.
[4.] The method as recited in claim 1, wherein the speech recognition engine is executed on a computing device remote from the controlling device.	Aginsky as modified by Stammler discloses wherein the speech recognition engine is executed on a computing device remote from the controlling device. Aginsky does not expressly disclose a speech recognition engine executed on a computing device remote from remote devices 107-1. However, a POSITA would have been motivated to apply

Limitation	Aginsky in view of Stammer
	Stammer’s teachings to Aginsky’s systems and methods. McNair, ¶162. Stammer broadly teaches that the speech dialog system may function on a device external to remote devices 107-1. Stammer, 7:1-10, 12:10-18, 20:21-56. Accordingly, a POSITA would have understood that Stammer’s speech dialog system could be executed on a computing device remote from remote devices 107-1. McNair, ¶163. To the extent argued otherwise, executing speech recognition on a computing device remote from remote devices 107-1 was well-known in the art by ’083’s filing date. Indeed, it would have been obvious to a POSITA to utilize the well-known practice of using a remote or server-based speech recognition engine. Specifically, a POSITA would have been motivated to incorporate this well-known technique to achieve Stammer’s goal of increasing user satisfaction by attaining more accurate and reliable speech recognition at the “lowest possible expenditure.” Stammer, 2:18-65; McNair, ¶164. Moreover, a POSITA would have been further motivated to utilize the more powerful processing capabilities of larger computers and servers as a way to increase speech recognition accuracy without using excessive power, space, and other resources that would otherwise be required for comparable speech recognition performance of smaller controlling devices. McNair, ¶165. McNair, ¶¶161-165.
[5.] The method as recited in claim 1, wherein codeset is provisioned to the controlling device by being downloaded thereto.	Aginsky as modified by Stammer teaches wherein codeset is provisioned to the controlling device by being downloaded thereto (e.g. “a controllable device transfers to the remote device...a data structure identifying various functions that can be controlled by a remote device”). First, Aginsky discloses that downloading control instructions was well-known in the art. Aginsky, 1:61-

Limitation	Aginsky in view of Stammler
	66. A POSITA would understand “control instructions” to be synonymous with “codesets” or “data structures.” McNair, ¶167. Second, Aginsky discloses “systems and methods in which a controllable device transfers to the remote device...a data structure identifying various functions that can be controlled by a remote device.” Aginsky, Abstract. Aginsky further discloses that “[t]he data structures [are] delivered to remote device 107-1 through connectivity layer 105.” <i>Id.</i>, 7:63-64; Fig. 1A. And after they are delivered, the data structures are “programmed” into memory/storage 109-1. <i>Id.</i>, 7:58-60. A POSITA would have understood that such a transfer and programming would constitute “downloading” the codeset. McNair, ¶168. Finally, ’083 itself admits that this limitation was well-known. ’083, 5:42-59 (“It is known to offer an app for download and installation into memory 312 which app may serve to allow use of the smart phone to transmit commands suitable for operation of entertainment and other appliances. ...[A library of codesets] may be resident on the smart device itself, <i>either downloaded as part of or in conjunction with the app</i>...”); McNair, ¶169. McNair, ¶¶166-169.
[6.] The method as recited in claim 1, wherein the method comprises receiving at the speech recognition engine voice data for mapping each of the less than all of the individual command function entries from within the	See [1.b.1], [1.c]. McNair, ¶¶143-146, 149-151, 170-171.

Limitation	Aginsky in view of Stammer
provisioned codeset record to the one or more of the plurality of user input elements of the controlling device.	
[8.] The method as recited in claim 1, comprising receiving at a speech recognition engine voice data indicative of at least a brand of the target appliance whereupon the speech recognition engine uses the voice data indicative of at least a brand of the target appliance to identify within a library of codeset records the codeset record that is caused to be provisioned to the controlling device.	Aginsky as modified by Stammer teaches receiving at a speech recognition engine voice data indicative of at least a brand of the target appliance whereupon the speech recognition engine uses the voice data indicative of at least a brand of the target appliance to identify within a library of codeset records the codeset record that is caused to be provisioned to the controlling device. See [1.c]—Aginsky teaches using voice commands to control devices, and Stammer provides the implementation details of receiving a voice command via a microphone, digitizing the voice command, and transmitting a digital signal containing voice data to a speech recognition engine. McNair, ¶¶149-151, 173. Aginsky discloses that remote device 107-1 may control one or more controllable devices 101-1 in the same home entertainment environment. Aginsky, 3:64-4:4, Fig. 1A; McNair, ¶174. As Aginsky discloses, one well-known way to identify a controllable device is by brand and model. Aginsky, 1:26-29. It therefore would have been obvious to a POSITA to use voice data associated with at least a brand name of a controllable device 101-1 to identify the desired controllable device 101-1, and accordingly, a data structure associated with controllable device 101-1 to be provisioned to remote device 107-1. McNair, ¶174. As Aginsky explains, each controllable device 101-1 may contain multiple data structures (<i>i.e.</i>, “a library” of data structures) specialized for “a specific brand, model, or category of remote devices 107-1 to 107-N.” Aginsky, 5:22-42; <i>see also</i> [1.a.1]. Given the existence

Limitation	Aginsky in view of Stammeler
	of voice controls on the remote device, the most straightforward form of selection would be done via voice control. McNair, ¶175. Alternatively, Aginsky discloses that multiple data structures for different controllable devices 101-1 (i.e., “a library” of data structures) may be transmitted, “programmed” to remote device 107-1, and stored in memory 109-1. Aginsky, 7:58-63; McNair, ¶176. Where remote device 107-1 is “programmed” with a library of the applicable data structures, it would have been obvious to a POSITA to use a brand identification to identify the appropriate data structure entry within memory 109-1. McNair, ¶176. McNair, ¶¶149-151, 172-176.
[9.] The method as recited in claim 8, wherein the controlling device comprises a memory having stored therein the library of codeset records.	Aginsky as modified by Stammeler teaches wherein the controlling device comprises a memory having stored therein the library of codeset records. See [8]—Aginsky teaches remote device 107-1’s memory stores multiple data structures. McNair, ¶¶172-178.
[10.] The method as recited in claim 8, wherein the library of codeset records is stored remotely from the controlling device and the codeset is provisioned to the controlling device from the library of codeset records by being downloaded thereto.	See [8]—Aginsky discloses that controllable device 101-1 provisions data structures to remote device 107-1 on an as-needed basis. McNair, ¶¶172-176, 179-180.

Limitation	Aginsky in view of Stammeler
[13.] The system as recited in claim 12, wherein the instructions are downloaded to the controlling device in a downloadable app.	Aginsky as modified by Stammeler discloses wherein the instructions are downloaded to the controlling device in a downloadable app (e.g. “the user of the remote device...will download from a third party (typically an ‘app store’) a control application that is designed to control controllable devices”). Aginsky discloses transferring the data structure to “a remote control application (“app”).” Aginsky, Abstract, 2:31-36, 7:36-57; McNair, ¶204. Aginsky further discloses that “[i]n some situations, the user of the remote device...will download from a third party (typically an ‘app store’) a control application that is designed to control controllable devices. The downloaded control application, typically in code format, is stored in a memory...on remote device 107-1 and runs on a processor...also contained on remote device. Downloading control applications from an app store is now well-known in the art...” Aginsky, 7:36:57; McNair, ¶205. In fact, even ’083 admits that “[i]t is known to offer an app for download and installation into memory 312 which app may serve to allow use of the smart phone to transmit commands suitable for operation of entertainment and other appliances.” ’083, 5:42-45; McNair, ¶206. McNair, ¶¶203-206.
[14.] The system as recited in claim 13, wherein the controlling device comprises one of a smart phone or a tablet computing device.	Aginsky as modified by Stammeler discloses wherein the controlling device comprises one of a smart phone or a tablet computing device (e.g. “remote devices” may be “a smart clicker, smartphone, tablet computer, personal computer, or any other programmable processor-based device”). Aginsky discloses that remote device 107-1 “may be, for example, a...smartphone [or] tablet computer.” Aginsky, 5:46-49.

Limitation	Aginsky in view of Stammer
	McNair, ¶¶207-208.
[15.] The system as recited in claim 12, wherein the controlling device comprises a memory having stored therein a library of codeset records including the provisioned codeset record.	See [9]. McNair, ¶¶172-178, 209-210.
[16.] The system as recited in claim 12, wherein a library of codeset records is stored remotely from the controlling device and the codeset is provisioned to the controlling device from the library of codeset records by being downloaded thereto.	See [5], [10]. McNair, ¶¶166-169, 172-176, 179-180, 211-212.
[17.] The system as recited in claim 12, wherein the processing device comprises one or more computing devices located remotely from the controlling device.	See [4.]—As explained above, it would have been obvious to execute a speech recognition engine on a computing device remotely located from remote devices 107-1 . McNair, ¶¶161-165, 213-214.
[18.] The system as recited in claim 12, wherein the instructions use voice	See [1.c], [6]. McNair, ¶¶143-146, 149-151, 170-171, 215-216.

Limitation	Aginsky in view of Stammler
data received by the speech recognition engine to map each of the less than all of the command function entries from within the provisioned codeset record to the one or more of the plurality of user input elements of the controlling device.	

B. Ground 2: Claims 7, 11, and 19 are rendered obvious over Aginsky in view of Stammler and further in view of Dresti

1. Overview of Dresti and Motivation to Apply Its Teachings to Aginsky as Modified by Stammler

Dresti discloses a universal remote control application resident on a hand-held electronic device. Dresti, ¶[0002]. **Dresti** discloses providing a remote control with a large dataset that includes regional-specific settings—including language particular to various regions. *Id.*, ¶[0321]. A user may select a desired region, and the settings of the remote may be adjusted to best suit that region. *Id.*; McNair, ¶219.

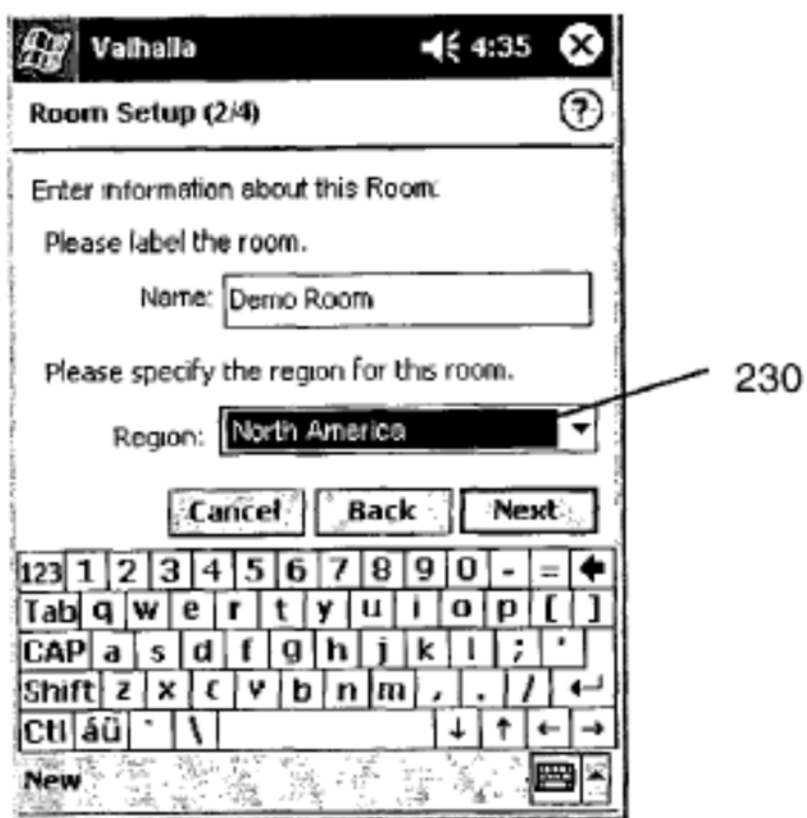


FIGURE 23a

Dresti, Fig. 23a.

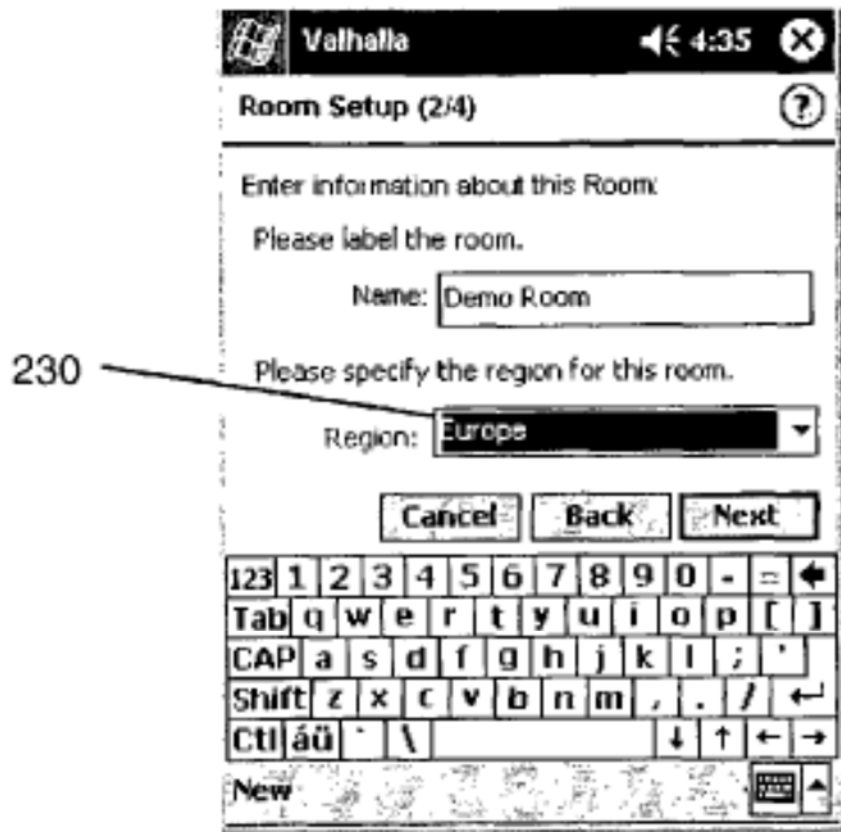


FIGURE 23b

Dresti, Fig. 23b.

Dresti also discloses that the prior art is plagued by increasingly more complex devices resulting in diminished usability, including across international markets. *See id.*, ¶¶[0002]-[0003], [0322]. Implementing **Dresti**'s teachings would advantageously further **Aginsky**'s goals of providing (1) programming methods for remotes that are more flexible and customizable to meet users' needs, (2) customizable remote controls that allow "distributors, resellers, and manufacturers" to distribute remote controls across different environments, and (3) smaller data

structures that would only need phonetic data for languages dominant in the geographic region, and **Stammler**'s goals of increasing user convenience by providing reliable control of devices "at the lowest possible expenditure." Aginsky, 1:15-2:15, 3:58-61, 2:41-56; Stammler, 2:18-25. For example, **Stammler**'s disclosure that "a plurality of functions for each language can be operated," Stammler, 6:33-35, would enhance **Aginsky**'s disclosure of using a Sony TV, Aginsky, 1:25-42, simplifying operation of the Sony TV in all locations where sold, such as in North America and Japan. McNair, ¶220. And because such remotes could be sold in various regions across the globe, Sony would not need to incur the expense to customize particular products for particular regions. *Id.*

A POSITA also would have had a reasonable expectation of success in applying **Dresti**'s teachings in implementing **Aginsky**'s systems and methods as modified by **Stammler**. McNair, ¶221. **Aginsky** suggests the use of voice commands to command functions of its universal remote control system and **Stammler** teaches that multiple languages could be used to carry out voice commands, but leaves it to a POSITA to simply determine which language would apply. *Id.* Using location data as taught by Dresti was a known way of selecting the correct language by using the dominant language of the selected location. Implementing **Dresti**'s teaching of selecting a codeset based upon location data would enable the predictable result of allowing **Aginsky**'s systems and methods as

modified by **Stammler**'s teachings to better select an appropriate language. *Id.*, ¶¶218, 221, 231.

Dresti is in the same field of endeavor as '083—remote control of various devices—and is therefore analogous art to '083. *Id.*, ¶222.

2. Claim Chart

Limitation	Aginsky in view of Stammler and further in view of Dresti
[7.] The method as recited in claim 1, comprising using at least location data to identify the codeset record that is caused to be provisioned to the controlling device.	Aginsky and Stammler as modified by Dresti discloses using at least location data to identify the codeset record that is caused to be provisioned to the controlling device. Stammler discloses that “a plurality of functions for each language can be operated.” Stammler, 6:33-35; McNair, ¶224. While neither Aginsky nor Stammler explicitly disclose using location data to identify the codeset record, a POSITA would have been motivated to apply Dresti's teachings to Aginsky and Stammler. <i>Id.</i> Dresti discloses a universal remote control application resident on a hand-held electronic device. Dresti, ¶[0002]. Dresti further teaches a universal remote provisioned with particular code sets after a user selects an appropriate region (<i>i.e.</i>, indicates the “location data”). Dresti, ¶[0321]; McNair, ¶225.

Limitation	Aginsky in view of Stammmler and further in view of Dresti
	FIGURE 23a FIGURE 23b FIGURE 23c FIGURE 23d Dresti, Figs. 23a-23d. Dresti teaches the general proposition that it was advantageous and well-known for location data to be used when selecting universal remote control codesets. It would have been obvious to a POSITA to implement Aginsky's methods and systems as modified by Stammmler to thus include location data—either as a threshold selection on its own GUI, or implemented as a component of the brand

Limitation	Aginsky in view of Stammler and further in view of Dresti
	selection process. Aginsky, 1:15-2:15; Stammler, 2:18-25; McNair, ¶226; <i>see also supra</i> §VIII.B.1. McNair, ¶¶223-226.
[11.] The method as recited in claim 8, wherein location data is additionally utilized in the process of identifying the codeset record that is caused to be provisioned to the controlling device.	<i>See</i> [7], [8]. McNair, ¶¶149-151, 172-176, 223-228.
[19.] The system as recited in claim 12, wherein the instructions additionally use at least location data to identify codeset that is provisioned to the controlling device.	<i>See</i> [7], [11]. McNair, ¶¶223-230.

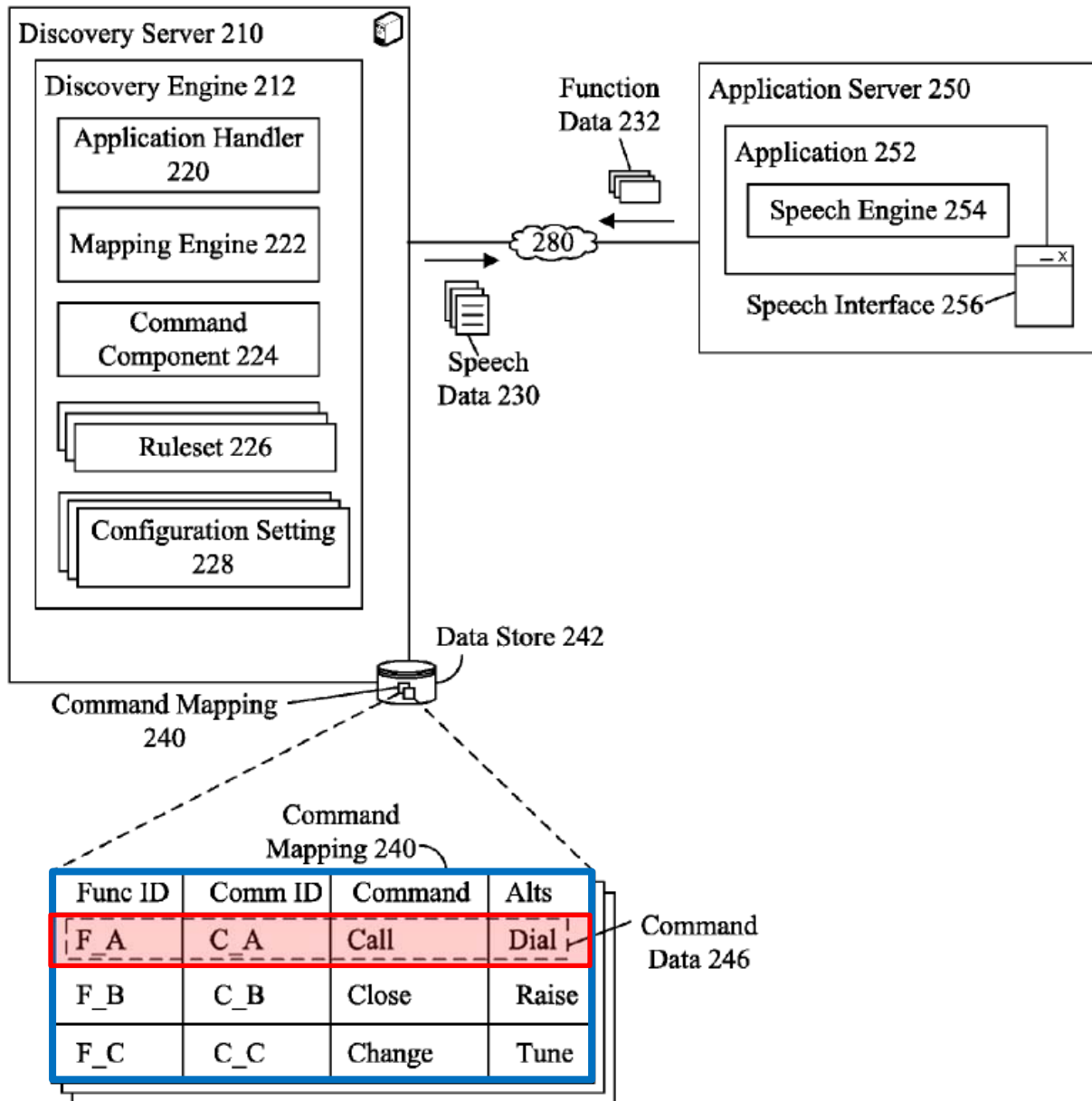
C. Ground 3: Claims 1-6, 8-10, and 12-18 are rendered obvious over Aginsky in view of Hanson

1. Overview of Hanson and Motivation to Apply Its Teachings to Aginsky

Hanson discloses “automated speech command discovery” within a speech-enabled computing system—*i.e.*, a voice-control system. Relevant here, when a user

utters a command such as “Lock doors” (see Hanson, ¶[0017]), a microphone receives the command and transmits it as voice data to a speech engine for processing. Hanson, ¶¶[0019] (“Speech interface can include...a microphone”), [0017], [0040]; McNair, ¶¶232-233. Specifically, **Hanson** discloses a speech engine that applies algorithms, such as phonetic algorithms, to recognize speech commands, and “automatically trigger the execution of [a] function.” Hanson, ¶¶[0021], [0040]; McNair, ¶233. A POSITA would have understood that the speech engine processes speech commands by utilizing **command mapping 240** and **command data 246**. Hanson, ¶¶[0021] (“Command mapping can link a system function to a speech command which can automatically trigger the execution of the function.”), [0040], [0033] (disclosing that command mapping 240 is transmitted to application 252); McNair, ¶233.

200



Hanson, Fig. 2.

Importantly, **command mapping 240** is a “data set” that includes an “arbitrary quantity of **commands**, **synonyms**, and/or **alternative commands for a function**.” *Id.*, ¶[0037]; *see also id.*, ¶[0023] (“The alternative command data can

be identified utilizing command mapping and/or an alternative command resource (e.g., synonym list).”). As shown in Figure 2 above, **command mapping 240** includes rows of **command data 246**, in which “a function associated with identifier F_A can be linked to a ‘Call’ command and an alternative command ‘Dial’.” *Id.*, ¶[0033]. As **Hanson** discloses that speech commands may be processed by phonetic algorithms and that command mapping 240 “is not limited to exemplary data set” described (Hanson, ¶[0037]), it would have been obvious to a POSITA to include in **command mapping 240** a **phonetic representation** each speech command, such as a phoneme. McNair, ¶234 (citing Stammler, 8:53-57).

As discussed above, **Aginsky** broadly discloses systems and methods of controlling multiple devices with a universal remote control, but leaves it to a POSITA to implement a data structure that allows a POSITA to use known speech recognition techniques. *See supra*, §VIII.A.3. In the same field of endeavor, **Hanson** discloses a voice control system that uses a variety of information to identify and map voice commands to particular functions and “automatically trigger the execution of [a] function” upon reception of a voice command. Hanson, ¶¶[0021], [0017], [0033], [0037], [0040]. **Hanson** explains that voice control system users often use synonymous terms to try to execute a command. *Id.*, ¶[0002]. A POSITA would have been motivated and found it obvious to modify **Aginsky’s** methods and system to provide **Hanson’s** synonymous command teachings in a

dataset. **Aginsky** broadly teaches voice control, but leaves it to a POSITA on how to implement such control and to include the requisite information within its dataset. **Hanson** teaches that it would be desirable to include in a dataset a variety of command data, including command synonyms, and that voice commands may be processed by a speech engine implementing phonetic algorithms. A POSITA would have been motivated to apply **Hanson**'s teachings in implementing **Aginsky**'s device because doing so would predictably result in improved voice control systems and methods that may execute a command in response to a variety of synonymous commands. See *KSR*, 550 U.S. at 420; *McNair*, ¶235. Moreover, applying **Hanson**'s teachings of phonetic algorithms to process voice commands (and therefore phonetic representation algorithm inputs) and synonyms in implementing **Aginsky**'s methods and systems would be the mere application of a known technique (implementing a data set with phonetic representations and synonyms) to **Aginsky**'s disclosed data set. See *KSR*, 550 U.S. at 417; *McNair*, ¶235.

Aginsky explains a data structure with voice command function in mind, and modifying that structure with the teachings of **Hanson** would have been well within the ability of a POSITA given **Hanson**'s explanation of the clear benefits, and its applicability to **Aginsky**'s design—indeed, a POSITA would have had a reasonable expectation of success in so applying **Hanson**'s teachings to **Aginsky**'s data structure. *McNair*, ¶236. Applying the teachings of **Hanson** to **Aginsky** would

yield the predictable result of enabling **Aginsky**'s universal remote to control the function of a variety of devices manufactured by various brands through the use of numerous different voice commands. *Id.*, ¶¶232, 236, 321; see *KSR*, 550 U.S. at 416.

2. Claim Chart

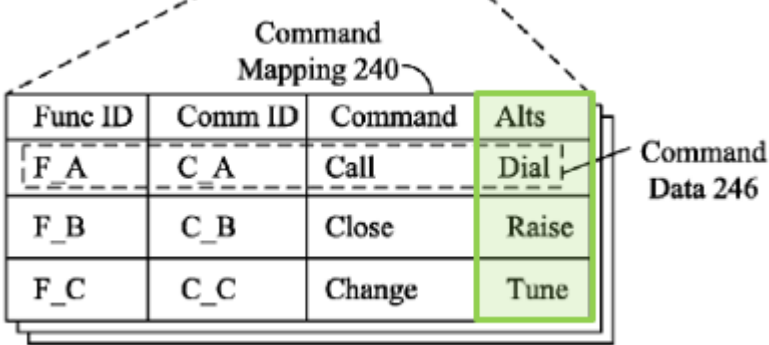
(a) Independent Claims

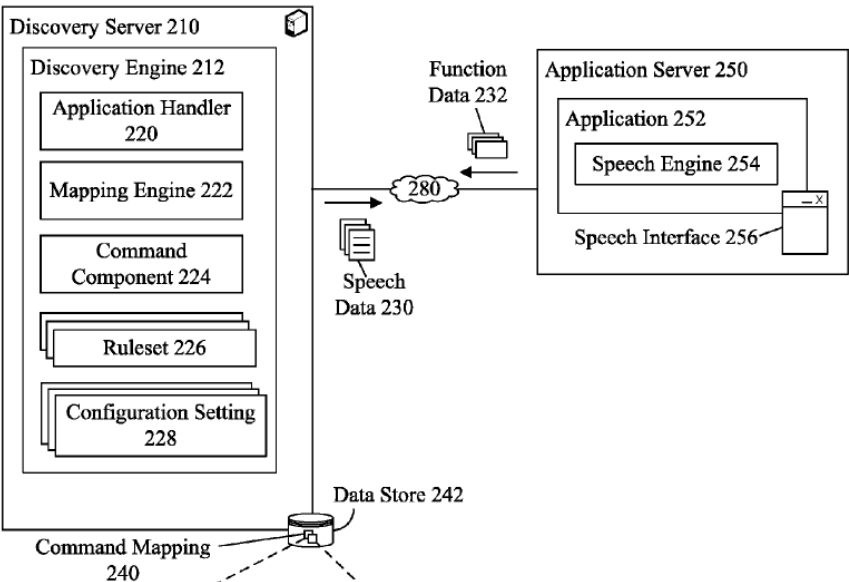
Limitation	Aginsky in view of Hanson
[1.pre]	See §VIII.A.4(a) at [1.pre]. McNair, ¶¶118-119, 237-238.
[1.a.1]	See §VIII.A.4(a) at [1.a.1]. McNair, ¶¶120-122, 239-240.
[1.a.2]	See §VIII.A.4(a) at [1.a.2]. McNair, ¶¶123-124, 241-242.
[1.a.3] and a plurality of individual command function entries	See §VIII.A.4(a) at [1.a.3]. To the extent argued that Aginsky does not disclose a plurality of individual command function entries as part of a codeset record, Hanson discloses “ Command Mapping 240 ,” where each row (“ command data 246 ”) of that mapping represents an individual command function entry. McNair, ¶245.

Limitation	Aginsky in view of Hanson																
	200 <table border="1" style="margin-left: auto; margin-right: auto;"><thead><tr><th>Func ID</th><th>Comm ID</th><th>Command</th><th>Alts</th></tr></thead><tbody><tr><td>F_A</td><td>C_A</td><td>Call</td><td>Dial</td></tr><tr><td>F_B</td><td>C_B</td><td>Close</td><td>Raise</td></tr><tr><td>F_C</td><td>C_C</td><td>Change</td><td>Tune</td></tr></tbody></table> “Individual command function entry” “Codeset Record” Hanson, Fig. 2. A POSITA would have recognized that command mapping 240 teaches a codeset record, as it “contain[s] command code data, function labels, etc.” <i>Compare</i> ’083, 9:55-67, Fig. 7b with Hanson, ¶[0037], Fig. 2. Further, a POSITA would have recognized command data 246 more broadly teaches individual command function entries as disclosed by ’083. <i>Id.</i>, Fig. 2; McNair, ¶246. In fact, ’083’s command data is a part of an individual command function entry. ’083, 10:47-67, Fig. 7b; McNair, ¶246. As explained above, it would have been obvious to implement Hanson’s teachings of using synonyms for commands to enable recognition of numerous phrases related to the same command in implementing Aginsky’s systems and methods. See §VIII.C.1; McNair, ¶247. McNair, ¶¶125-127, 243-247.	Func ID	Comm ID	Command	Alts	F_A	C_A	Call	Dial	F_B	C_B	Close	Raise	F_C	C_C	Change	Tune
Func ID	Comm ID	Command	Alts														
F_A	C_A	Call	Dial														
F_B	C_B	Close	Raise														
F_C	C_C	Change	Tune														

Limitation	Aginsky in view of Hanson																
[1.a.4] wherein each of the plurality of individual function entries within the codeset record comprises command data,	See §VIII.A.4(a) at [1.a.4]. To the extent argued that Aginsky does not disclose command data, Hanson expressly discloses “command data” that “can be a speech command registered within the speech component.” Hanson, ¶¶[0004], [0026] (“Command data 246 can include a speech command associated with the manual event.”), [0033]. A POSITA would have understood that such command data would command a controllable appliance to perform the function related to that command data. McNair, ¶250. McNair, ¶¶128-130, 248-250.																
[1.a.5] a standard function identifier,	See §VIII.A.4(a) at [1.a.5]. To the extent argued that Aginsky does not disclose a standard function identifier, Hanson expressly discloses a “function identifier,” denoted as “Func ID” in Command Mapping 240 of Fig. 2 that is indicative of a particular command. Hanson, <i>Abstract</i>, ¶¶[0004]-[0005], [0021], [0028], [0033], [0039], Fig. 2. Command Mapping 240 <table><tr><th>Func ID</th><th>Comm ID</th><th>Command</th><th>Alts</th></tr><tr><td>F_A</td><td>C_A</td><td>Call</td><td>Dial</td></tr><tr><td>F_B</td><td>C_B</td><td>Close</td><td>Raise</td></tr><tr><td>F_C</td><td>C_C</td><td>Change</td><td>Tune</td></tr></table> Command Data 246 McNair, ¶¶131-132, 251-253.	Func ID	Comm ID	Command	Alts	F_A	C_A	Call	Dial	F_B	C_B	Close	Raise	F_C	C_C	Change	Tune
Func ID	Comm ID	Command	Alts														
F_A	C_A	Call	Dial														
F_B	C_B	Close	Raise														
F_C	C_C	Change	Tune														
[1.a.6] data which comprises a phonetic representation of a function name corresponding the	See §VIII.A.4(a) at [1.a.6]. To the extent argued that Aginsky’s voice commands do not disclose phonetic representations, Hanson discloses “speech data 230,” “Command Mapping 240,” and “speech engine 254” process speech through “phonetic”																

Limitation	Aginsky in view of Hanson																
standard function identifier,	algorithms.” <i>E.g.</i>, Hanson, ¶¶[0026], [0040], Fig. 2. A POSITA would have understood that “phonetic algorithms” index and recognize words according to phonetic representations, such as phonemes. <i>Id.</i>, ¶[0040]; McNair, ¶256. A POSITA would have been motivated to apply Hanson’s teachings in implementing Aginsky’s systems and methods to achieve the predictable result of using phonetic representations to process voice commands. McNair, ¶256. <table><tr><th>Func ID</th><th>Comm ID</th><th>Command</th><th>Alts</th></tr><tr><td>F_A</td><td>C_A</td><td>Call</td><td>Dial</td></tr><tr><td>F_B</td><td>C_B</td><td>Close</td><td>Raise</td></tr><tr><td>F_C</td><td>C_C</td><td>Change</td><td>Tune</td></tr></table> Hanson, Fig. 2 (partial). McNair, ¶¶133-138, 254-256.	Func ID	Comm ID	Command	Alts	F_A	C_A	Call	Dial	F_B	C_B	Close	Raise	F_C	C_C	Change	Tune
Func ID	Comm ID	Command	Alts														
F_A	C_A	Call	Dial														
F_B	C_B	Close	Raise														
F_C	C_C	Change	Tune														
[1.a.7] and a plurality of data each of which comprises a phonetic representation of a unique one of a plurality of synonyms of the function name;	See §VIII.A.4(a) at [1.a.6]. While Aginsky does not explicitly disclose or teach the use of synonyms of a function name, Hanson discloses “[m]apping 240 can support arbitrary quantity of commands, synonyms, and/or alternative commands for a function.” Hanson, ¶[0037]. These synonyms are denoted by the “Alts” column of Command Mapping 240:																

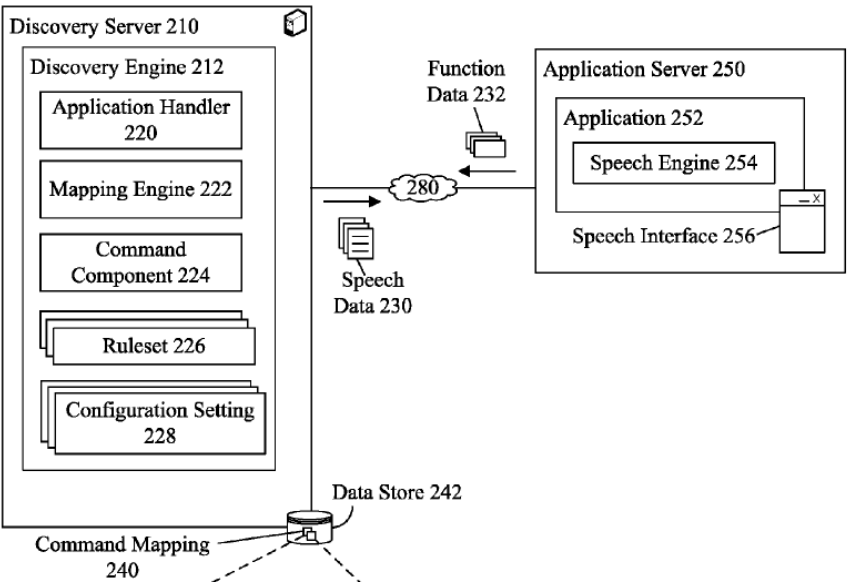
Limitation	Aginsky in view of Hanson
	 <i>Id.</i>, Fig. 2 (partial). Hanson further explicitly discloses that “Alts” includes synonyms of the Command. <i>Id.</i>, ¶[0023]. For example, as shown above in Figure 2, “a function associated with identifier F_A can be linked to a ‘Call’ command and an alternative command ‘Dial’.” <i>Id.</i>, ¶[0033]. Hanson discloses that implementing such synonyms reduces “troublesome...scenarios” in which the voice control system is unable to recognize a command. <i>Id.</i>, ¶¶[0002], ¶[0003]. Thus, a POSITA would have been motivated to apply these teachings of Hanson to implement a more user-friendly, voice-controlled Aginsky system. McNair, ¶259. McNair, ¶¶139-142, 257-259.
[1.b.1]	See §VIII.A.4(a) at [1.b.1]. McNair, ¶¶143-146, 260-261.
[1.b.2]	See §VIII.A.4(a) at [1.b.2]. McNair, ¶¶147-148, 262-263.
[1.c] causing the controlling device to transmit a command communication by using the protocol and formatting information and the command data of a one of the one	See [1.a.6]-[1.a.7]; §VIII.A.4(a) at [1.c]. To the extent argued Aginsky does not explicitly disclose “a speech recognition engine,” Hanson discloses voice data (<i>e.g.</i> “speech data 230”) provided to a speech recognition engine (<i>e.g.</i> “speech engine 254”).

Limitation	Aginsky in view of Hanson
or more of the plurality of individual command function entries from within the provisioned codeset record having a phonetic representation of the function name or a synonym of the function name which corresponds to voice data provided to a speech recognition engine.	200  Hanson, Fig. 2 (partial); McNair, ¶266. Hanson discloses speech engine 254 includes speech processing algorithms—such as phonetic algorithms—to recognize a user’s voice commands, such as “Lock doors.” Hanson, ¶¶[0040], [0017], [0021]. Hanson further discloses that “Speech data 230” can include “linguistic analysis information, wave form data, and the like,” which a POSITA would have understood to include voice data. <i>Id.</i>, ¶[0029]; McNair, ¶266. McNair, ¶¶149-151, 254-259, 264-266.
[12.pre]	See [1.pre]; §VIII.A.4(a) at [12.pre]. McNair, ¶¶118-119, 237-238, 286-287.
[12.a.1] a processing device having associated instructions stored on a non-transient readable media which instructions, when executed by the processing	See [1.a.1]; §VIII.A.4(a) at [12.a.1]. To the extent argued that Aginsky does not disclose such instructions stored on a non-transient readable media, Hanson explicitly discloses such instructions. Hanson discloses “computer program instructions” that “create means for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks.” Hanson, ¶[0014]; see Hanson ¶¶[0011]-[0016]. And, as stated above, a POSITA would have been motivated to apply the

Limitation	Aginsky in view of Hanson
device, cause a codeset record to be provisioned to the controlling device for use in commanding functional operations of the target appliance	teachings of Hanson in order to achieve the predictable result of a user friendly, voice-controlled system. McNair, ¶290. McNair, ¶¶120-122, 239-240, 288-290.
[12.a.2]	See [1.a.2]; §VIII.A.4(a) at [12.a.2]. McNair, ¶¶123-124, 241-242, 291-292.
[12.a.3]	See [1.a.3]; §VIII.A.4(a) at [12.a.3]. McNair, ¶¶125-127, 243-247, 293-294.
[12.a.4]	See [1.a.4]; §VIII.A.4(a) at [12.a.4]. McNair, ¶¶128-130, 248-250, 295-296.
[12.a.5]	See [1.a.5]; §VIII.A.4(a) at [12.a.5]. McNair, ¶¶131-132, 251-253, 297-298.
[12.a.6]	See [1.a.6]; §VIII.A.4(a) at [12.a.6]. McNair, ¶¶133-138, 254-256, 299-300.
[12.a.7]	See [1.a.7]; §VIII.A.4(a) at [12.a.7]. McNair, ¶¶139-142, 257-259, 301-302.
[12.b.1]	See [1.b.1]; §VIII.A.4(a) at [12.b.1]. McNair, ¶¶143-146, 260-261, 303-304.
[12.b.2]	See [1.b.2]; §VIII.A.4(a) at [12.b.2]. McNair, ¶¶147-148, 262-263, 305-306.
[12.c]	See [1.c]; §VIII.A.4(a) at [12.c]. McNair, ¶¶149-151, 254-259, 264-266, 307-308.

(b) Dependent Claims

Limitation	Aginsky in view of Hanson
[2.] The method as recited in claim 1, wherein the controlling device comprises a microphone for receiving voice input used in creating the voice data.	See §VIII.A.4(b) at [2]. To the extent argued that Aginsky does not teach a microphone for receiving voice input used in creating the voice data, Hanson discloses a microphone. Hanson teaches that its “speech-enabled computing system can include one or more computing devices capable of speech recognition.” Hanson, ¶[0024]. Hanson further teaches using speech commands to control system operations, such as “Lock doors.” <i>Id.</i>, ¶¶[0017], [0021]. And Hanson discloses a microphone on the speech interface of the speech-enabled system that receives voice input used in creating voice data (<i>e.g.</i> “speech data”). See <i>id.</i>, ¶¶[0019], [0026], Fig. 2; McNair, ¶269. McNair, ¶¶152-156, 267-269.
[3.] The method as recited in claim 1, wherein the controlling device comprises a processing device and instructions for providing the speech recognition engine.	See §VIII.A.4(b) at [3]. While Aginsky does not expressly teach or suggest “instructions for providing the speech recognition engine,” it would have been obvious to a POSITA to apply Hanson’s teachings of recognizing speech and providing instructions to execute such speech recognition. Hanson, ¶[0043]; McNair, ¶272. McNair, ¶¶157-160, 270-272.
[4.] The method as recited in claim 1, wherein the speech recognition engine is executed on a computing device remote from the controlling device.	See §VIII.A.4(b) at [4]. Hanson explicitly discloses that speech engine 254 is located on application server 250:

Limitation	Aginsky in view of Hanson
	200  Hanson, Fig. 2, ¶[0038]. Indeed, application server 250 includes functionality including “speech recognition,” and a POSITA would have recognized that application server 250 is remote from the device receiving the voice commands because application server 250 only communicates via network 280. Hanson, ¶[0026]; McNair, ¶275. McNair, ¶¶161-165, 273-275.
[5.]	See §VIII.A.4(b) at [5]. McNair, ¶¶166-169, 276-277.
[6.]	See [1.b.1], [1.c]. McNair, ¶¶143-146, 149-151, 260-261, 264-266, 278-279.
[8.]	See §VIII.A.4(b) at [8]. McNair, ¶¶172-176, 280-281.
[9.]	See §VIII.A.4(b) at [9]. McNair, ¶¶177-178, 282-283.
[10.]	See [5], [8]; §VIII.A.4(b) at [10].

Limitation	Aginsky in view of Hanson
	McNair, ¶¶166-169, 172-176, 179-180, 276-277, 280-281, 284-285.
[13.]	See §VIII.A.4(b) at [13]. McNair, ¶¶203-206, 309-310.
[14.]	See §VIII.A.4(b) at [14]. McNair, ¶¶207-208, 311-312.
[15.]	See [9]. McNair, ¶¶209-210, 313-314.
[16.]	See [5], [10]. McNair, ¶¶166-169, 179-180, 276-277, 284-285, 315-316.
[17.]	See §VIII.A.4(b) at [17]. McNair, ¶¶213-214, 317-318.
[18.]	See [1.c], [6]. McNair, ¶¶143-146, 149-151, 260-261, 264-266, 278-279, 319-321.

D. Ground 4: Claims 7, 11, and 19 are rendered obvious over Aginsky in view of Hanson and further in view of Dresti

For the same reasons as those stated above in §VIII.B, a POSITA would have been motivated to apply Dresti’s teachings of using location data to identify the codeset record in implementing **Aginsky**’s systems and methods as modified by **Hanson**’s teachings. McNair, ¶¶322-323.

IX. SECONDARY CONSIDERATIONS

Petitioner is unaware of evidence of secondary considerations relevant to the Challenged Claims. McNair, ¶341.

X. CONCLUSION

Substantial, new, and noncumulative technical teachings have been presented for each Challenged Claim, which are disclosed and/or rendered obvious for the reasons set forth above. McNair, ¶¶342-343. There is a reasonable likelihood that Petitioner will prevail as to each of these Challenged Claims. IPR of Claims 1-19 of the '083 is accordingly requested.

Respectfully submitted,

Dated: July 20, 2022

By: /Scott A. McKeown/
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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(a) and (d), the undersigned hereby certify that the Petition For *Inter Partes* Review complies with the type-volume limitation of 37 C.F.R. § 42.24(a)(i) because, exclusive of the exempted portions, it contains 13,394 words as counted by the word processing program used to prepare the paper.

Dated: July 20, 2022

By: /Brendan F. McLaughlin/
ROPES & GRAY LLP

CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b) on the Patent Owner by Federal Express of a copy of this Petition for *Inter Partes* Review and supporting materials at the correspondence address of record for the '083 patent:

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