

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.
Petitioner

v.

KANNUU PTY LTD.
Patent Owner

Case IPR2026-00072
Patent No. 11,200,252

**DECLARATION OF VIJAY MADISETTI, PH.D. IN SUPPORT OF
SAMSUNG'S REQUEST FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,200,252
UNDER 35 U.S.C § 312 AND 37 C.F.R. § 42.104**

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EXHIBIT LIST

No.	Short Name	Exhibit
1001	'252 patent	U.S. Patent No. 11,200,252
1002	'939 File History	File History of U.S. Patent No. 11,200,252
1003	Madisetti Decl.	Declaration of Vijay Madisetti, Ph.D.
1004	Madisetti CV	Curriculum Vitae of Vijay Madisetti, Ph.D.
1005	<i>Perlman</i>	U.S. Pat. Pub. No. 2002/0113825 A1
1006	<i>Dostie</i>	U.S. Pat. Pub. No. 2004/0021691
1007	<i>Pu</i>	U.S. Patent No. 7,152,213
1008	<i>Josenhans</i>	U.S. Patent Publication No. 2002/0078013
1009	<i>Badarneh</i>	Int'l Patent Pub. No. WO2002/091160
1010	<i>Schroeder</i>	U.S. Patent No. 5,797,098
1011	<i>Strubbe</i>	U.S. Patent No. 5,223,924
1012	<i>Montgomery</i>	U.S. Patent No. 3,309,677
1013	'354 FWD	Final Written Decision, IPR2020-00737, Paper 105 (PTAB Sept. 21, 2021) (filed under seal)
1014	'393 FWD	Final Written Decision, IPR2020-00738, Paper 100 (PTAB Sept. 21, 2021) (filed under seal)
1015	'852 Final Rejection	Final Rejection, Reexamination No. 90/014,760 (July 28, 2022)
1016	'852 PTAB Decision	Decision on Appeal, Reexamination No. 90/014,760 (PTAB Sept. 19, 2023)
1017	'579 Final Rejection	Final Rejection, Reexamination No. 90/014,761 (July 28, 2022)
1018	'579 PTAB Decision	Decision on Appeal, Reexamination No. 90/014,761 (PTAB Sept. 19, 2023)
1019	'354/'393 IPR Appeal	Judgment, <i>Kannuu Pty Ltd. v. Samsung Elecs. Am., Inc.</i> , No. 22-1526 (Fed. Cir. Oct. 11, 2013)

No.	Short Name	Exhibit
1020	'264 Final Rejection	Final Rejection, Reexamination No. 90/014,759 (Sept. 2, 2022)
1021	'264 PTAB Decision	Decision on Appeal, Reexamination No. 90/014,759 (PTAB Sept. 19, 2023)
1022	'252 Patent	U.S. Patent No. 11,200,252
1023		Samsung Document Production SAMSUNG_K_00035577-00035704 (filed under seal)
1024	'939 File History	File History of U.S. Patent No. 11,573,939
1025		Samsung Document Production SAMSUNG_K_00035597 -603 -619 (Original) (filed under seal)
1026		30(b)(6) Deposition Transcript from IPR2020-00737 and IPR2020-00738 (filed under seal)
1027		Samsung's Supplemental Interrogatory Response to Kannuu's Interrogatory in IPR2020-00737 and IPR2020-00738 (filed under seal)
1028		[intentionally omitted]
1029		[intentionally omitted]
1030		[intentionally omitted]
1031		[intentionally omitted]
1032		[intentionally omitted]
1033		KAN-PTAB00001830, Kannuu--Revenue 2010-2018.pdf (filed under seal)
1034		KAN-PTAB00001655 (filed under seal)
1035		KAN-PTAB00001505 (filed under seal)
1036		KAN-PTAB00000236 (filed under seal)
1037		KAN-PTAB00000025 (filed under seal)

No.	Short Name	Exhibit
1038		KAN-PTAB00000910 (filed under seal)
1039		KAN-PTAB00000919 (filed under seal)
1040		KAN-PTAB00000099 (filed under seal)
1041		KAN-PTAB00000118 (filed under seal)
1042		KAN-PTAB00000168 (filed under seal)
1043		KAN-PTAB00000973 (filed under seal)
1044		KAN-PTAB00001095 (filed under seal)
1045		KAN-PTAB00001237 (filed under seal)
1046		KAN-PTAB00000386 (filed under seal)
1047		KAN-PTAB00000989 (filed under seal)
1048		KAN-PTAB00001278 (filed under seal)
1049		KAN-PTAB00001327 (filed under seal)
1050		KAN-PTAB00001323 (filed under seal)
1051		KAN-PTAB00001803 (filed under seal)
1052		KAN-PTAB00001515 (filed under seal)
1053		KAN-PTAB00001796 (filed under seal)
1054		KAN-PTAB00001056 (filed under seal)
1055		KAN-PTAB00001618 (filed under seal)
1056		KAN-PTAB00001661 (filed under seal)
1057		[intentionally omitted]
1058		SAMSUNG-KANNUU-IPRS-00002 (filed under seal)
1059		SAMSUNG-KANNUU-IPRS-00002(Translation) (filed under seal)

1. My name is Vijay Madisetti, Ph. D. I have been retained on behalf of Samsung Electronics America, Inc. (“Samsung”) to provide this Declaration in support of Samsung’s Petition for *inter partes* review of (“Petition”) of U.S. Patent No. 11,200,252 (“the ’252 patent”), entitled “Process and Apparatus for Selecting an Item from a Database” (the “Challenged Patent,” whose claim 1 is referred to as the “Challenged Claim”). The ’252 patent is assigned to Kannuu Pty Ltd. (“Patent Owner” or “Kannuu”) and is the latest patent Patent Owner has asserted against Samsung.

2. I am being compensated for my time at the rate of \$700 per hour. My compensation is not based on the resolution of this matter. My findings are based on my education, experience, and background in the fields discussed below.

3. In preparing this declaration, I have reviewed and am familiar with all the prior art references referenced herein including at least the following:

Perlman is U.S. Patent Pub. No. 2002/0113825 A1 to Perlman *et al.*

Dostie is U.S. Patent Pub. No. 2004/0021691 to Dostie *et al.*

Badarneh is WO 2002/091160 A1

Josenhans is U.S. Patent Pub. No. 2002/0078013 A1 to Josenhans

Schroeder is U.S. Patent No. 5,797,098 to Schroeder *et al.*

Krohn is U.S. Patent No. 6,593,913 to Krohn *et al.*

Lee is U.S. Patent No. 6,144,378

I have also considered all other materials cited and discussed herein. I have reviewed the Challenged Patents and their file histories.

4. Patent Owner asserted the '252 patent and another patent, U.S. Patent No. 11,573,939, following its failed first-round, in which it asserted 5 patents related to the '939 and '252 patents. Samsung challenged, and invalidated, all 5 of these patents in IPRs and *ex parte* reexaminations. In my opinion, the scope of the claims of these now-invalid patents is substantially the same as the Challenged Claim of the '252 patent.

5. The '252 patent, like each of these patents, describes various techniques for more quickly selecting items from a database, such as names from an electronic telephone address book. EX1001, Abstract. "Items" in the database are indexed by "item identifiers." *Id.*, Abstract. The four most likely item identifiers are presented on a display screen corresponding to the left, right, up, and down positions of a joystick, sometimes referred to as a 4-way direction-pad or d-pad. *Id.*, Abstract, 4:53-64. The user can then select one of the available displayed item identifiers using the joystick. *Id.*, Abstract.

6. As described in more detail below, however, Patent Owner was not the first to propose the claimed selection method. In the late 1990s and early 2000s—well before the earliest possible priority date of the '252 patent—significant efforts were being undertaken to make textual input more efficient using input devices with reduced set keyboards, such as mobile telephones and television remote controls. Numerous enhanced user interfaces with “dynamic” displays (that re-positioned letters, groups of letters, or words based on the likelihood of being inputted next) were developed to input textual data more efficiently and without the use of a standard keyboard. These include the *Perlman* and *Badarneh* prior art, which are the primary references presented in this Petition.

7. For the same technical reasons as in the prior proceedings involving the related, now invalidated, Patent Owner patents—the '354, '579, '852, '393, and '264 patents—the Challenged Claim is invalid.

I. QUALIFICATIONS

8. My qualifications can be found in my Curriculum Vitae, which is submitted with this Declaration as Exhibit 1004 and includes a complete list of my publications.

9. My educational qualifications began in the early 1980s at The Indian Institute of Technology, Kharagpur, from which I graduated in 1984 with a B. Tech (Hons) in Electronics and Electrical Communications Engineering. I then moved to

the U.S. and joined a doctoral program at University of California at Berkeley, from which I graduated in 1989 with a Ph. D. in electrical engineering and computer sciences.

10. I then moved to The Georgia Institute of Technology (“Georgia Tech”) and have been a Professor of Cybersecurity & Privacy, and Electrical & Computer Engineering since 1989.

11. I have been a Director of three startup companies, VP Technologies, Inc., Soft Networks, Inc., and Elastic Video, Inc.

12. I am a named inventor on 38 U.S. patents.

13. I have authored or co-authored 12 books in the fields of cloud computing, block chain, and other electrical and software technologies.

14. I have also published over 100 articles in peer-reviewed journals and other academic publications, such as conference publications. I am also a first inventor on over 70 issued US patents.

15. I have mentored 25 students who have been awarded doctoral degrees.

16. I have received numerous awards in my field and am also a Fellow of the IEEE.

II. LEGAL UNDERSTANDING

A. The Person of Ordinary Skill In the Art

17. I understand that a person of ordinary skill in the relevant art (also referred to herein as “POSITA”) is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity—not an automaton.

18. I have been asked to consider the level of ordinary skill in the field that someone would have had at the time the claimed invention was made. In deciding the level of ordinary skill, I considered the following:

- the levels of education and experience of persons working in the field;
- the types of problems encountered in the field; and
- the sophistication of the technology.

19. My opinion below explains how a POSITA would have understood the technology described in the references I have identified herein around the August 2006 timeframe. I have been advised that the earliest possible effective filing date of the ‘252 patent is January 3, 2007.

20. In my opinion, a POSITA at that time would be a person with at least an undergraduate degree in electrical engineering, computer science, or physics (or a related field, such as computer engineering, human-computer interaction, or

industrial design) and 2 years of work experience with input interfaces to electronic devices.

21. I am well-qualified to determine the level of ordinary skill in the art and am personally familiar with the technology of the '252 patent in the January 2007 timeframe.

22. By 2007, I had completed my graduate degree and been a Professor at Georgia Tech since 1989. The work highlighted in my CV discussing digital signal processing included processing of input signals for electronic devices. I was also familiar with the design of input interfaces from my time in academia and at various startups I founded.

23. I was a person of at least ordinary skill in the art at this timeframe. Regardless, if I do not explicitly state that my statements below are based on this timeframe, all of my statements are to be understood as a POSITA would have understood something as of the earliest effective filing date of the Challenged Patents.

B. My Understanding of Patent Invalidity Law (Anticipation & Obviousness)

24. I am not a lawyer and will not provide any legal opinions. Though I am not a lawyer, I have been advised that certain legal standards are to be applied by technical experts in forming opinions regarding the meaning and validity of patent claims.

25. I understand that a patent claim is invalid if each and every element of the claim is disclosed by a single prior art reference. This is known as anticipation, and the claim is said to be “anticipated” by the prior art reference.

26. I understand that disclosure of a limitation of a patent claim can be “express” or “inherent.” Express disclosure means the limitation is actually disclosed in the words or figures of the reference, while inherent disclosure means that the limitation is necessarily present or the natural, inevitable result of the elements explicitly disclosed.

27. I understand that a patent claim is invalid if the claimed invention would have been obvious to a person of ordinary skill in the field at the time the application was filed. This means that even if all of the limitations or requirements of the patent claim cannot be found in a single prior art reference that would anticipate the claim, the claim can still be invalid as obvious in view of that reference or in view of multiple prior art references.

28. To obtain a patent, a claimed invention must have been, as of the invention date, nonobvious in view of the prior art in the field. I understand that an invention is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

29. I understand that to prove that prior art, or a combination of prior art, renders a patent obvious, it is necessary to: (1) identify the particular references that singly, or in combination, make the patent obvious; (2) specifically identify which elements of the patent claim appear in each of the asserted references; and (3) explain how the prior art references would have been combined to create the inventions claimed in the asserted claim. I understand that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. I also understand that when there are a finite number of identified, predictable solutions, a POSITA has good reason to pursue the known options within his or her technical grasp. I further understand that design incentives or market forces can motivate a POSITA to modify or combine teachings in the same field or in different fields. When considering obviousness of a combination of known elements, the operative question is thus whether the improvement is merely the predictable use of prior art elements according to their established functions.

30. I understand that certain objective indicia or “secondary considerations” can be important evidence regarding whether a patent is obvious or nonobvious. Such indicia include: (1) commercial success of products covered by the patent claims; (2) a long-felt need for the invention; (3) failed attempts by others to make the invention; (4) copying of the invention by others in the field; (5)

unexpected results achieved by the invention as compared to the closest prior art; (6) praise of the invention by the infringer or others in the field; (7) the taking of licenses under the patent by others; (8) expressions of surprise by experts and those skilled in the art at the making of the invention; and (9) the patentee proceeded contrary to the accepted wisdom of the prior art.

31. For the reasons I set out below, in my opinion, the prior art references either anticipate or demonstrate a strong case of obviousness against the Challenged Claim of the '252 patent. The prior art references therefore invalidate the Challenged Claim.

32. I understand that in evaluating the invalidity of the Challenged Claim, the content of a prior art patent or printed publication should be interpreted the way a POSITA would have interpreted the prior art as of the effective filing date of the Challenged Patent (August 2006).

33. My analysis below is based upon this understanding.

C. My Understanding of Claim Construction

34. I have been instructed by counsel on the law regarding claim construction and patent claims, and understand that a patent may include two types of claims—independent claims and dependent claims. An independent claim stands alone and includes only the features it recites. A dependent claim depends from an independent claim or another dependent claim. I understand that a dependent claim

includes all the features that it recites in addition to all of the features recited in the claim(s) from which it depends.

35. I reserve my right to amend or alter my analysis and opinions in view of the Patent Owner's proposed claim constructions, if any.

III. BACKGROUND OF THE TECHNOLOGY

36. The alleged invention described in the Challenged Claim of the '252 patent relates to techniques for more quickly selecting an item from a database, such as a name from an electronic telephone address book. The techniques aim to limit the number of keystrokes needed to traverse the database to the desired item. As acknowledged in the background of the '252 patent itself, there was a well-known problem inputting textual data into on-screen user interfaces without a full keyboard. EX1001, 1:42-2:6. Mobile phones, PDAs, television remote controls, and set-top boxes all shared this problem.

A. Predictive Keyboards

37. The use of on-screen keyboards exploded in the 1990s, thanks to the proliferation of interactive televisions and smart phones. Almost immediately thereafter, user interface designers began working on ways to simplify and expedite textual input using the on-screen keyboards. *Schroeder* (EX1010), filed in 1995, describes an improved mobile telephone user interface with both a predictive

keyboard input method and automatic word completion. EX1010, 1:39-45, 4:20-6:15. *Schroeder's* predictive method is shown in Figures 1A and 4:

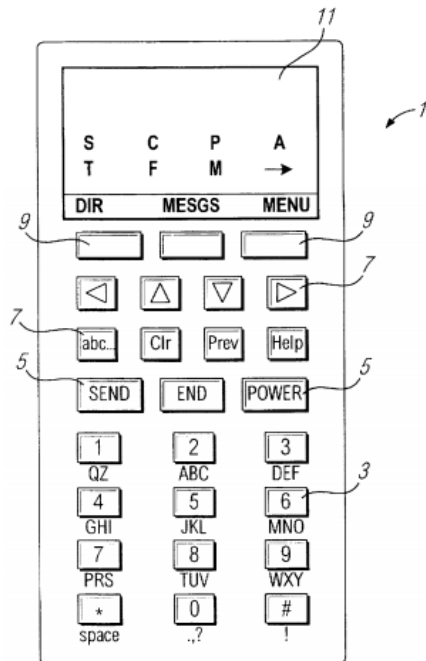


FIG. 1A

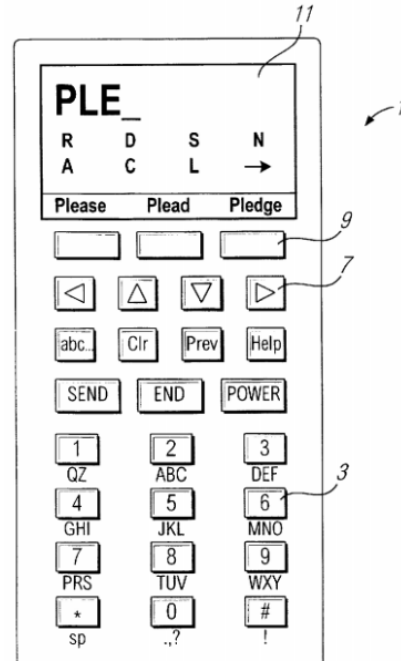


FIG. 4

38. *Pu* (EX1007) also relates to an improved user input interface that uses “dynamic key assignment” and “a predefined list that is presented to a user in an arrangement that statistically reduces the number of keystrokes required for data entry.” EX1007, Title & Abstract. As shown in Figures 6C and 6B, as a user is inputting characters into the display, tables are created listing the possibilities for the next character input according to the frequency of that input.

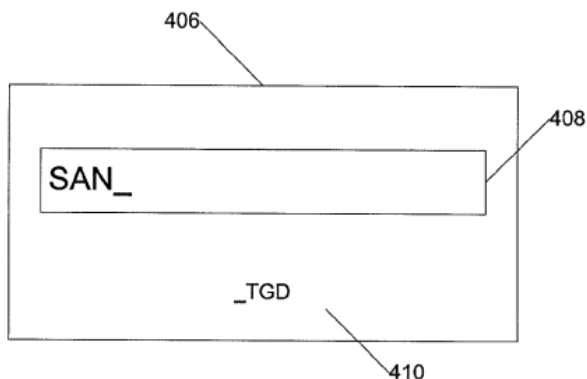


FIG. 6C

Letter	Frequency
SAN_	30
SANT	11
SAND	1
SANG	1

FIG. 6B

39. In one embodiment of *Pu*, a four-direction (up, down, left, and right) shuttle control system is used as the input mechanism. *Id.*, 7:59-8:4.

B. Database Indexing, Searching, and Selection

40. Databases have been used to store information, such as names, addresses, and messages for decades before the '252 patent. Almost immediately after databases for storing vast amounts of information were developed, methods for automatically indexing and searching the information were developed. EX1012.

41. *Strubbe* (EX1011), filed in 1992, discloses “program information databases” for television programs that are automatically correlated with the preferences of the user. EX1011, 4:17-5:32. A user browses the data in the databases by specifying one or more of these indices. *Id.* A “free text” search field also allows users to perform simple database queries and display the results. *Id.*, 5:48-6:24.

42. By 1995, “[t]he implementation of such dictionary trees or lookup tables in the computer arts [was] well known.” EX1009, 7:10-25.

IV. THE '252 patent

A. Overview

43. The '252 patent relates to a method and apparatus for selecting database items from a database. EX1001, Abstract. Database items are indexed by item identifiers, such as text. *Id.* A user may select one or more parts of an identifier from a display, where the one or more parts may be selected by adding to the previously selected one or more parts to build a larger part or whole of an item identifier. *Id.*

44. In an embodiment, the user opens the address book application and is presented with “4 strings in a menu indicating the strings are selected by movements of the joystick in the directions left, right, up and down.” *Id.*, 46:30-36.

B. Prior IPRs Against Related Patents

45. The '252 patent is a continuation of a series of patent applications, one of which is the now-invalidated U.S. Patent No. 9,697,264. These applications claim priority to a provisional application filed January 3, 2007. The '264 patent was invalidated during a reexamination (EX1020, EX1021) based on combinations of *Perlman* in view of *Dostie*, *Josenhans*, *Krohn*, and *Badarneh*; *Badarneh* in view of *Josenhans*; and *Schroeder* in view of *Josenhans*. EX1020. I understand that Patent Owner asserted the '264 patent in the co-pending district court case

46. I also understand that Patent Owner asserted other patents that are similar in scope to the '252 patent, each of which was also invalidated. In IPR2020-00737, the PTAB invalidated the '354 patent (EX1013) and in IPR2020-00738, the

PTAB invalidated the '393 patent (EX1014). I understand these decisions were summarily affirmed by the Federal Circuit. The '852 and '579 patents were invalidated by the patent office during reexamination (EX1015 through EX1018). These four patents are not related to the '252 or '264 patents, but have similar specifications.

47. In my opinion, the claims of the '252 patent have substantially the same scope and closely map to the claims of these earlier, invalidated patents, including the four unrelated patents.

48. Moreover, I note that the prior art in each of these proceedings overlaps with the art I opine on in this proceeding.

- In IPR2020-00737, the PTAB found the claims of the '354 patent anticipated by *Perlman* and obvious over *Perlman* in view of *Dostie* and *Perlman* in view of *Pu*. EX1013 at 105.
- In IPR2020-00738, the PTAB found the claims of the '393 patent anticipated by *Perlman*, anticipated by *Pu*, and obvious over combinations of *Perlman* in view of *Dostie*, *Pu* in view of *Dostie*, and *Pu* in view of *Perlman*. EX1014 at 90.
- In the '852 patent *ex parte* reexamination, the Examiner rejected—and the PTAB affirmed—the claims over combinations of *Badarneh* in view of *Josenhans* and *Schroeder* in view of *Josenhans*. EX1015.
- In the '579 patent *ex parte* reexamination, the Examiner rejected the claims over the same combinations. EX1017.

49. I have reviewed the decisions in all of the above proceedings. For the same reasons as in those cases, the claims of the '252 patent are invalid as shown below.

C. Prosecution History

50. The '252 patent was filed on August 13, 2019. The '252 patent claims the benefit of U.S. Provisional Application 60/878,083, filed January 3, 2007. EX1001.

51. I provide a detailed summary of the prosecution history below. I note that the examiner only issued a single office action, rejecting some claims and allowing others. In response, the applicant canceled the rejected claims.

52. On August 19, 2020, the examiner issued a non-final Office Action allowing application claims 27-39 and rejecting claims 40-49 as obvious in view of *Lee* and *Mansfield. Id.*, 464-473. In response to the office action, the applicant canceled claims 40-49. *Id.*, 430-35. I note that the applicant did not make any substantive remarks. The applicant did not state that it disagrees with the examiner's findings with respect to the canceled claims.

53. Following the cancellation of the rejected claims, on December 11, 2020, the examiner issued a notice of allowance. In the notice, the examiner stated that the prior art does not disclose the limitations "select one of the further one or more parts of item identifiers in response to an activation of a corresponding up,

down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers” and the limitation “wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.” *Id.*, 384-86.

54. However, I do want to note that the rejected/canceled claim 40 recited the limitation “enable selection of one of the second plurality of portions of the item identifiers by using the up, down, left, right, select functionality of the directional controller of the remote control to navigate to the one of the second plurality of portions of the item identifiers with a single activation of the up, down, left, or right key prior to selection with the selection key.” *Id.*, 625. This limitation is substantially identical in scope to the limitation in allowed claim 40 which the examiner mentioned—they both require using up/down/left/right keys to navigate to the character and then the select key to select it. Yet the examiner had found the limitation in claim 40 disclosed by *Lee*. *Id.*, 466-67. Thus, in my opinion, the examiner’s statement in the notice of allowance indicated that the examiner believed that the prior art did not disclose that this navigation requires “a key press corresponding to the relative arrangement” of the characters displayed on the screen.

Id., 466-67. As I discuss below, the PTAB and CRU had previously invalidated limitations that are identical in scope.

55. Following the notice of allowance, the applicant submitted additional IDS's, and each time the examiner issued a new notice of allowance restating his earlier reasons for allowance. *Id.*, 202-04, 253-54, 15-17.

56. The '252 patent issued on December 14, 2021. EX1001.

V. CLAIM CONSTRUCTION

57. In my opinion, all terms should be given their ordinary meaning as understood by a POSITA and no term needs to be expressly construction.

58. However, I do want to point out that in the previous IPRs involving unrelated patents, Patent Owner had argued that the limitations “parts of item identifiers being positioned in one of the ***up, down, left and right positions***” (from the '354 patent) and “portions of item identifiers is displayed in a position corresponding to an up, down, left, right, select functionality of an input directional controller of the device” (from the '393 patent) should be construed to mean the “*no more than* four directional selection options on the input direction controller to select an item identifier.” EX1013, 24, EX1014, 20-21. I note that the Board rejected Patent Owner's argument, pointing out that the language was not so restrictive and that the specification's example of a four-way directional controller was merely

exemplary and other embodiments allowed for additional directions. EX1013, 23-33; EX1014, 25-29.

59. The '252 patent recites “a remote control device comprising a 4-way directional controller” and “enable the selection of the one or more parts by utilizing the 4-way directional controller.” It is possible that Patent Owner will argue that these limitations require “***no more than four*** directional selection options of the input direction controller to select an item identifier.” In my opinion, this narrow construction is not warranted. The plain meaning of “4-way directional controller” does not preclude additional directions, and the plain meaning of “selection ... utilizing the 4-way directional controller” does not require only four directional options. The specification supports this as well. While the specification discloses an interface with “four options (one for the menu locations for up, down, left and right),” it notes that “[o]ther interface variations may require other numbers of options from one upwards.” EX1001, 20:19-28. The specification also describes a “5-way joystick” with four directions (the fifth “way” being “a press in of the joystick indicating ‘more’”) where “only ***3 of the directions*** are used to present options (e.g. left, up and right),” therefore supporting the argument that a “4-way directional controller” is not required to have 4 directional options. EX1001, 19:38-42. I further note that the previous IPRs construed up/down/left/right “positions” or “functionality,” which on their face recite ***four ways***, as not requiring only four

directions. And though the '252 patent recites “four-way,” the '252 patent equates the two. EX1001, 23:41-45 (“[T]he four options correspond to joy stick movements in the directions up, right, down and left”).

60. In addition, it is also my opinion that the applicant did not disclaim the plain meaning of the term “four-way directional controller” during prosecution. During prosecution, the applicant made no remarks when it canceled claims that the examiner had found unpatentable in favor of proceeding with claims that the examiner allowed in the first office action.

61. I am also aware of certain remarks that the applicant made during prosecution of an unrelated patent, U.S. Pat. No. 11,573,939 (which is related to the '393 and '354 patents that were invalidated by the PTAB). There, the applicant had argued that then-pending (but ultimately cancelled) claims should be construed as “requir[ing] no more than four options on the input device itself that can be used to select the portions of item identifiers.” EX1024, 454-64. The examiner rejected this argument, and in response, the applicant amended the claims to recite “an input device” or “a remote control comprising a *four way up, down, left, right directional controller*.” EX1024, 309, 312. The applicant argued that the amendment “clarif[ies] that the claims require no more than four options on the input device itself that can be used to select the portions of item identifiers.” EX1024, 316. I note that this remark was made on December 20, 2021, after the '252 patent was already in a state

of allowance. But following continued prosecution of the '939 patent, the amended claims were canceled in favor of an allowed claim that did not have the amended language. EX1024, 114-17.

62. In my opinion, this remark from the prosecution of the unrelated '939 patent is not a clear and unmistakable disclaimer. The remark itself is not clear enough to constitute a disclaimer of the '939 patent, since the amended claims were eventually canceled, indicating that whatever remark was made was withdrawn. I also note that the applicant did not claim that they intended to depart from the plain meaning of the claims or intended to change the scope in any way. Instead, the amendment was characterized as a “clarify[ication]” of the claimed scope. EX1024, 316. And there is no indication that the applicant’s remarks made during prosecution of the '939 patent were intended to apply to other patents, especially unrelated patents like the '252 patent.

63. However, even if the claims of the '252 patent were construed to require ***only four directional options*** for selecting characters, both *Badarneh* and *Lee* disclose the limitation under that narrow construction.

VI. GROUNDS OF CHALLENGE

64. I understand that Petitioner requests *inter partes* review and cancelation of the challenged claim on the following grounds:

Grounds	Claim	Statute	Prior Art
1	1-13	§102 or §103	<i>Perlman and Lee</i>
2	6, 11	§103	<i>Perlman, Lee, and Dostie</i>
3	1-5, 7-13	§103	<i>Badarneh and Lee</i>
4	6, 11	§103	<i>Badarneh, Lee, and Dostie</i>

VII. GROUND 1: CLAIMS 1-13 ARE RENDERED OBVIOUS BY PERLMAN AND LEE

A. *Perlman*

65. *Perlman* (EX1005) describes a user input interface for a television remote control having functional buttons arranged in a “star” pattern. EX1005, ¶0014. Function buttons 101 on remote control 100 of Figure 1B are mapped to characters in buttons 110 displayed on television/computer display 105 in Figure 2. The mapped characters correspond to “the most common first letters of words in the database list 120.” *Id.*, ¶[0017].

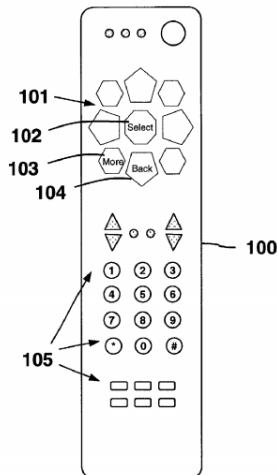


FIG. 1b

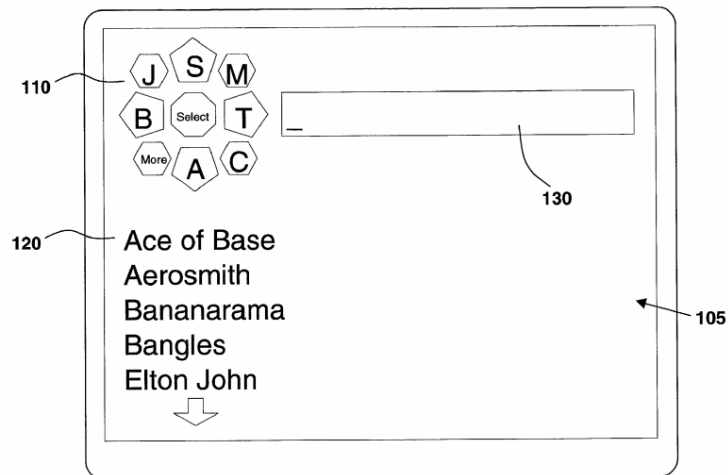
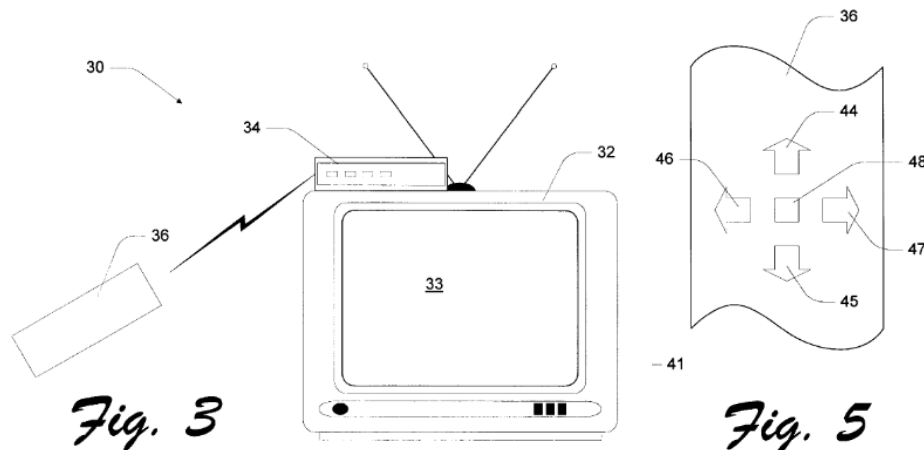


FIG. 2

B. Lee

66. *Lee* (EX1008) describes a “symbol entry system” for entering characters on a television display using a “handheld remote command unit.” EX1008, Abstract, 2:36-37. The remote control has up, down, left, right keys and an “action” key in the center, as depicted in Figure 5. *Id.*, 3:12-14.



67. Figures 7 through 17 show that the user interface displayed on the television allows a user to use the up/down/left/right keys to navigate a circular menu

to a desired character, and further allows that character to be selected using the central “action” key. *Id.*, 4:11-5:34.

C. Motivation to Combine *Perlman* and *Lee*

68. In my opinion, it would have been obvious to incorporate *Lee*’s method of navigating sub-menus with *Perlman*, in particular, *Lee*’s teaching of using up/down/left/right directional buttons to navigate to a desired letter and a central select button to select that letter. A POSITA would be motivated to incorporate *Lee* into *Perlman* in at least two ways: (1) using *Perlman*’s interface to, in view of *Lee*, allow a user to navigate to a letter and select it with an action button, or (2) replace *Perlman*’s interface for entering characters with *Lee*’s.

69. *Perlman*’s interface presents characters in a star-based menu where a user presses a character-mapped button to select the corresponding character. EX1005, ¶[0014]. A POSITA would be motivated, in view of *Lee*, to allow the user to instead use the directional buttons to navigate to the desired character and a center select or action button to select the character. This would allow the user to essentially confirm that the selected character is the desired character—and if the selected character is the incorrect character, easily allow the user to correct their mistake. Otherwise, some users who are prone to input mistakes may accidentally press the character-mapped button, thereby selecting the character and forcing the

system to perform an unnecessary update of the database list. Allowing the user to navigate to the character first before selection prevents such mistakes.

70. In addition, a POSITA would have found it obvious to use *Perlman*'s system with *Lee*'s interface, which would improve the user interface in various aspects for various users. In particular, while *Perlman* displays characters in a star pattern, the number of available characters that can be displayed at once is limited. Thus, *Perlman* requires a "more" button where "if the desired letter does not appear among the mapped letters, the user may press the 'more' button 103 to retrieve a new group of the next most common letters." EX1005, ¶[0023]. Indeed, *Perlman* recognizes that this method may involve a lot of key presses to navigate all characters. *Id.*, ¶[0028].

71. By contrast, *Lee* is simpler in that respect. *Lee* does not require the use of a "more" button, as each letter is accessible via cascading menus as the user uses the navigation buttons. In fact, *Lee* provides express motivation for its interface, stating that it "allow[s] a user to learn the positions of different symbols and to thus shorten the effort required to enter any particular character." EX1008, 1:63-65. A POSITA would have also known and been motivated by the fact that *Lee*'s mechanism provides easier access to the full range of characters, especially in situations where a user may inadvertently overlook a letter. For example, when a user uses the interface in *Perlman*, if they overlook a letter and inadvertently press

“more,” they would have to cycle through all the options before the desired letter is displayed. *Lee* mitigates that scenario because the user can simply navigate back to the desired letter using the directional characters. At least in this respect, *Lee* provides a user interface that many users may find preferable, and POSITA would therefore be motivated to offer such an interface. Indeed, incorporating *Lee* would not require removing *Perlman*’s interface, as they could be toggled via a settings menu and the user could use whichever interface they prefer. Providing more user interface options would be beneficial.

72. In my opinion, a POSITA would have reasonably expected the combination to succeed. *Perlman* and *Lee* are readily combinable, since *Perlman* already provides a remote control unit with four directions and a center button for use with a display, such as disclosed in Figures 1a or 1b of *Perlman*. *Lee* also explains that the order of layout of characters in its interface can be assigned in any matter, and indeed, some possibilities “may be preferable in some situations” (EX1008, 3:63-67)—this fits well with *Perlman*’s disclosure of prioritizing characters based on how common they are in the database. EX1005, ¶[0017]. The combination would merely require implementing *Lee*’s user interface on the display, which could be done using conventional user interface APIs that any POSITA would have been capable of doing.

D. Claim 1

73. *Perlman* in view of *Lee* render obvious the Challenged Claims. As I discuss below, *Perlman* discloses and renders obvious most limitations the Challenged Claims, and *Lee* discloses limitation 1i. The two would have been obvious to combine.

1. ***1a: A system for selecting items associated with corresponding item identifiers from a plurality of items, the system comprising:***

74. In my opinion, *Perlman* discloses the preamble, to the extent it is limiting. EX1005, ¶85. *Perlman* describes a ***system for selecting items*** and presents numerous “Embodiments of an ***Apparatus and Method for Selecting Data***” including an embodiment that “allows [a] user to rapidly enter alphanumeric characters (or other types of symbols) without looking away from the television/computer screen.” EX1005, ¶[0014]. In my opinion, a piece of desired content is an ***item***, its title is an ***item identifier***, and a letter or number (alphanumeric character/symbol) is a ***part of item identifier***, which is used to select the desired content from a database of multimedia content (***plurality of items***). See *id.*, ¶[0017]. *Perlman* discloses databases of ***items*** (EX1005, ¶[0004], ¶[0017], Figs. 2, 7, 8) and a display that display “character-mapped buttons 110” for selection (*i.e.*, ***part of an item identifier***) for a “database list 120” (*i.e.*, a list of ***item identifiers***) (*Id.*, ¶[0017], Fig. 2).

75. I note that in the '354 patent IPR FWD, the PTAB found that *Perlman* disclosed “[a] method of selecting database items from a database, the database items being indexed by a list of item identifiers.” EX1013, 36. In my opinion, this preamble in the claim 1 of the '354 patent is of at least the same scope as this limitation and therefore should be found disclosed for the same reasons.

2. **1b: a television display**

76. In my opinion, *Perlman* discloses this limitation. One of *Perlman*'s goals was to allow user interaction with the **system for selecting items** “without looking away from the television/computer screen,” which is the **output display of a television**. EX1005, ¶[0014], Fig. 2.

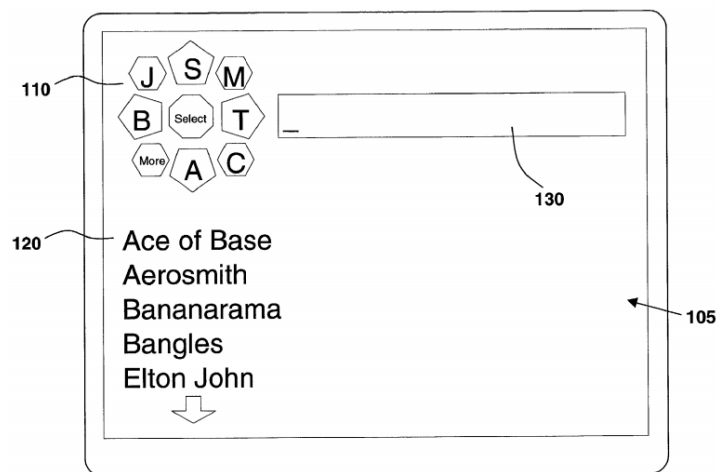


FIG. 2

Id., Fig. 2.

77. I note that in the '393 patent IPR FWD, the PTAB found that *Perlman* disclosed “wherein the computing device is a television.” EX1014, 70. In my

opinion, that limitation of the '393 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

3. 1c: a remote control device comprising a 4-way directional controller; and

78. In my opinion, *Perlman* discloses this limitation. As shown in *Perlman* Figs. 1a and 1b, *Perlman* discloses a **remote control keypad** with **four directions**, specifically up, down, left, and right. EX1005, ¶[0014] (“directional and functional buttons 101”, “a ‘select’ button 108 for making various types of data selections”), Figs. 1b and 2. Figures 1a and 1b, which I have annotated and reproduced below, support my opinion. These four directions are the same four directions described in embodiments of the '252 patent.

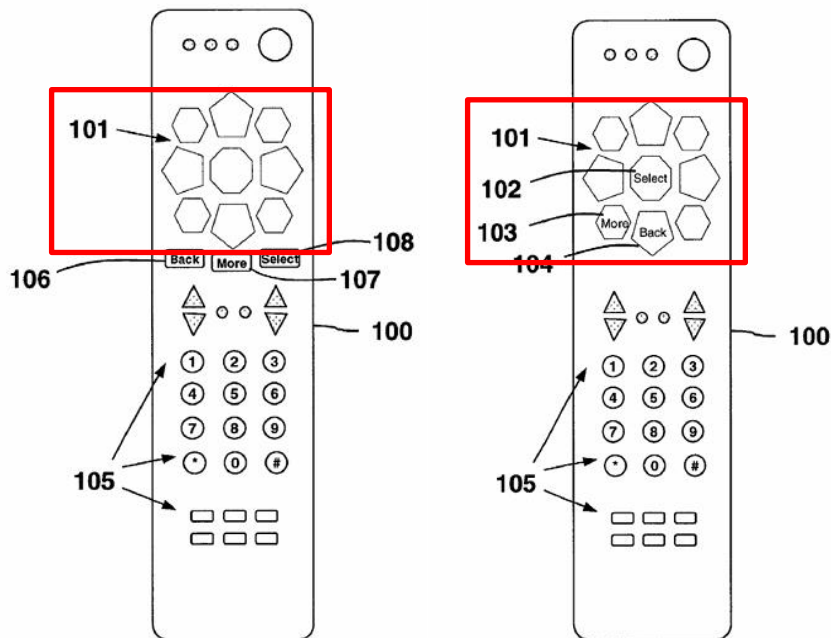


FIG. 1a

FIG. 1b

79. As I discussed above, I do not believe this term should be construed as limited to **only** four directions. But if it is, I note that *Perlman* teaches that its remote control is “not limited to any particular number of buttons or any particular button arrangement.” EX1005, ¶[0016]. Thus, a POSITA would understand that *Perlman*’s remote control could be limited to four directional buttons, especially since such a pattern was the conventional approach for television remote controls. Moreover, a POSITA would have considered it an obvious design choice given the limited, discrete options for the number of directional buttons on a remote control.

80. In my opinion, a POSITA would have also been motivated to, in view of *Perlman*’s teachings, provide a remote control and interface with only four directional options. This would provide a simpler interface and would be less prone

to erroneous inputs from the user. Again, the conventional approach for remote controls was to only provide four directional buttons, and thus the average user would have been accustomed to such an arrangement. By providing a remote control in line with the user's expectation, that would enhance the user experience. It is also my opinion that a POSITA would have had a reasonable expectation of success, as it would only require providing a remote control with only four directional buttons and showing only four directional options in the user interface.

81. I also note that *Lee* describes a remote control with only four directional buttons and a central select button. EX1008, Fig. 5; 3:12-14 ("They include an up key 44, a down key 45, a left key 46, a right key 47, and an 'action' or 'enter' key 48."). In my opinion, POSITA would have been motivated to combine *Perlman* and *Lee* to use *Lee*'s character-input methods, as I discussed above. Since *Lee*'s interface only uses four directional buttons, the combination would further involve providing a remote control with only four directional buttons. For the same reasons, as well as the reasons I described above about the benefits of only providing four directional buttons, a POSITA would be motivated to use *Lee*'s remote control, which is well-suited for *Lee*'s methods.

82. I note that in the '354 patent IPR FWD, the PTAB also found that *Perlman* disclosed "an apparatus and method for entering characters and selecting data using a remote control device." EX1013, 34. The PTAB found that *Perlman*

disclosed a limitation requiring “wherein the further one of more parts of item identifiers being arranged on the display relative to one another and corresponding to at least an up, down, left or right position.” *Id.*, 38-42. In my opinion, those limitations of the ’354 patent are of at least the same scope as this limitation in the ’252 patent and therefore should be found disclosed for the same reasons.

4. 1d: a computer processor configured to:

83. In my opinion, *Perlman* discloses this limitation. As shown in *Perlman* Fig. 2, above, *Perlman* discloses an example in which the function buttons on the **remote control keypad** are “mapped to the characters in buttons 110 displayed on **television/computer display**.” EX1005, ¶[0014], Figs. 1b and 2.

84. *Perlman* explains the television (which generates the user interface) may utilize “a general-purpose or special-purpose processor to perform the steps,” i.e., a **computer processor**. EX1005, ¶37.

5. 1e: generate, on the television display, a first display of an on-screen keyboard including one or more parts of an item identifier for selection;

85. In my opinion, *Perlman* discloses this limitation. In Figures 2-8, *Perlman* describes a GUI with character-mapped buttons 110 in a “star” configuration corresponding to the same “star” configuration on a remote control input device to a television/computer. EX1005, ¶[0014]. *Perlman* also discloses other configurations. *Id.* at ¶[0016].

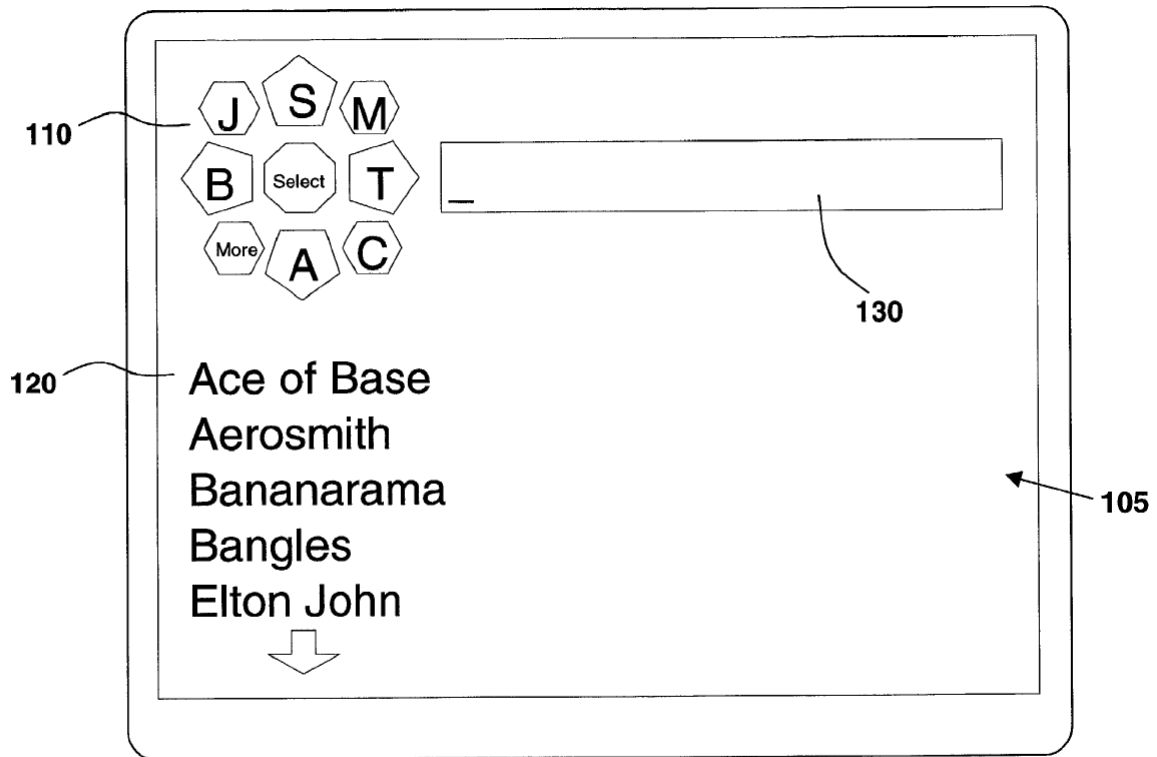


FIG. 2

Id., Fig. 2.

86. The “star” configuration includes within “character-mapped buttons 110” a ***one or more parts of an item identifier for selection***. For example, the characters shown in Figure 2 correspond to the “most common first letters of words in the database list 120,” which corresponds to “available multimedia content” accessible by the television/computer. EX1005, ¶[0017]. This star configuration within the user interface is an ***on-screen keyboard*** because provides an interface for a user to enter characters. A POSITA would understand that the plain meaning of

“on-screen keyboard” does not require displaying a full-size keyboard. For example, Figure 24 of the '252 patent depicts an on-screen keyboard that is not a full-size keyboard.

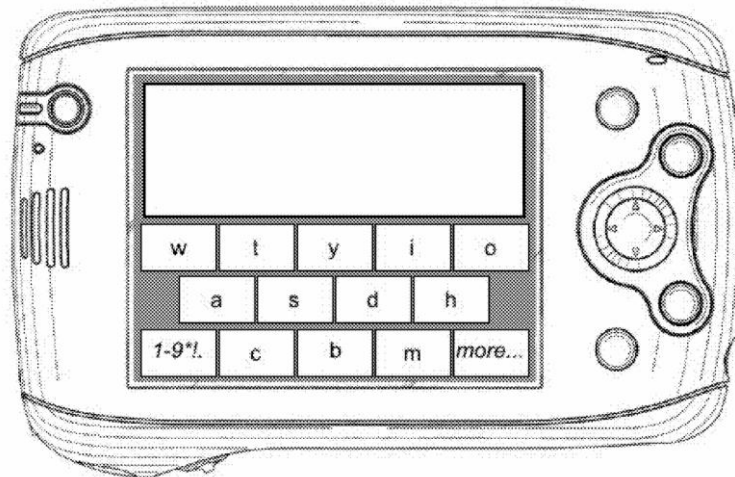
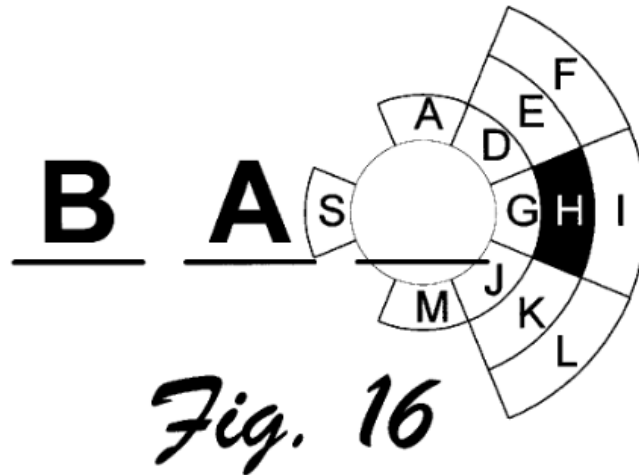


FIG. 24

87. It is also my opinion that *Perlman* in view of *Lee* render obvious this limitation. As I discussed above, *Lee* provides an alternative interface for entering characters, which a POSITA would be motivated to use with *Perlman*. *Lee* discloses an interface with a circular menu over an on-screen keyboard. For example, in Figure 16, the character “G” is positioned in a circular menu over the remaining letters in the circular menus, which is an **on-screen keyboard** because it allows entry of characters via an on-screen interface. EX1008, 4:11-5:35.



88. I note that in the '393 patent IPR FWD, the PTAB found that *Perlman* disclosed “displaying, by at least one computer processor, in a first area of a display of a device, a first plurality of portions of item identifiers, wherein the item identifiers correspond to the plurality of items in a database.” EX1014, 38-40. In my opinion, that limitation of the '393 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

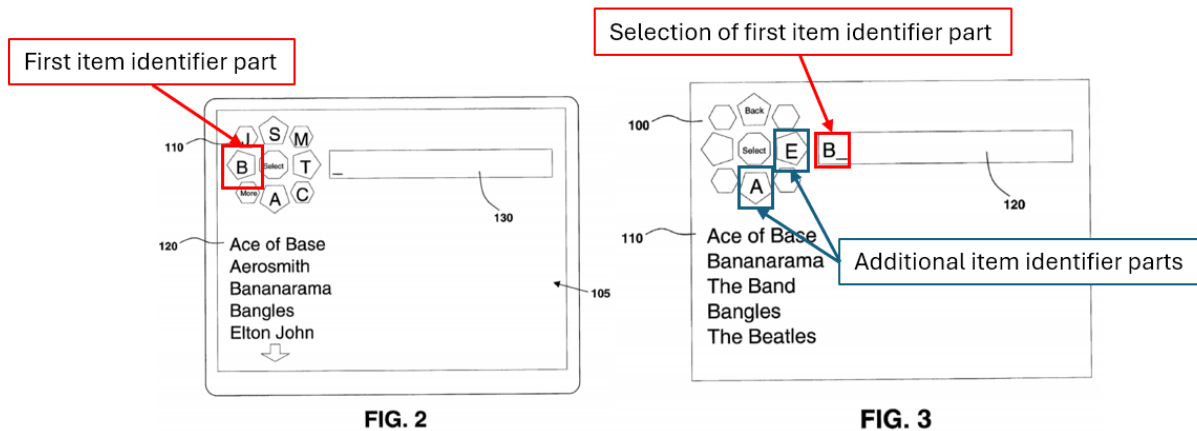
6. 1f: enable the selection of the one or more parts by utilizing the 4-way directional controller;

89. In my opinion, *Perlman* discloses this limitation. A user may select a ***part of an item identifier*** (a letter) from the GUI using the character-mapped buttons of the remote control, i.e. ***4-way directional controller***. EX1005, ¶[0017]. Through this iterative process, the user has ***selected one of the two parts of an item identifier***.

90. I note that in the '393 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “enabling, by the at least one computer processor, selection of one of the first plurality of portions of the item identifiers by using the up, down, left, right, select functionality of the directional controller on the input device.” EX1014, 38-40. In my opinion, these limitations have similar scope and therefore should be found disclosed for the same reasons.

7. ***1g: in response to the selection of the one or more parts of item identifiers, generate a display of a further one or more parts of item identifiers for selection, wherein the further one of more parts of item identifiers are arranged on the display relative to one another and corresponding to an up, down, left and right position;***

91. In my opinion, *Perlman* discloses this limitation. The user’s previously selected letter “B” (*i.e. one of the two parts of the item identifiers*) is displayed in text box 130, while a further set of item identifier parts (letters “E” and “A”) are displayed on character-mapped buttons 110, as shown in Figures 2 and 3 of *Perlman*. EX1005, ¶[0017]. As depicted in these figures, the new characters are arranged ***relative to one another and correspond to an up, down, left, and right position.***



Id., Figs. 2 & 3.

92. Once the user selects “B,” a *first part of an item identifier*, as in element 1*f*, the database list 110 is updated to reflect items whose full *item identifiers* begins with “B.” *Id.*, ¶[0025]. In Figure 3, “A” and “E” are then *displayed* to the user as options for *further one or more parts of item identifiers* in the *down and right positions*.

93. Although in this example there are no further parts of item identifiers in the up and left positions, Perlman discloses that each of the character-mapped buttons, including the up and left positions, can have letters for selection. Specifically, *Perlman* discloses that the new set of characters “correspond to the most common second letters of words in the database list 120 which begin with the first-selected character.” EX1005, ¶[0017]. Although *Perlman*’s example in Figure 4 only lists four items starting with the letter “B,” and only requires displaying two second letters (“E” and “A”), a POSITA would understand that as additional items

are included in the database, it will be necessary to add additional letters. For example, if the database also included “Blink-182” and “Bon Jovi,” it would be necessary to include the letters “L” and “O” in the second-letter selections depicted in Figure 3, in order to allow the user to search for and select such items. And a POSITA would understand that *Perlman* discloses that those additional characters would be placed in the up and left positions, as those are prioritized positions as shown in Figures 2-5. For example, Figure 2 depicts the up, left, down, and right positions as having characters.

94. Although Figures 3-5 depict the up position as having the “Back” button, a POSITA would understand that the “Back” button would be placed in the bottom-left position (as in Figure 2 where the “More” button is placed in the bottom-left) in order to assign characters to the more-often used up, down, left, right positions. Alternatively, *Perlman* discloses an embodiment where the remote control has a dedicated “Back” button (Figure 1a), and there, the “back” function will not be mapped to the set of character-mapped buttons 101, 110 (i.e., because this embodiment uses dedicated buttons for these functions).” EX1005, ¶[0018].

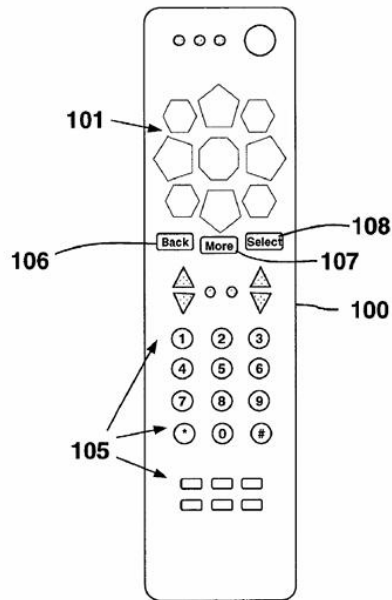


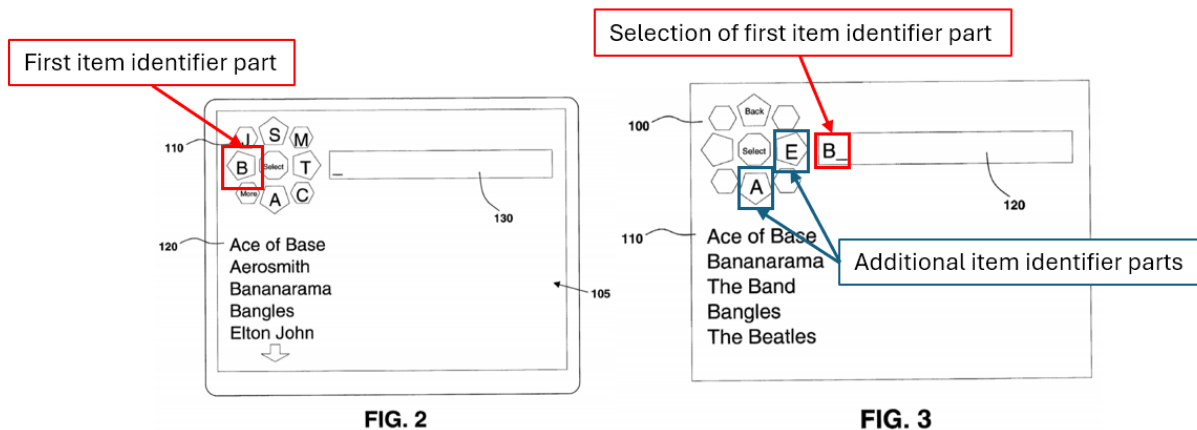
FIG. 1a

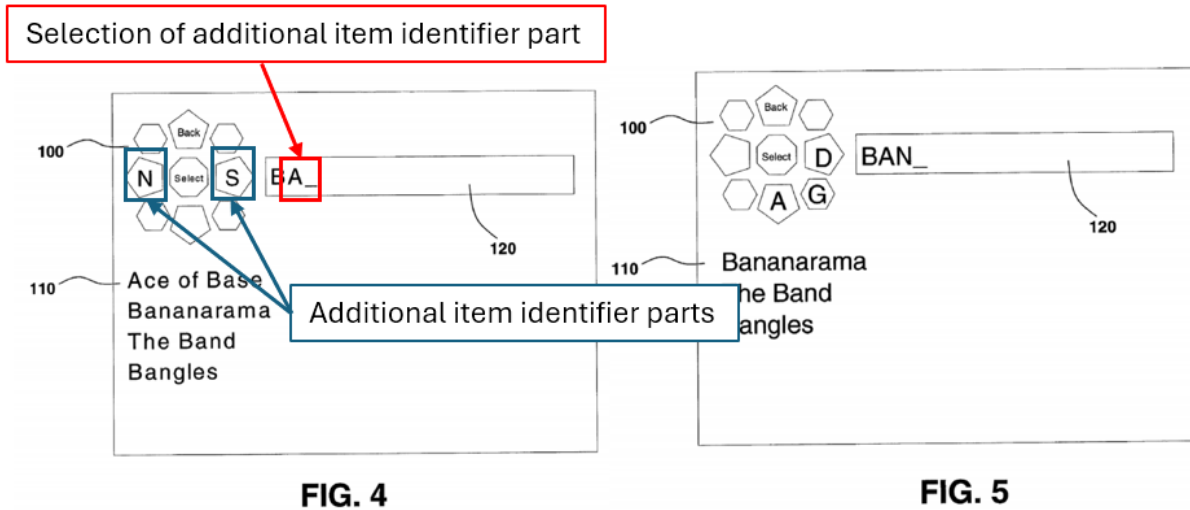
95. I note that in the '354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “in response to the selection of the one or more parts of item identifiers, generating a display of a further one or more parts of item identifiers for selection, the further one of more parts being selected for display based at least in part on a ranking scheme wherein the further one of more parts of item identifiers being arranged on the display relative to one another and corresponding to at least an up, down, left or right position.” EX1013, 39-42. In my opinion, that limitation of the '354 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

8. ***1h: enable selection of the further one or more parts of item identifiers in order to add to the selected one or more parts to***

***build a larger part or whole of a particular item identifier;
and***

96. In my opinion, *Perlman* discloses this limitation. After the user selects “B,” a new set of ***parts of item identifiers*** is automatically mapped to the character-mapped buttons on the ***remote control keypad***. EX1005, ¶¶[0017], [0025]. As the user selects these ***further parts of item identifiers***, they are added to the other selected parts to ***build a larger part of the particular item identifier***, the title being searched.





Id., Figs. 2-5.

97. As shown in Figures 2-5, which I have annotated above, *Perlman* discloses this progressive process and the user interaction with the **remote control keypad**, as the displayed item identifiers corresponding to database **items** change as the user **selects further parts of the item identifiers**, progressing from the first choice of “B,” to “BA” and “BE” (the user chose “BA”), then to “BAN” and “BAS” (the user chose “BAN”), and finally “BANA,” “BAND,” and “BANG.” This discloses at least four layers of **further parts of item identifiers**. *Id.*, ¶¶[0025]-[0026]. This also discloses how each selection further builds the item identifier, for example, going from “B” to “BANA,” which is a portion of the whole Bananarama item identifier.

98. I note that in the ’354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “enabling selection, by the user, of the further one

or more parts of item identifiers in order to add to the selected one or more parts to build a larger part or whole of a particular item identifier.” EX1013, 50-52. In my opinion, that limitation of the ’354 patent is of at least the same scope as this limitation in the ’252 patent and therefore should be found disclosed for the same reasons.

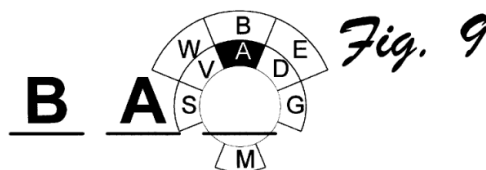
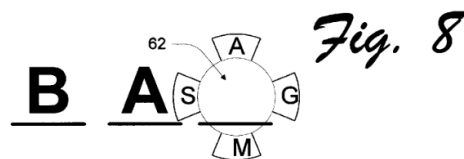
9. ***1i: select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers;***

99. In my opinion, *Perlman* in view of *Lee* renders obvious this limitation. In the first combination, *Perlman*’s interface is used but instead of the character-mapped buttons activating selection of a character, the interface is modified to allow the directional buttons to navigate a selection of one of the displayed characters and a central button to select that character, which meets this limitation.

100. In the second proposed combination, *Perlman*’s interface for selecting characters is replaced with *Lee*’s interface. *Lee* describes a “symbol entry system” for entering characters on a television display using a “handheld remote command unit.” EX1008, Abstract, 2:36-37. The remote control has up, down, left, right keys and an “action” key in the center, as depicted in Figure 5. *Id.*, 3:12-14.

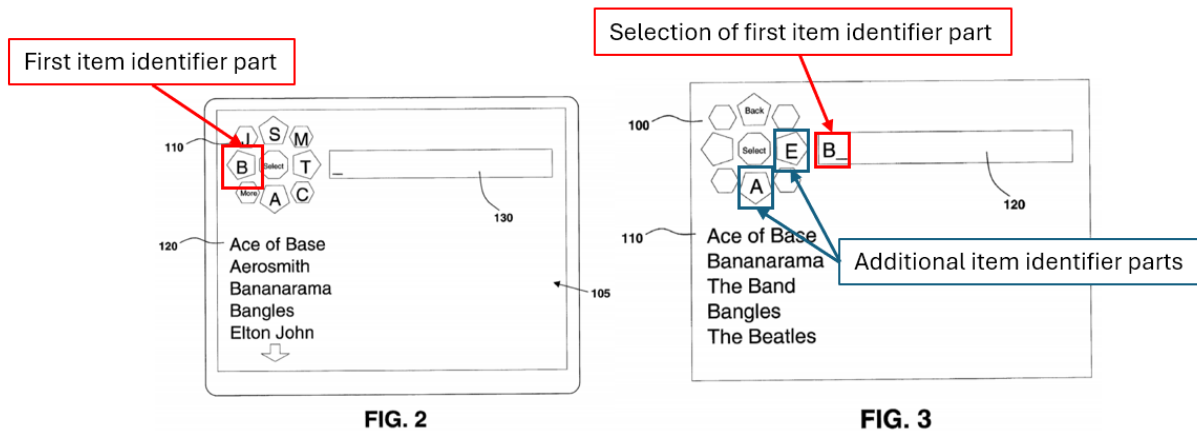
101. *Lee* teaches that characters can be selected by navigating to a particular character using the four directional buttons and actuating the center “action” button.

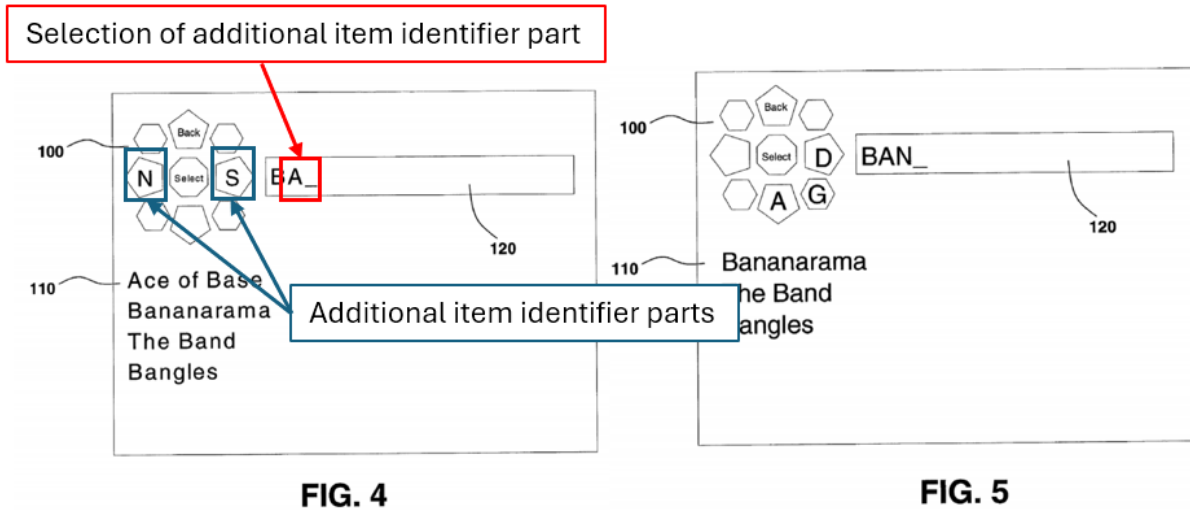
Lee provides an example navigation in Figures 7 through 17. Beginning at Figure 7, the user has already entered the letters “B” and “A” (*i.e. parts of item identifiers*) and is set to select another letter (*i.e. further parts of item identifiers*). The immediate options in Figure 8 include the “S”, “A”, “G”, and “M” letters (EX1008, Fig. 8), although in the combination, those letters could also make use of *Perlman’s* disclosure of prioritizing letters of titles that are more frequently played by the user. EX1005, ¶[0019]. Lee discloses that the user can navigate to any of these four letters by using the four directional keys, *i.e. activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers*. EX1008, 4:21-29 (for example, “[p]ressing up key 44 positions a focus on the ‘A’ symbol”). Figure 9 “shows the result of pressing up key 44.” *Id.*, 4:30. Lee further teaches that any letter that is focused can be selected by pressing the central “action” key. EX1008, 5:29-30 (“Pressing action key 48 at any time enters the currently focused symbol in the symbol entry region 62.”).



10. **1j: wherein the selected one or more parts of item identifiers and the further one or more parts of item identifiers are shorter than a complete word; and**

102. In my opinion, *Perlman* discloses this limitation. The progression in Figures 2-5 as the user ***selects parts of item identifiers*** (“B” to “BA” to “BAN”) involves ***additional parts of item identifiers*** that ***are shorter than a complete item identifier*** (“Bananarama” or “Beatles”). EX1005, ¶¶[0004], [0017]. A built-in dictionary comprising English letters or characters may also be used. *Id.*, ¶¶[0035]-[0036].



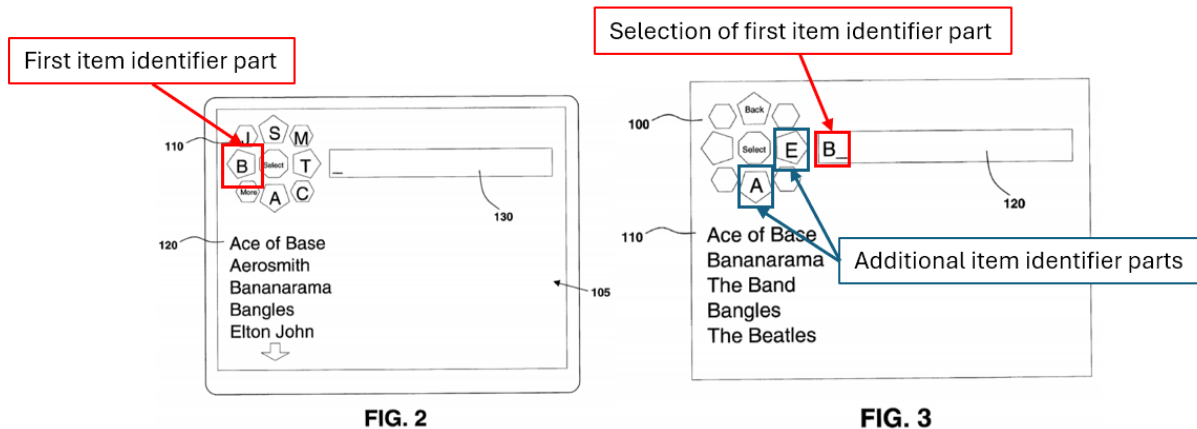


103. I note that in the '354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “wherein the selected one or more parts of item identifiers and the further one or more parts of item identifiers are shorter than a complete word.” EX1013, 50-52. In my opinion, that limitation of the '354 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

11. 1k: wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.

104. In my opinion, *Perlman* in view of *Lee* render obvious this limitation. As I explained in limitation 1g and as shown in Figures 2 through 5, the **further parts of item identifiers** can be and are arranged in up, down, left, and right positions. As I discussed above, in view of *Lee*, a POSITA would have found it obvious to

modify *Perlman* so that each of these characters can be navigated by **a key press corresponding to the relative arrangement** of the characters.



105. For example, in the above Figure 3, “E” is selected by pressing the right key, and “A” is selected by pressing the down key, since they are “character-mapped buttons.” EX1005, ¶[0014]. In one of the ways to combine *Perlman* and *Lee*, “E” can be navigated by pressing the right key, and then pressing the central action or select key.

106. In another way of combining *Perlman* and *Lee* I discussed above, including for limitation 1i, *Lee*’s interface for selecting characters can be used instead. As *Lee* explains, the user can navigate to a letter by using the up/down/left/right buttons, e.g., “[p]ressing up key 44 positions a focus on the ‘A’ symbol” in Figure 8. EX1008, 4:21-29. Thus, this discloses **navigation to letter enabled by a key press corresponding to the relative arrangement of the letters on the display**.

107. In the '354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “wherein selection of the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.” EX1013, 50-52. In my opinion, that limitation of the '354 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

E. Claim 2: *The system of claim 1, wherein the processor is located within the television.*

108. In my opinion, *Perlman* discloses this limitation for the same reasons I discussed about for limitation 1d.

F. Claim 3: *The system of claim 1, wherein the processor is further configured to enable navigation and selection of the one or more parts of item identifiers and the further one or more parts of item identifiers by way of the 4-way directional controller.*

109. In my opinion, *Perlman* in view of *Lee* render obvious this limitation. As I discussed about for limitation 1i, in the combination of *Perlman* or *Lee*, a 4-way directional controller (whether that disclosed in *Perlman* or disclosed in *Lee*) allows a user to navigate and select a character, *i.e. further one or more parts of item identifiers*. A POSITA would understand that when using one of the proposed combined interfaces, all the characters including the initial *one or more parts of item*

identifiers, will also be navigated and selected using the same method. See EX1008, 4:11-5:35.

- G. **Claim 4: The system of claim 1, wherein the further one of more parts is selected for display based at least in part on a ranking scheme, and the highest ranked of the further one or more parts of item identifiers is positioned in one of the up, down, left and right positions.**

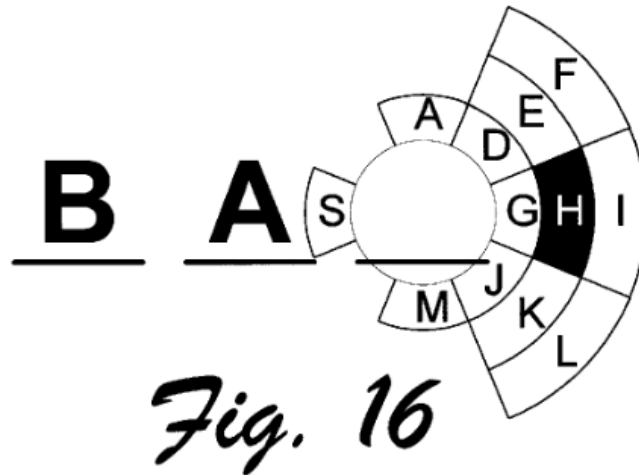
110. In my opinion, *Perlman* in view of *Lee* render obvious this limitation. *Perlman* teaches that the displayed characters “correspond to the most common ... letters of words in the database list.” EX1005, ¶[0017]. This includes the display of the second group of letters, i.e. **further one or more parts**. The commonality of letters is **a ranking scheme** where more common letters are **higher ranked**. Thus, as disclosed in *Perlman*, the most common letters are **positioned in one of the up, down, left and right positions**, and the remaining letters are not initially displayed. In the second proposed combination with *Lee*, the remaining letters can be accessed by navigating through the rings. EX1008, 4:11-5:35. *Lee* even teaches that certain layouts of the rings “may be preferable in some situations,” and a POSITA would understand that *Perlman*’s commonality-ranked characters is one such situation.

111. I note that in the ’354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “the highest ranked of the further one or more parts of item identifiers” is “positioned in one of the up, down, left and right positions.” EX1013, 42-50. In my opinion, that limitation of the ’393 patent is of at least the

same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

- H. **Claim 5: *The system of claim 4, wherein the highest ranked of the further one or more parts of item identifiers being positioned in one of the up, down, left and right positions is specifically positioned in a circular menu over the on-screen keyboard on the television display indicating the item identifiers to be selected by movements of the user in the directions left, right, up, and down using the 4-way directional controller.***

112. In my opinion, *Perlman* in view of *Lee* render obvious this limitation. As I discussed for claim 4, the second proposed combination involves displaying characters ranked by commonality using the interface described in *Lee*. In that interface, characters are positioned in a ***circular menu over the on-screen keyboard on the television display***. For example, in Figure 16, the character “G” is positioned in a circular menu over the remaining letters in the circular menus. These remaining letters are an ***on-screen keyboard*** because they allows entry of characters via an on-screen interface. EX1008, 4:11-5:35. As shown in that figure, the placement of the character “G” ***indicates that it can be selected using one of the directions of the directional controller***, specifically the left button in Figure 16.



- I. **Claim 6: The system of claim 2, wherein the item identifiers are pre-processed in order to generate a hierarchical tree, which is stored in a computer accessible memory.**

113. In my opinion, *Perlman* discloses this limitation. *Perlman* teaches that the items in the database are ordered in a **hierarchy tree**. EX1005, ¶[0035] (“One embodiment of the invention includes a built in dictionary which is **extended** each time a user enters a full word. New words entered by the user are then **linked to the word or sequence of words which precede it**. **Prioritization** in the word list in this embodiment may be decided based on the number of words that are known to precede the dictionary entry, and/or **based on the frequency of the dictionary entry**. One embodiment of the system will **be ‘pre-trained’** with a number of common word Sequences.”).

114. A POSITA would have understood that the above database structure described by *Perlman* involves a database using hierarchical tree structures. For example, *Schroeder* acknowledges that by 1995, when *Schroeder* was filed, “[t]he

implementation of such dictionary trees or lookup tables in the computer arts [was] well known.” EX1009, 7:10-25. Thus it is my opinion that *Perlman*’s “pre-trained” hierarchical databases involve nodes in a hierarchical tree database schema, which *Schroeder* and *Dostie*, discussed below, recognize as being well-known before the date of the ‘252 patent.

J. Claim 7: *The system of claim 4, wherein the items are stored in a database and indexed based on the item identifiers and capable of being queried.*

115. In my opinion, *Perlman* discloses this limitation. The alphanumeric characters/symbols described in *Perlman* are ***parts of item identifiers***, which are used to ***index database items***. More specifically, the alphanumeric characters/symbols are the “most common first letters of words in the database list 120,” which corresponds to available multimedia content (***items***). EX1005, ¶[0017]. Because the items need to be retrieved from the database to populate the displayed database list, a POSITA would understand that the ***items*** are ***capable of being queried*** and that they are ***indexed based on the item identifiers*** used to populate the list.

116. I note that in the ’354 patent IPR FWD, the PTAB found that *Perlman* disclosed “selecting database items from a database, the database items being indexed by a list of item identifiers.” EX1013, 38-39. In my opinion this limitation

of the '354 patent are of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

K. Claim 8: *The system of claim 4, wherein the number of key presses of the remote control keypad to select an item is fewer than the number of key presses required to select an item according to a system that requires an end user to enter one, two, three, or four characters of the item identifier and then scroll through a list of potential items to select the item by additional key presses.*

117. In my opinion, *Perlman* and *Lee* render obvious this limitation.

118. In my opinion, a POSITA would understand this claim to recite that the claimed system uses less key presses than the prior art systems described in the '252 patent. The '252 discloses that the prior art “requires entering several of the initial letters of the search term resulting in a smaller subset of the list and then scrolling through the subset to manually point out the desired items.” EX1001, 1:55-58. The '252 patent describes several “onerous” methods for entering characters that require multiple keys presses, such as a 0-9 keypad found on older mobile phones, which requires “repeatedly pressing the 12 number keys” to enter a character. *Id.*, 1:59-65. The '252 patent also describes systems that have “limited ... directional input mechanisms such as a joystick or selection wheel plus,” where the user has to “select[] each character by navigating around an onscreen list of characters,” such as an on-screen full qwerty keyboard. *Id.*, 2:54-58.

119. *Perlman* in view of *Lee* render obvious this limitation because they teach an input mechanism where the most common characters are displayed and can

be selected using no more than two key presses (a directional input and an action key), as I described above in claim 1, in particular limitation 1i. *Perlman* further teaches that an **item** can be selected from a list by pressing a dedicated “select” button and selecting the item within the list. EX1005, ¶¶[0014], [0022]. This process requires **fewer key presses** than the prior art methods where entry of a character often requires more than two key presses, such as a joystick navigating a full on-screen qwerty keyboard.

120. In addition, this process requires **fewer key presses** than entering four characters and scrolling through a long list of **items**. *Perlman* teaches that a user can enter most or all of the characters of a desired **item**, which would greatly reduce the number of items that a user would need to scroll through, thereby requiring **fewer key presses**.

L. **Claim 9: The system of claim 1, wherein the computer processor is further configured to: iterate the selection until the particular item identifier is completed, and enable selection of the particular item identifier to select the item.**

121. In my opinion, *Perlman* discloses this limitation. As I discussed above for limitations 1f and 1g, *Perlman* discloses an **iterative or progressive** selection process in which the user enters **parts of item identifiers** until he/she identifies and **selects** the desired **item identifier** for the **selected item**.

122. I note that in the '354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “iterating the selection steps until the particular item

identifier is completed, and enabling selection, by the user, of the particular item identifier to select the database item.” EX1013, 52-54. In my opinion, that limitation of the ’354 patent is of at least the same scope as this limitation in the ’252 patent and therefore should be found disclosed for the same reasons.

M. Claim 10: *The system of claim 1, wherein the computer processor configured to generate the initial display further includes selecting the one or more parts of item identifiers to be displayed based on at least one predetermined criterion.*

123. In my opinion, *Perlman* discloses this limitation. As I discussed above for elements *1e* and *1g* and claim 4, *Perlman* discloses an initial display that allows a user to ***select one or more parts of item identifiers*** that can be based on the “most common first letters of words in the database list 120,” which is a ***predetermined criterion*** based on ranking. EX1005, ¶[0017]. Also, frequency of ***selection of items associated with item identifiers*** is within the scope of claim 11, below, which depends from claim 10, confirming that the ***predetermined criterion*** is broad enough to include any of the options in the group in claim 11.

124. I note that in the ’354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “wherein the step of generating the initial display includes selecting the one or more parts of item identifiers to be displayed based on at least one predetermined criterion.” EX1013, 54-55. In my opinion, that limitation of the ’354 patent is of at least the same scope as this limitation in the ’252 patent and therefore should be found disclosed for the same reasons.

- N. **Claim 11: The system of claim 10, wherein the at least one predetermined criterion is selected from the following: a frequency of selection of items associated with the pluralities of portions of the item identifiers, a recency of selection of the items associated with the pluralities of portions of the item identifiers, a likelihood of selection of the items associated with the pluralities of portions of the item identifiers, or a ranking of the pluralities of portions of the item identifiers in relation to a hierarchical classification of the pluralities of portions of the item identifiers.**

125. In my opinion, *Perlman* discloses this limitation. As I discussed above for claim 10, *Perlman* discloses a predetermined criterion. *Perlman* discloses an initial display that allows a user to ***select one or more parts of item identifiers*** that can be based on the “most common first letters of words in the database list 120.” EX1005, ¶[0017]. This is a ***predetermined criterion*** based on ranking, and more specifically based on the likelihood of selection of the ***items*** associated with the ***pluralities of portions of the item identifiers***, where the first letters are ***portions of item identifiers***, the “most common first letters” constitute “***pluralities of portions of item identifiers***” (i.e., more ***items*** start with T than with W), and the ***item identifiers*** lead the user to ***items associated with such item identifiers***.” *Id.* A POSITA would be able to employ data as to the “most common words (***items***),” as *Perlman* teaches, to practice any of the predetermined criteria in Claim 11.

126. I note that in the ’354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “wherein the at least one predetermined criterion is a frequency of selection of database items associated within the one or more parts of

item identifier.” EX1013, 55-56. In my opinion, that limitation of the ’354 patent is of at least the same scope as this limitation in the ’252 patent and therefore should be found disclosed for the same reasons.

O. Claim 12: *The system of claim 1, wherein the computer processor configured to generate the initial display further includes displaying a plurality of parts of item identifiers.*

127. In my opinion, *Perlman* discloses this limitation. Figure 2 of *Perlman* depicts the display of a plurality of parts of item identifiers, specifically the letters “B,” “J,” “S,” “M,” “T,” “C,” and “A.”

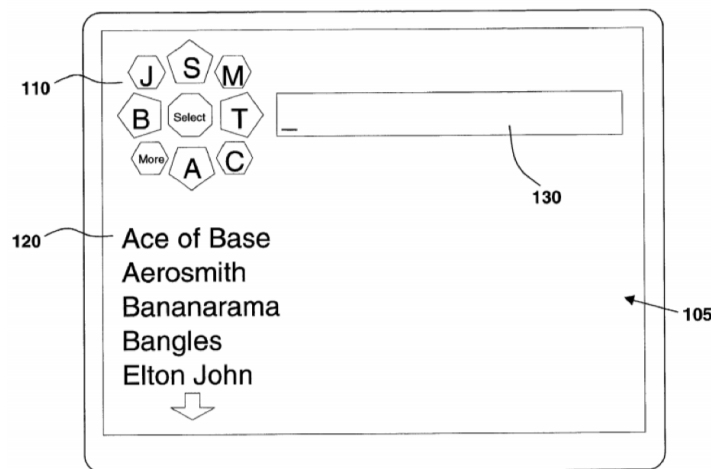
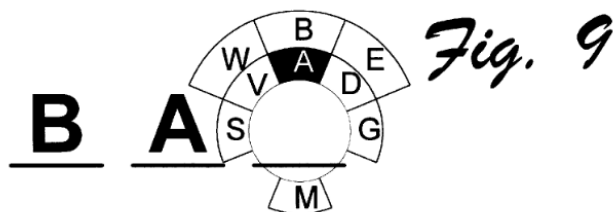
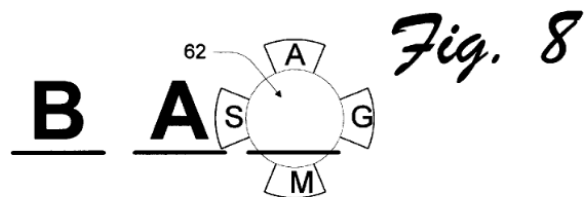


FIG. 2

128. In the second proposed combination of *Perlman* and *Lee*, the interface also displays a ***plurality of parts of item identifiers***, such as the letters “S”, “A”, “G”, and “M” shown in Figure 8. EX1008, 4:21-29.



129. I note that in the '354 patent IPR FWD, the PTAB found that *Perlman* disclosed a limitation requiring “generating the initial display of the one or more parts of item identifiers includes displaying a plurality of parts of item identifiers.” EX1013, 56. In my opinion, that limitation of the '354 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

P. Claim 13: *The system of claim 1, wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier.*

130. In my opinion, *Perlman* discloses this limitation. *Perlman* teaches that an **item** can be selected from a list of **item identifiers** by pressing a dedicated “select” button, scrolling up/down the list, and selecting the item within the list. EX1005, ¶¶[0014], [0022]. In the combination of *Perlman* and *Lee*, the remote has a dedicated

“select” button (as disclosed in Figure 1a of *Perlman*) that is different from the central “Action” button described in *Lee*.

**VIII. GROUND 2: CLAIMS 6 AND 13 ARE OBVIOUS IN LIGHT OF
*PERLMAN, LEE AND DOSTIE***

A. *Dostie*

131. *Dostie* (EX1006) describes a personal computing device that supports the “rapid search for data, such as text” by having the user input one or more characters and then using the inputted character sequence to search a dictionary for a set of completion candidates that begin with the typed sequence. *Dostie* at Abstract; ¶73. *Dostie* discloses that full sequences of characters are presented based on the current location in the tree. *Id.*

132. Figure 14 returns candidates ordered based on their “preference values.” *Id.*, ¶¶85, 209-215.

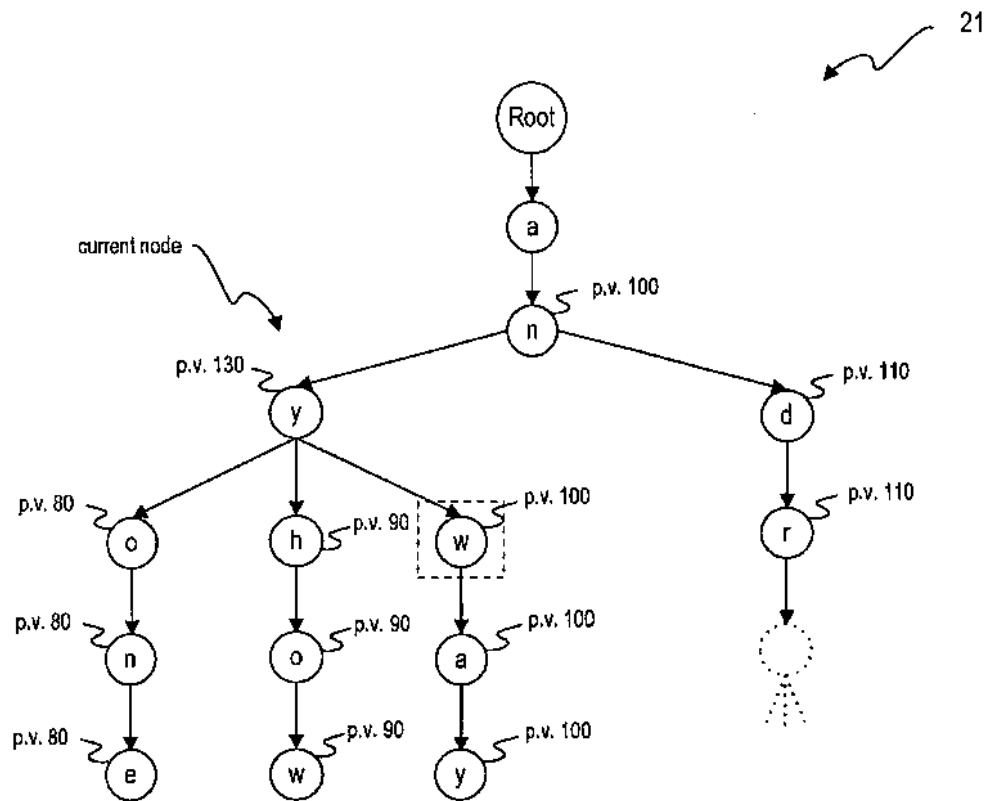


FIG. 14

133. Figure 3 from *Dostie* shows one method of presenting these completion candidates (either whole words or partial words).

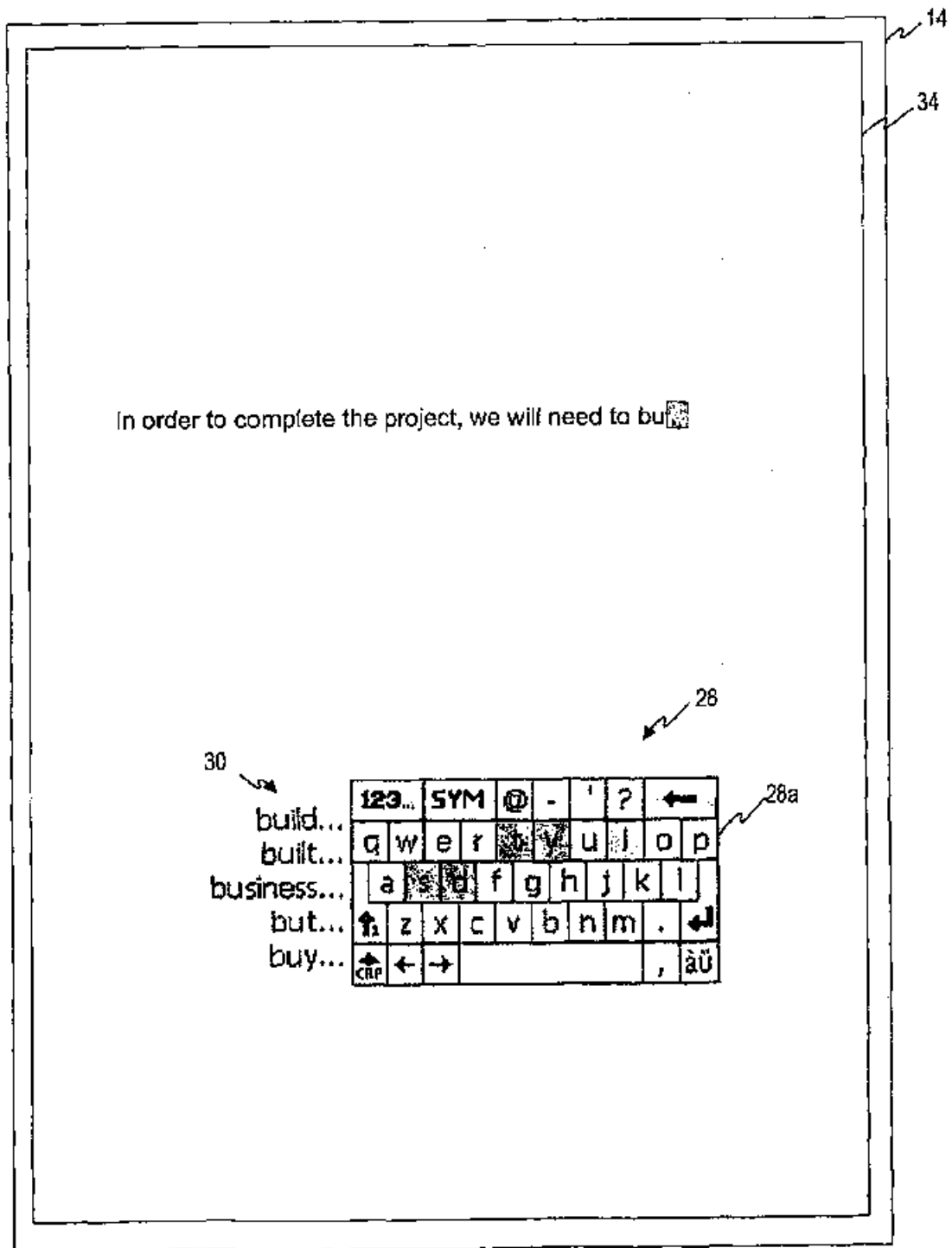


FIG. 3

Id.

B. Motivation to Combine *Perlman*, *Lee* and *Dostie*

134. In my opinion, it would have been obvious to incorporate *Dostie*'s dictionary trees and rankings based on tree hierarchy classifications into *Perlman* (as combined with *Lee*) because it was well known at the time of *Perlman* to conduct database searches using hierarchical trees like the ones described in *Dostie*. Moreover, *Dostie* provides express motivation to incorporate its candidate trees into systems like *Perlman* to "rapidly predict potential completion candidates" and "provide[] a mechanism for supporting enhanced data entry techniques such as character prediction," like the mechanisms described in *Perlman*. EX1005, ¶[0097].

135. A POSITA would have known that hierarchical search trees are the most efficient way to identify matching prefixes because they promote efficient traversal forward and backward through a series of search candidates stored in nodes of the tree. Database search techniques routinely used search trees and other hierarchical classifications in the searching, ranking, and selection processes.

136. It was well-known this form of search was almost always performed using a hierarchical search tree, including by the time *Perlman* issued. In my opinion, because of the well-known benefits of using hierarchical search trees to search a database, and a POSITA's knowledge of predictive keypad systems used to query databases, a POSITA would reasonably expect the combination to succeed in achieving the desired result of efficiently calling up and displaying content of

interest to a user. As such, the trees *Dostie* teaches would have been a trivial and routine addition to *Perlman* that would have yielded extremely predictable results (e.g., permitted simple and efficient searching based on a known prefix of database entries, like the searching discussed in *Perlman*). This is especially true since *Perlman* already discloses “forward and backward/reverse searching capabilities” (EX1006, ¶[0027]) which would likely have hierarchical search trees, which were the standard database searching technique at the time.

137. Because *Lee* is simply a modification to *Perlman*’s user interface, the above description of the combination and motivations to do so also apply to the combination of *Perlman* and *Lee*.

C. Claims 6 and 11

138. With respect to dependent claims 6 (requiring a “hierarchical tree”) and 11 (requiring a “hierarchical classification”), they are rendered obvious by *Dostie*’s hierarchical search trees in combination with *Perlman* and *Lee*.

139. *Dostie*’s implementation organizes its database in a “tree structure” which can take the form of a binary tree or “B-tree.” EX1006, ¶[0088]. Because “[c]haracters making up a completion candidate are stored in separate nodes within the tree structure” and “each node pointing to a child node containing the next character in the completion candidate,” *Dostie*’s tree structure discloses that a **first set of items** and their **item identifiers** and a **second set of items** and its **item**

140. For example, Figure 4 of *Dostie* shows various sets of *item identifiers that are mutually exclusive of one another* and subsets of one another. The mutually



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exclusive sets would constitute different branches within candidate tree 21, while the mutually exclusive subsets would constitute all *items* below a certain node in the same branch or a different branch. *Id.* The *mutually exclusive subsets* would also be described by the “child list” or “child nodes pointer” for each node in the tree, which represent “a list of nodes which directly follow the current node, i.e. a list of nodes which are the immediate children of the current node.” *Id.*; EX1006, ¶¶[0090]-[0096]. In my opinion, it would have been obvious to incorporate *Dostie*’s tree structure into *Perlman* for the same reasons I discussed above and because *Dostie* itself recognizes that use of a candidate tree helps “to rapidly predict potential completion candidates” and “provides a mechanism for supporting enhanced data entry techniques such as character prediction.” *Id.*, ¶[0097]. The “enhanced data entry techniques” and “character prediction” are the same techniques described by *Perlman*, so a POSITA would have found it natural to incorporate *Dostie*’s candidate tree into the character selection system of *Perlman*.

141. I note that in the ’354 patent IPR FWD, the PTAB found that *Dostie* disclosed a limitation requiring “the at least one predetermined criterion is a ranking of the one or more parts of item identifiers in relation to a tree hierarchy classification of the one or more parts of item identifiers.” EX1013, 64-68. The PTAB also found a POSITA would have combined *Perlman* and *Dostie*. *Id.*, 68-81.

IX. GROUND 3: CLAIMS 1-5 AND 7-13 ARE RENDERED OBVIOUS BY BADARNEH AND LEE

A. Badarneh

142. *Badarneh* (EX1009) discloses a system for input of data elements (such as letters) in an electronic device, where entering characters suggests the next character or characters in a word. *Id.*, 1:9-11. The predictive functions are agnostic to the type of interface or hardware device being used. *Id.*, 1:13-16. The important criterion is what the user sees in terms of inputs made and predictive outputs given in response. *Id.*, 1:27-30.

143. *Badarneh* discloses a “rotatable, multifunctional switch having five pressure points” as shown in Figure 5. *Id.*, 2:27-31.

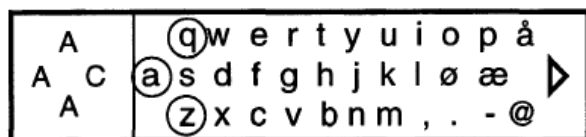


Fig. 5b

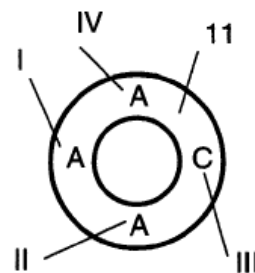


Fig. 5c

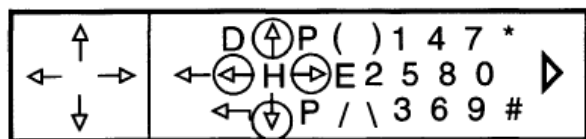


Fig. 5d

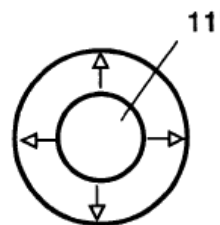
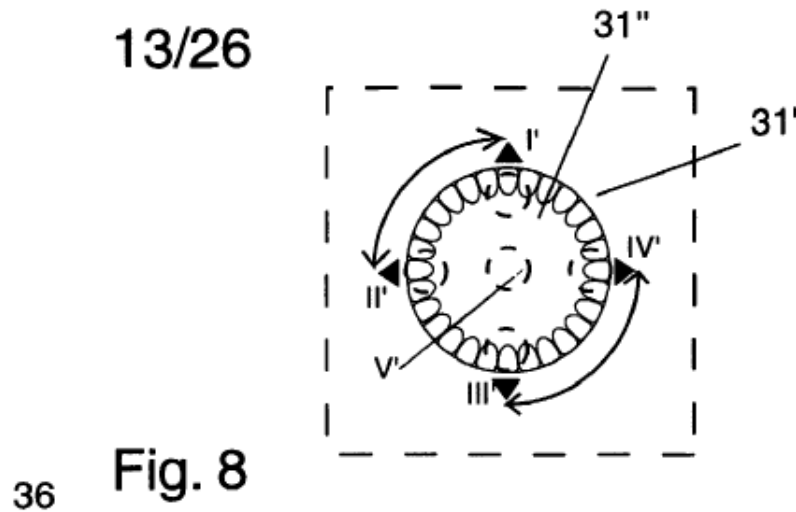


Fig. 5e

144. The rotatable switch is able to leverage the database of words and its ranking of such words based on the frequencies in which they have been used. *Id.*, 16:22-31.



145. Figure 8 shows an embodiment of a rotatable, multifunctional switch 31' which has five pressure points indicated by I', II', III', IV' and V'. These pressure points are explicitly in four directional positions (I'-IV'), plus a position V' in the center of the four-position switch.

146. In an illustrative example shown in Figure 9, the word “telephone” appears at the top of a list as the word most often appearing after “the te” is input (after ‘the te’ is input, the words that most often follow ‘te’ are displayed in the left rectangular section. Based on the frequency of words starting with “te”, the characters that can follow ‘te’ are shown in the circular icon section (‘l’, ‘c’, ‘m’ are displayed as the characters of the most frequently occurring words following ‘te’):

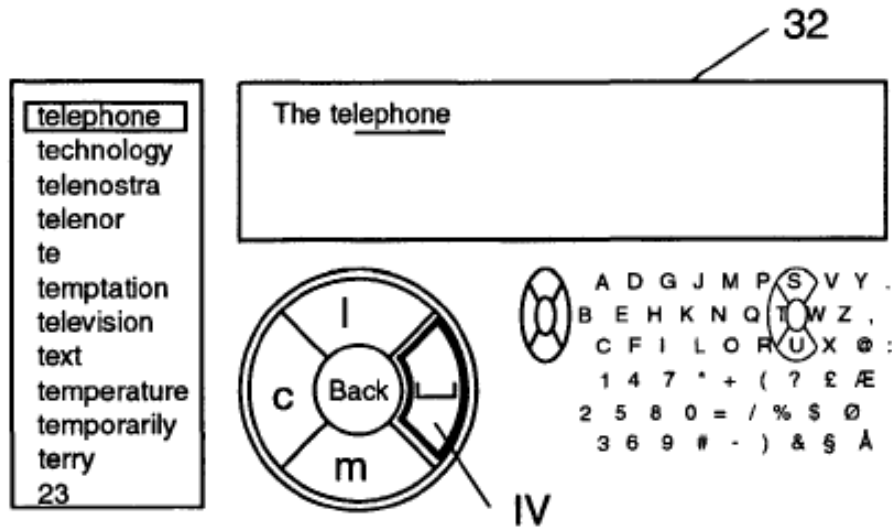


Fig. 9h

147. This GUI provides suggested inputs corresponding to “likely words and/or letters according to priority of use” (*id.*, 15:15-20), which corresponds to, for example, “a database which contains options and data that should be available” (*id.*, 24:15-19). It also provides further suggested inputs based on the user’s prior inputs. *Id.* Fig. 9d and 9e.

148. *Badarneh* also claims the prioritization of the data elements in its database according to predetermined criteria, including “a) the frequency of previous use of the phrases, or b) standard frequency of the occurrence of the phrases, or c) alphabetical order, or d) most probable phrases in conjunction with other used phrases, or e) style, terminology, dialect or language.” *Id.*, 26:33-27:2.

B. Motivation to Combine

149. In my opinion, it would have been obvious to incorporate *Lee*'s method of navigating sub-menus with *Badarneh*, in particular, *Lee*'s teaching of using up/down/left/right directional buttons to navigate to a desired letter and a central select button to select that letter. A POSITA would be motivated to incorporate *Lee* into *Badarneh* in at least two ways: (1) using *Badarneh*'s interface to, in view of *Lee*, allow a user to navigate to a letter and select it with an action button, or (2) replace *Badarneh*'s interface for entering characters with *Lee*'s.

150. *Badarneh*'s interface presents characters in a circular menu with characters mapped to each cardinal direction, where a user presses a directional button to select the corresponding character. EX1009, 14:30-15:2. These characters may have been algorithmically chosen by the system for display. *Id.*, 17:20-19:19. A POSITA would be motivated, in view of *Lee*, to allow the user to instead use the directional buttons to navigate to the desired character and a center select or action button to select the character. This would allow the user to essentially confirm that the selected character is the desired character—and if the selected character is the incorrect character, easily allow the user to correct their mistake. Otherwise, some users who are prone to input mistakes may accidentally press the incorrect directional button, thereby selecting an incorrect character and forcing the system to

perform an unnecessary update of the database list. Allowing the user to navigate to the character first before selection prevents such mistakes.

151. In addition, a POSITA would have found it obvious to use *Badarneh's* system with *Lee's* interface, which would improve the user interface in various aspects for various users. In particular, *Badarneh* displays characters in a circular pattern over an on-screen full qwerty keyboard. The first character is selected by rotating a switch to move the circular marker and pressing a directional key to select one of the letters within the marker, such as pressing left to select "T" in Figure 9d. EX1009, 17:20-19:19.

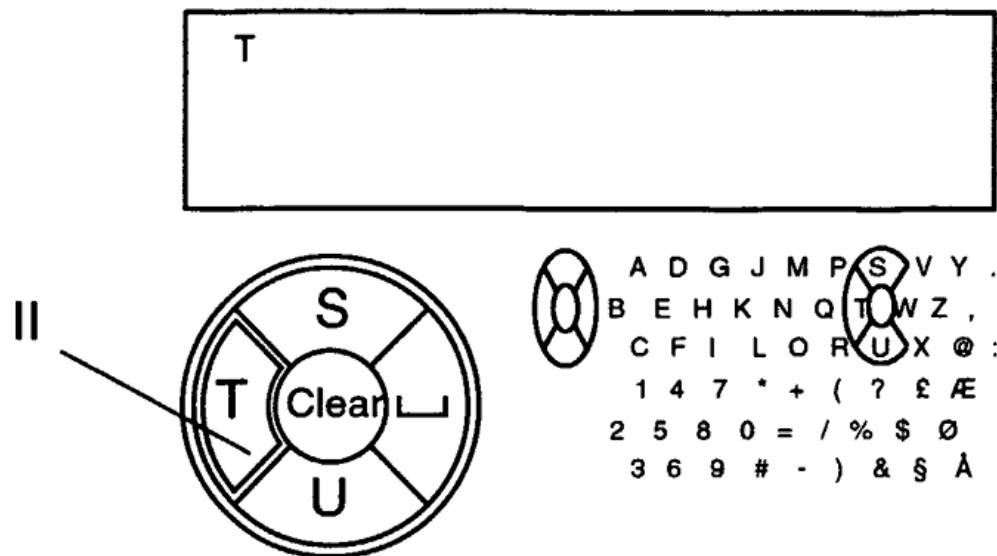


Fig. 9d

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152. *Badarneh* explains that subsequent letters can be selected as the system populates the circular menu with characters that the system believes the user desires, such as the letters "H," "O," or "E", since those commonly follow the letter "T." *Id.*

However, a POSITA would recognize that such a mechanism can require many inputs, especially if the system does not correctly guess the next letter. In those situations, the user may need to rotate the dial to move the circular menu for many letters.

153. By contrast, *Lee* provides a simpler mechanism. *Lee* does not require of an input to move a marker on an on-screen keyboard. Instead, each letter is accessible via cascading menus as the user uses the navigation buttons. In fact, *Lee* provides express motivation for its interface, stating that it “allow[s] a user to learn the positions of different symbols and to thus shorten the effort required to enter any particular character.” EX1008, 1:59-65. *Lee* also explains that its interface “is much more compact” than an on-screen qwerty keyboard such as used in *Badarneh*. *Id.* Another disadvantage with on-screen keyboards that *Lee* mentions is that “the distance between characters is large, and very large cursor movements are therefore required to enter strings of text.” *Id.*, 1:50-56. Thus, *Lee* provides express motivation to use its interface over that of *Badarneh*. At least in this respect, *Lee* provides a user interface that many users may find preferable, and POSITA would therefore be motivated to offer such an interface. Indeed, incorporating *Lee* would not require removing *Badarneh*’s interface, as they could be toggled via a settings menu and the user could use whichever interface they prefer. Providing more user interface options would be beneficial.

154. In my opinion, a POSITA would have reasonably expected the combination to succeed. *Badarneh* and *Lee* are readily combinable, since *Badarneh* is directed to inputting characters into a display using a remote control unit. A POSITA could instead use a remote control such as that provided in *Lee*. *Lee* also explains that the order of layout of characters in its interface can be assigned in any matter, and indeed, some possibilities “may be preferable in some situations” (EX1008, 3:63-67)—this fits well with *Badarneh*’s disclosure of prioritizing the display of characters based on how common they are in the database. EX1009, 17:29-31. The combination would merely require implementing *Lee*’s user interface on the display, which could be done using conventional user interface APIs that any POSITA would have been capable of doing.

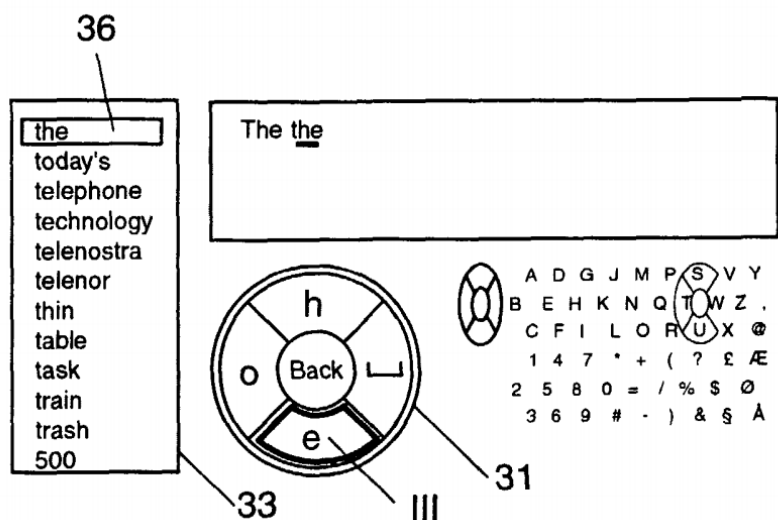
C. Claim 1

155. *Badarneh* in view of *Lee* render obvious the Challenged Claims. As I discuss below, *Perlman* discloses and renders obvious most limitations the Challenged Claims, and *Lee* discloses limitation 1i. The two would have been obvious to combine.

1. ***1a: A system for selecting items associated with corresponding item identifiers from a plurality of items, the system comprising:***

156. In my opinion, to the extent the preamble is considered limiting, *Badarneh* discloses this limitation. *Badarneh* describes a ***system for selecting items***,

such as “letters, signs, numbers and/or symbols in connection with an electronic apparatus or device which has or is connected to a display, wherein the system is so configured that on input of at least one first data element in a data phrase it offers suggestions of the data phrase.” EX1009 at [0002]. As shown in the figure below, *Badarneh* discloses entering letters to select a word (36) (*item identifier* for an *item*) from the list (33) (*plurality of identifiers* for a *plurality of items*).



Id. The alphanumeric characters/symbols on the circular menu 31 described in *Badarneh* constitute a plurality of *parts of item identifiers* corresponding to a *plurality of items*, and the embodiments described therein relate to selecting alphanumeric characters/symbols from a plurality of characters/symbols.

157. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “computer-implemented method of selecting an item from a plurality of items, the method comprising: generating, by at

least one computer processor, a first display.” EX1017, 3-4. In my opinion, that limitation of the ’579 patent is of at least the same scope as this limitation in the ’252 patent and therefore should be found disclosed for the same reasons.

2. 1b: a television display;

158. In my opinion, *Badarneh* discloses this limitation. *Badarneh* discloses a “**screen**” including “**all screen-assisted and screen-based devices** can be used according to the system described herein.” EX1009, 1:27-30. A POSITA would understand that this would include a television with a remote control device, since that would be a device that is “screen-assisted” and “screen-based.” *Id.* In addition, *Badarneh* also discloses that its system can be “adaptable to larger display screens ... used ... for other apparatus[es],” such as “remote control units,” which a POSITA would understand includes a television. EX1009, 4:6-11.

159. In view of these disclosures, a POSITA would consider it obvious that *Badarneh*’s system includes a television, as televisions were well-known displays having remote control units. *See, e.g.,* EX1005, ¶[0014].

160. In addition, *Lee* discloses that its display is “a color television.” EX1008, 2:36-37. A POSITA would therefore also be motivated to use *Badarneh*’s disclosures on a TV display, for the same reasons discussed above.

3. ***1c: a remote control device comprising a 4-way directional controller; and***

161. In my opinion, *Badarneh* discloses this limitation. *Badarneh* discloses a ***remote control keypad*** with ***four directions***, specifically up, down, left, and right. *Badarneh* describes such a ***keypad*** as “a rotatable, multifunctional switch 31' which has five pressure points indicated by I, II, III, IV and V. Fig. 9 shows an animation 31 of the switch 31'. During the input of text numbers and/or symbols, an input field or result field will be shown together with a field which indicates appropriate words or options that are possible from a “dictionary” or “list of words” which shows the most likely words that begin with the entered letter or letters, preferably in an order determined by how many points the word or letter combination has been given, such points being related to the frequency of use of such combinations.” EX1009, 16:23-30. The below figures depicts the remote control keypad, showing the four directions:

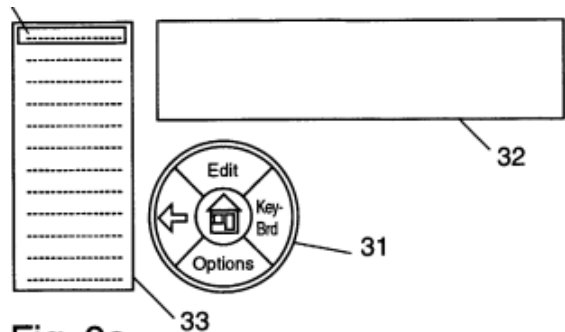


Fig. 9a

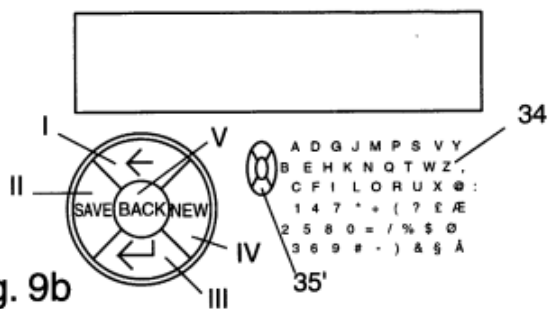


Fig. 9b

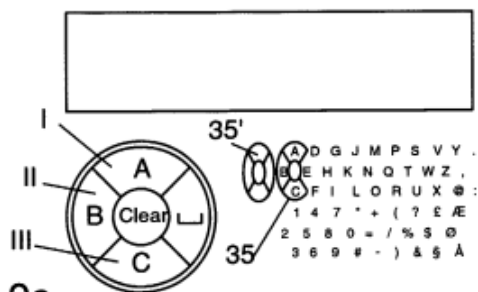


Fig. 9c

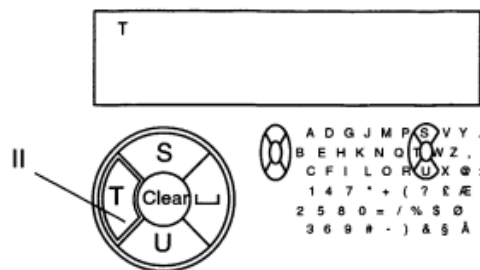


Fig. 9d

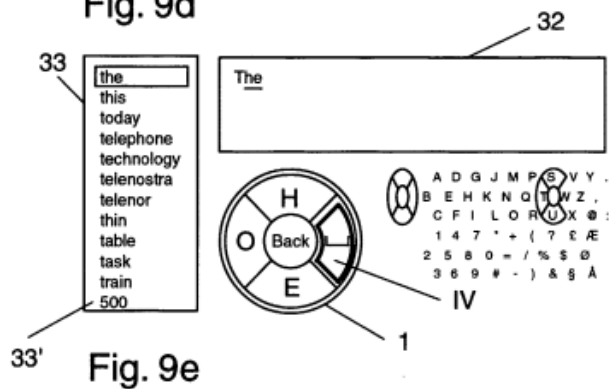


Fig. 9e

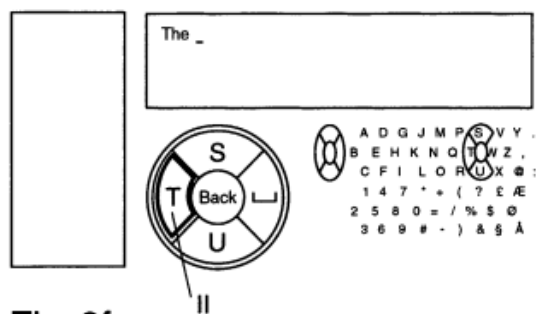


Fig. 9f

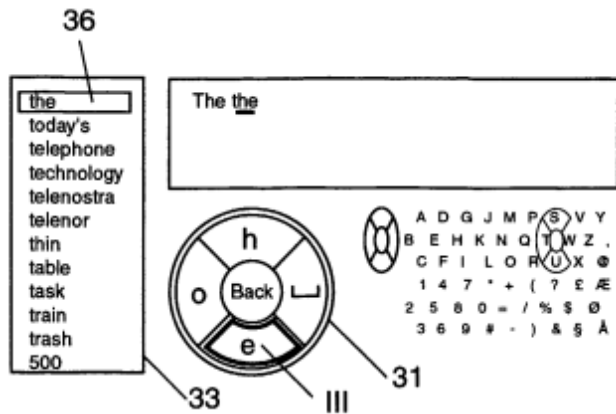


Fig. 9g

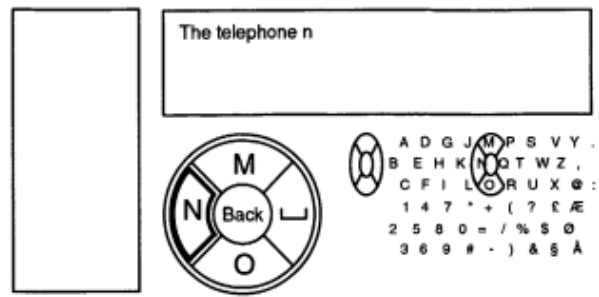


Fig. 9j

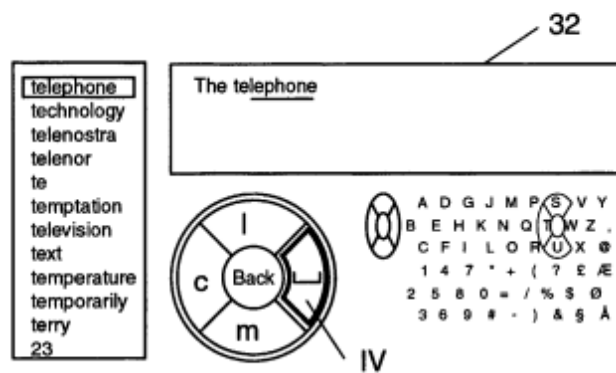


Fig. 9h

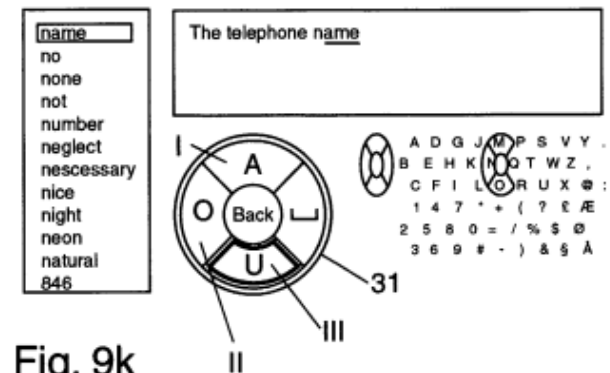


Fig. 9k

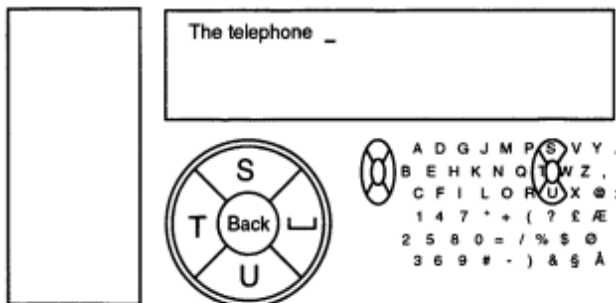


Fig. 9i

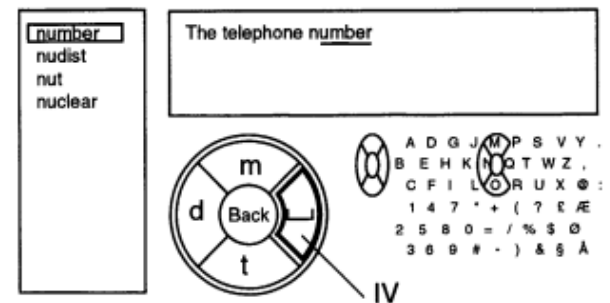


Fig. 9l

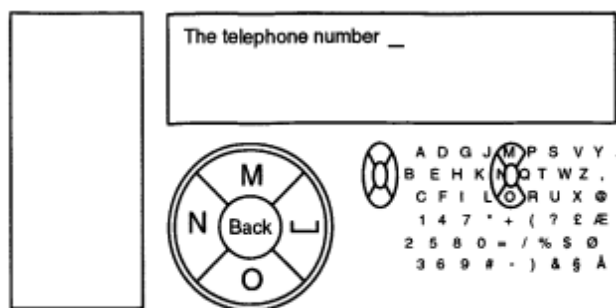
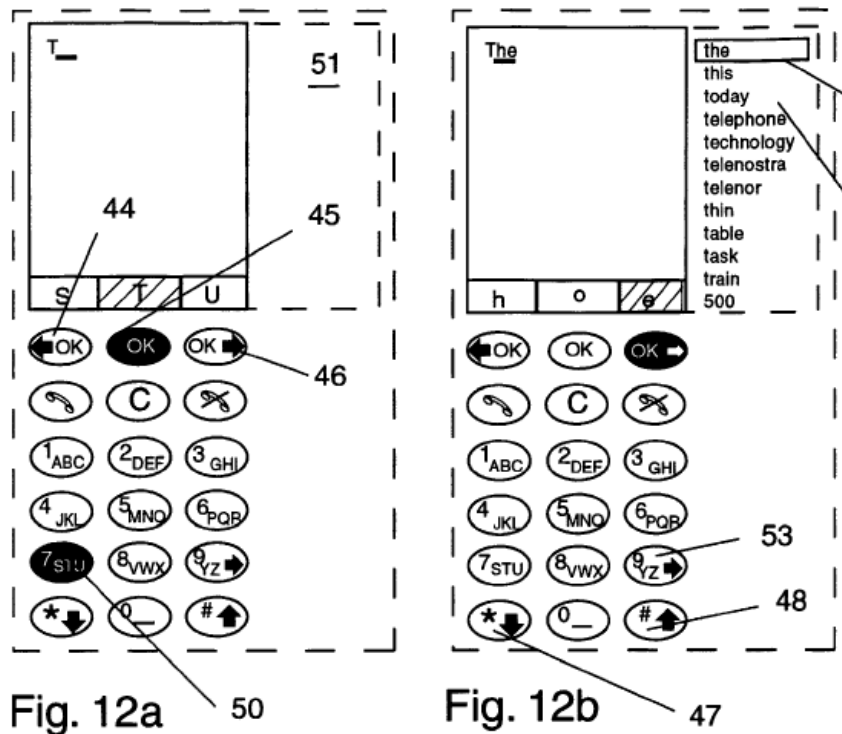


Fig. 9m

162. As shown in Figures 8 and 9a through 9m above, *Badarneh's* position I corresponds to the “up” position; position II corresponds to the “left” position; position III corresponds to the “down” position; position IV corresponds to the “right” position; and position V corresponds to a center selector, since it can select various options like “home” and “back.” EX1009, Figs. 8, 9a-9m, 3:30-33, 16:23-18:36.

163. *Badarneh* discloses another **keypad**, “a traditional pushbutton keyboard in connection with the system shown in Figs. 9-11.” EX1009, 4:1-2. Figures 12a and 12b show the **keypad** with arrows on certain keys in **the up** (the “#” key), **down** (the “*” key), **left** (the top-left “OK” key), **and right** (the top-right “OK” key and the “9” key) **directions**, which are being used to select one or more parts of an item. EX1009, 22:15-23:6.



164. In addition, as I discussed above, it would have been obvious to use *Lee*'s remote control keypad, which has only four directional buttons and a central select button. EX1008, Fig. 5; 3:12-14 ("They include an up key 44, a down key 45, a left key 46, a right key 47, and an 'action' or 'enter' key 48."). In my opinion, POSITA would have been motivated to combine *Badarneh* and *Lee* to use *Lee*'s character-input methods, as I discussed above. Since *Lee*'s interface only uses four directional buttons, the combination would further involve providing a remote control with only four directional buttons. For the same reasons, as well as the reasons I described above about the benefits of only providing four directional

buttons, a POSITA would be motivated to use *Lee*'s remote control, which is well-suited for *Lee*'s methods.

165. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a "GUI with character mapped buttons (I-IV) corresponding to up, down, left and right configuration can be controlled by a multifunction key." EX1017, 4.

4. 1d: a computer processor configured to:

166. In my opinion, *Badarneh* discloses this limitation. *Badarneh* discloses **a computer processor** and specifically notes that the invention can be implemented on any "electronic apparatus (*e.g.*, a **mini-computer/PDA/mobile telephone**) which is controlled by a multifunction key, in this case a rotary switch with four clicks (as shown before) and with an alternative centre click." EX1009, 14:30-32. *Baderneh* also discloses that the apparatus "requires a memory and processing power," and that the apparatus "has ... a display." EX1009, 12:26-29, Abstract; *see also* 16:14-21 ("[T]he system can be construed with a microprocessor 14.").

167. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a "computer processor." EX1017, 5.

5. **1e: generate, on the television display, a first display of an on-screen keyboard including one or more parts of an item identifier for selection;**

168. In my opinion, *Badarneh* discloses this limitation. In Figures 5b-5e (which I reproduce below), *Badarneh* describes a GUI with an **on-screen keyboard** that includes character-mapped buttons (I, II, III, IV) with characters that can be selected, *i.e. one or more parts of an identifier*. EX1009, 14:30-15:2.

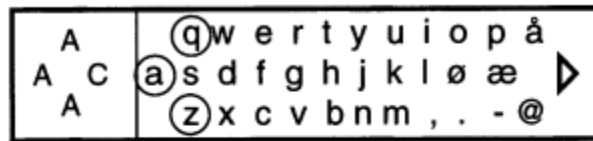


Fig. 5b

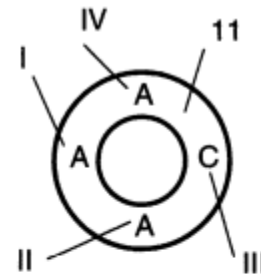


Fig. 5c

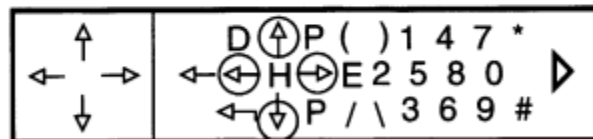


Fig. 5d

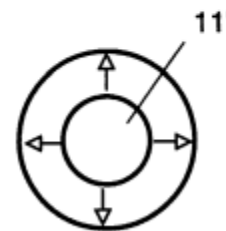


Fig. 5e

169. *Badarneh* also discloses other configurations using the same multifunction key. See *id.*, Figs. 9-12 and corresponding description. These other configurations include Figure 9, discussed above, also depict an on-screen keyboard with characters for selection.

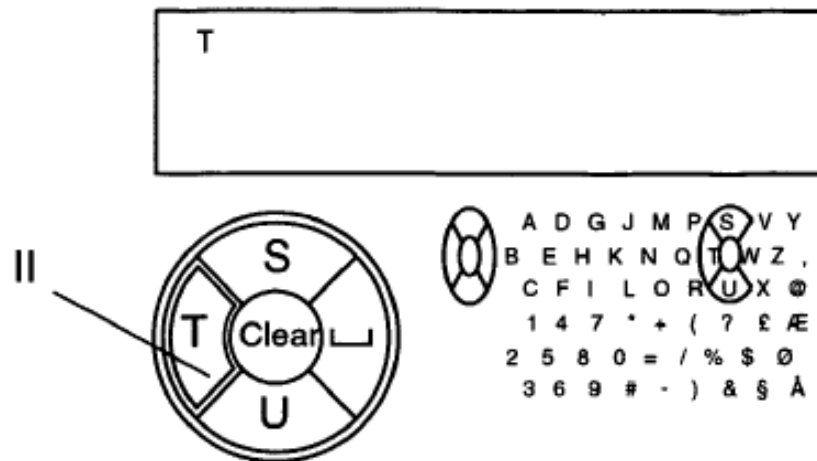
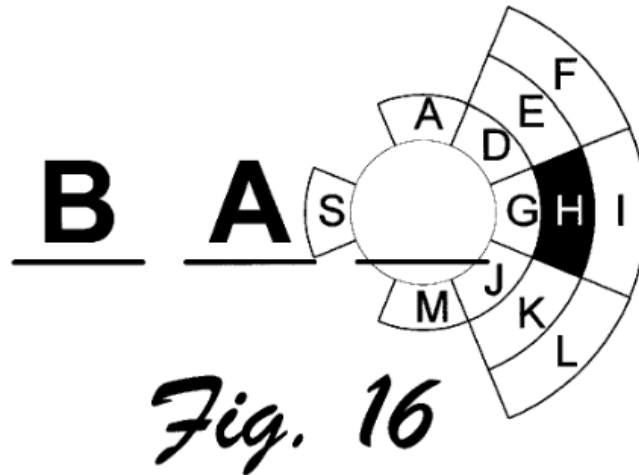


Fig. 9d

170. It is also my opinion that *Perlman* in view of *Lee* render obvious this limitation. As I discussed above, *Lee* provides an alternative interface for entering characters, which a POSITA would be motivated to use with *Perlman*. *Lee* discloses an interface with a circular menu over an on-screen keyboard. For example, in Figure 16, the character “G” is positioned in a circular menu over the remaining letters in the circular menus, which is an **on-screen keyboard** because it allows entry of characters via an on-screen interface. EX1008, 4:11-5:35. As I discussed above in Ground 1, it is not necessary that an on-screen keyboard display a full keyboard. See EX1001, Fig. 24.



171. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “the first display comprises: a part of an item identifier corresponding to a first set of items and a part of an item identifier corresponding to a second set of items.” EX1017, 4-5. In my opinion, that limitation of the '579 patent is of similar scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

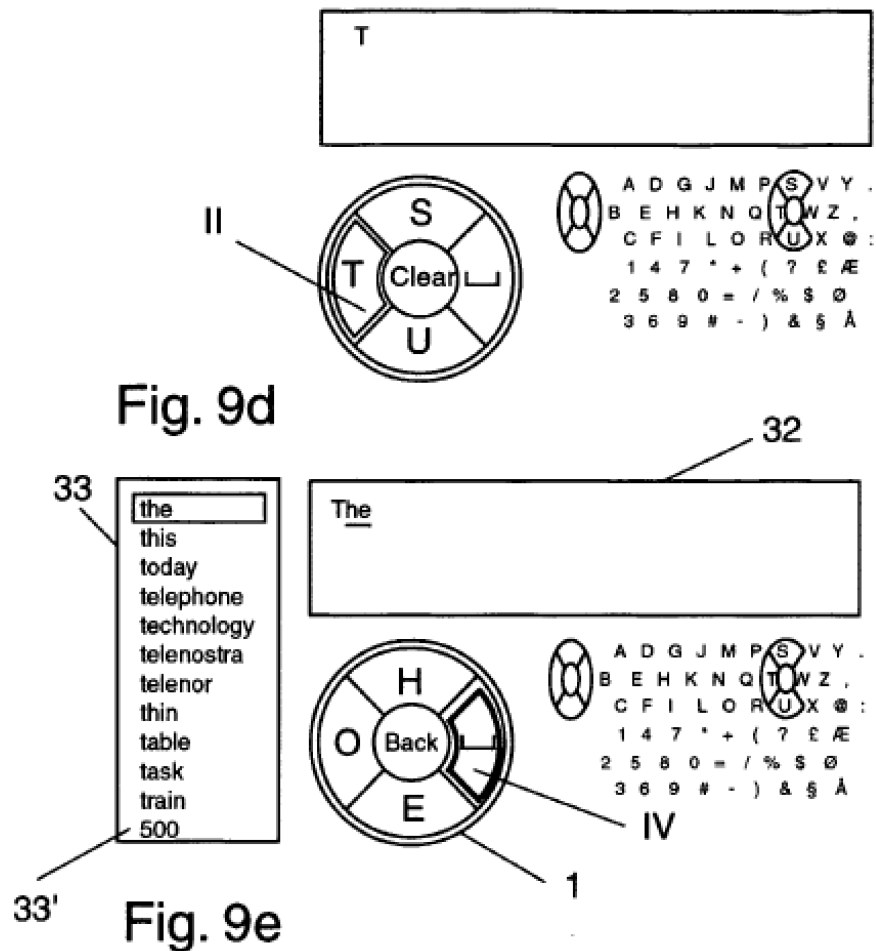
6. 1f: enable the selection of the one or more parts by utilizing the 4-way directional controller;

172. In my opinion, *Badarneh* discloses this limitation. As I discussed in the previous limitation, *Badarneh enables selection, by the 4-way directional controller, of a part of an item identifier*, specifically by allowing a user to select a letter from the GUI using the character mapped the up, down, left, and right buttons. EX1009, 16:23-31.

173. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “enabling, by the at least one computer processor, selection of one of the two parts of the item identifiers by a user using a user interface.” EX1017, 5. In my opinion, that limitation of the '579 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

7. ***1g: in response to the selection of the one or more parts of item identifiers, generate a display of a further one or more parts of item identifiers for selection, wherein the further one of more parts of item identifiers are arranged on the display relative to one another and corresponding to an up, down, left and right position;***

174. In my opinion, *Badarneh* discloses this limitation. *Badarneh* discloses a ***further display of parts of an item identifier*** based on the user's input, specifically shown as ***one of the two parts of the item identifiers*** displayed in text box 32, while a ***different set of parts of item identifiers are displayed in the circular menu***, as shown in Figure 9 of *Badarneh*. EX1009, 17:28-31.



Id., Figs. 9d and 9e.

175. As shown above, once the part ‘T’ of the item identifier is selected, list of words 33’ is updated to reflect database items containing a word beginning with the selected letter. Additional parts of item identifiers ‘H’ ‘O,’ ‘E’ and ‘space’ are each displayed in *corresponding up, down, left, right positions relative to each other*.

176. I note that in the ’579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “generating, by the at least one computer

processor, in response to the selection of the one of the two parts, a further display; wherein the further display comprises: an additional part of an item identifier corresponding to a subset of the selected set of items and another additional part of an item identifier corresponding to another subset of the selected items.” EX1017, 5-6. In my opinion, that limitation of the ’579 patent is of at least the same scope as this limitation in the ’252 patent and therefore should be found disclosed for the same reasons.

8. ***1h: enable selection of the further one or more parts of item identifiers in order to add to the selected one or more parts to build a larger part or whole of a particular item identifier; and***

177. In my opinion, *Badarneh* discloses this limitation. After a user ***selects*** a letter (*i.e.*, the letter T), a new set of ***parts of item identifiers*** are automatically mapped to the up, down, left, right functionality of the remote control keypad and displayed for another user selection. EX1007, 17:29-34 (“Field 33 shows the candidate words which are picked from the available list of word in the order made according to how often these words have been used statistically. On the basis thereof, the system will choose letters which follow the previously entered letter. In this case, HOE are chosen as the letters which will provide letter number two in the first words that are chosen from the displayed list. These letters appear in the animation 31”). As the user selects these ***further parts of item identifiers***, they are added to the other

selected parts to ***build a larger part of the particular item identifier***, i.e. the title being searched, such as “telephone.”

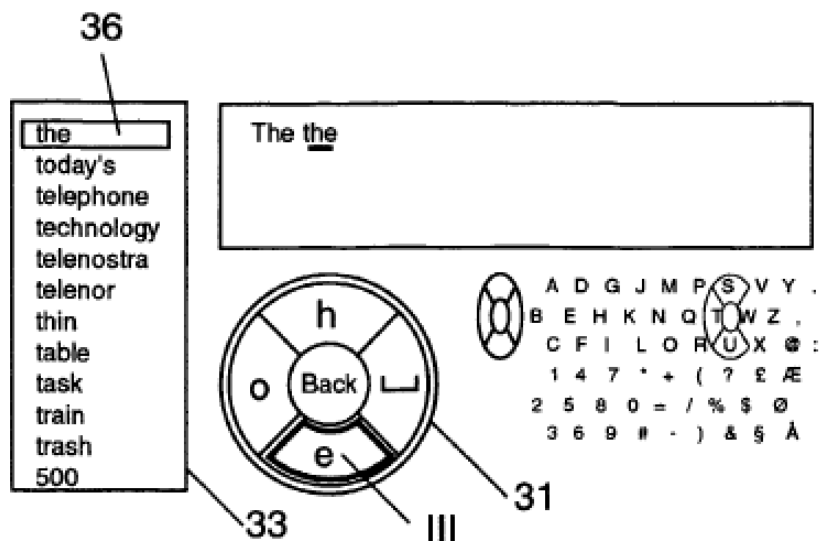


Fig. 9g

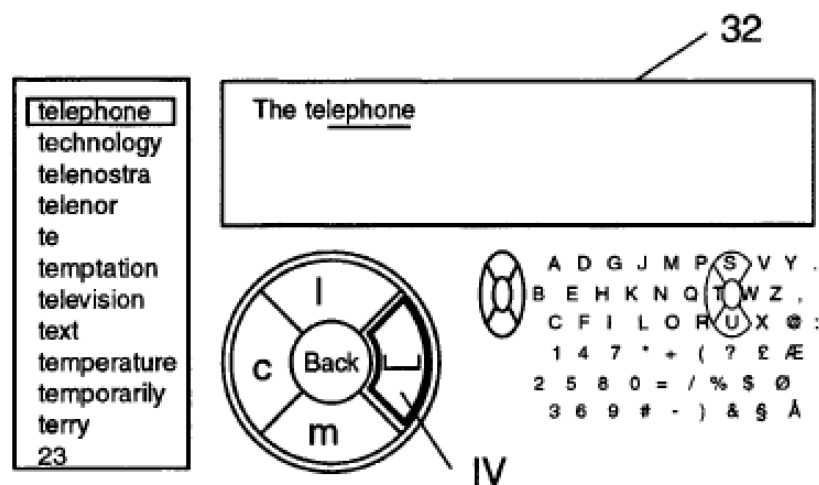


Fig. 9h

178. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “combining, by the at least one computer processor, the selected one of the two parts of the item identifiers with the selected

one of the two additional parts of the item identifiers to create a larger part of the item identifiers.” EX1017, 6. In my opinion, that limitation of the ’579 patent is of at least the same scope as this limitation in the ’252 patent and therefore should be found disclosed for the same reasons.

9. ***1i: select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers;***

179. In my opinion, *Badarneh* in view of *Lee* discloses this limitation. In the first combination, *Badarneh*’s interface is used but instead of the character-mapped buttons activating selection of a character, the interface is modified to allow the directional buttons to navigate a selection of one of the displayed characters and a central button to select that character, which meets this limitation.

180. In the second proposed combination, as I discussed in limitation *1i* of Ground 1, *Lee* discloses this limitation.

10. ***1j: wherein the selected one or more parts of item identifiers and the further one or more parts of item identifiers are shorter than a complete word; and***

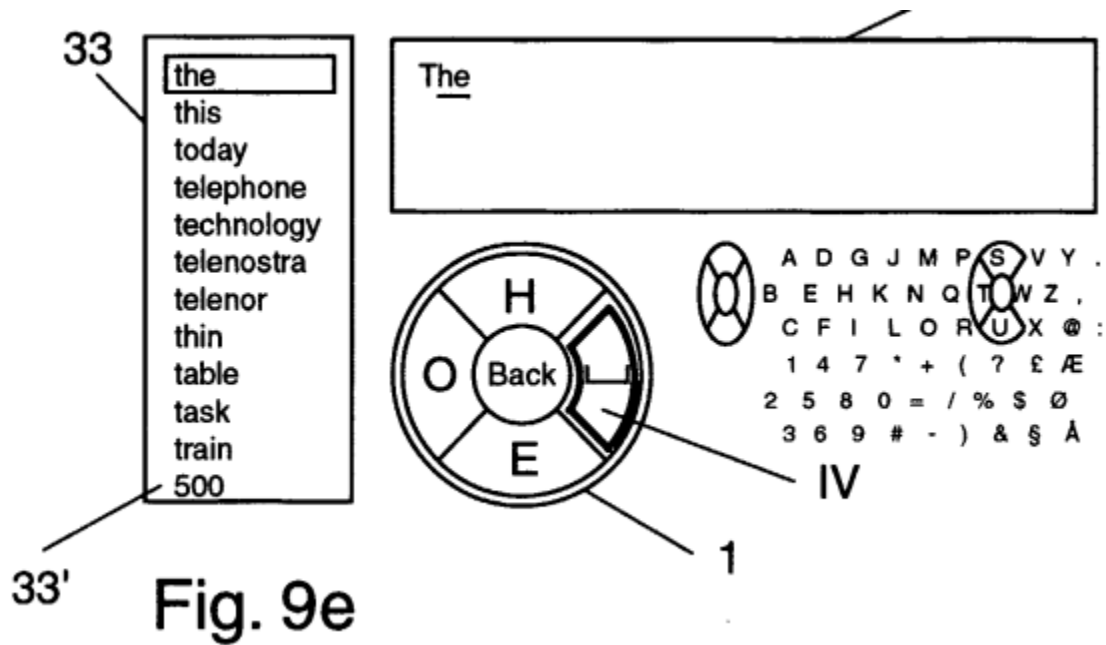
181. In my opinion, *Badarneh* in view of *Lee* render obvious this limitation. The ***parts of item identifiers*** are letters or characters, which are text symbols in the English language. EX1007, 9:20-24, 17:20-24. The ***further parts of item identifiers*** (*i.e.*, the second letters of the words in the list of words 33’) are ***shorter*** than

complete item identifiers, as shown above in Figures 9a-m, since characters are shorter than words.

182. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “wherein the additional parts of the item identifiers are shorter than complete item identifiers.” EX1017, 7. In my opinion, that limitation of the '579 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

11. 1k: wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.

183. In my opinion, *Badarneh* discloses this limitation. As I explained in limitation 1g and as shown in Figure 9, the ***further parts of item identifiers*** can be and are arranged in up, down, left, and right positions. As I discussed above, in view of *Lee*, a POSITA would have found it obvious to modify *Badarneh* so that each of these characters can be navigated by ***a key press corresponding to the relative arrangement*** of the characters.



184. For example, in the above Figure 9e, “H” is selected by pressing the up key, and “E” is selected by pressing the down key. In one of the ways to combine *Badarneh* and *Lee*, “E” can be navigated by pressing the down key, and then pressing the central action or select key.

185. In another way of combining *Badarneh* and *Lee* I discussed above, including for limitation 1i, *Lee*’s interface for selecting characters can be used instead. As *Lee* explains, the user can navigate to a letter by using the up/down/left/right buttons, e.g., “[p]ressing up key 44 positions a focus on the ‘A’ symbol” in Figure 8. EX1008, 4:21-29. Thus, this discloses ***navigation to letter enabled by a key press corresponding to the relative arrangement of the letters on the display.***

D. Claim 2: *The system of claim 1, wherein the processor is located within the television.*

186. In my opinion, *Badarneh* discloses this limitation. *Baderneh* discloses that the its apparatus “requires a memory and processing power,” and that the apparatus “has ... a display.” EX1009, 12:26-29, Abstract; see also 16:14-21 (“[T]he system can be construed with a microprocessor 14.”). This apparatus is separate from the remote control device. *Id.*, 16:23-31. In my opinion, a POSITA would understand that in embodiments using a television with a remote control device (e.g. a “remote control unit”), the processor would be within the television.

E. Claim 3: *The system of claim 1, wherein the processor is further configured to enable navigation and selection of the one or more parts of item identifiers and the further one or more parts of item identifiers by way of the 4-way directional controller.*

187. In my opinion, *Badarneh* in view of *Lee* render obvious this limitation. As I discussed about for limitation 1i, in the combination of *Badarneh* or *Lee*, a 4-way directional controller (whether that disclosed in *Badarneh* or disclosed in *Lee*) allows a user to navigate and select a character, i.e. ***further one or more parts of item identifiers***. A POSITA would understand that when using one of the proposed combined interfaces, all the characters including the initial ***one or more parts of item identifiers***, will also be navigated and selected using the same method. See EX1008, 4:11-5:35.

F. Claim 4: *The system of claim 1, wherein the further one of more parts is selected for display based at least in part on a ranking*

scheme, and the highest ranked of the further one or more parts of item identifiers is positioned in one of the up, down, left and right positions.

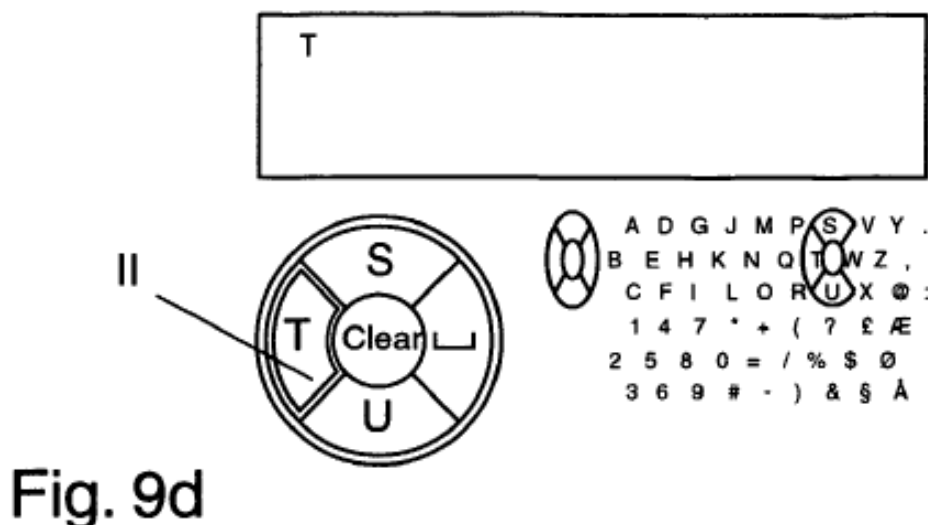
188. In my opinion, *Badarneh* in view of *Lee* render obvious this limitation. *Badarneh* teaches that once an initial character is selected, additional characters are displayed based on “the available list of words in the order made according to ***how often these words have been used statistically.***” EX1009, 17:29-31. This includes the display of the second group of letters, *i.e.* ***further one or more parts.*** The commonality of words is ***a ranking scheme*** where more letters in more common words are ***higher ranked.*** Thus, as disclosed in *Badarneh*, the most common letters are ***positioned in one of the up, down, left and right positions,*** and the remaining letters are not initially displayed. In the second proposed combination with *Lee*, the remaining letters can be accessed by navigating through the rings. EX1008, 4:11-5:35. *Lee* even teaches that certain layouts of the rings “may be preferable in some situations,” and a POSITA would understand that *Badarneh*’s commonality-ranked characters is one such situation.

- G. ***Claim 5: The system of claim 4, wherein the highest ranked of the further one or more parts of item identifiers being positioned in one of the up, down, left and right positions is specifically positioned in a circular menu over the on-screen keyboard on the television display indicating the item identifiers to be selected by movements of the user***

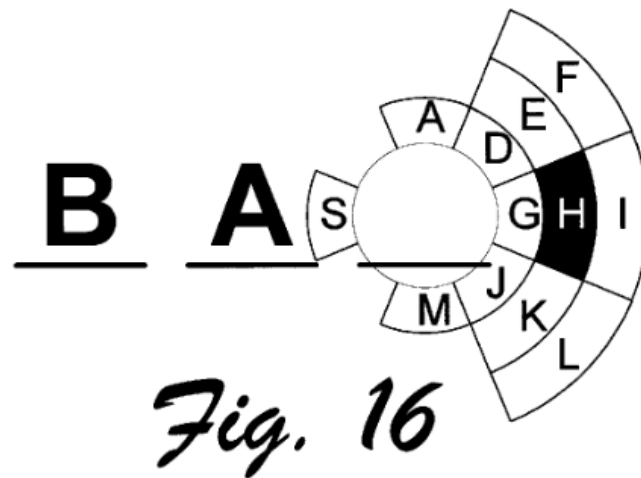
in the directions left, right, up, and down using the 4-way directional controller.

189. In my opinion, *Badarneh* in view of *Lee* render obvious this limitation. As I discussed for limitation 1e, the two proposed combination either uses *Badarneh*'s on-screen interface or *Lee*'s on-screen interface. Moreover, as I discussed for claim 4, *Badarneh* discloses display characters ranked by the commonality of the words they appear in.

190. *Badarneh* discloses that its interface has an **on-screen keyboard**, with characters displayed in a **circular menu** over that placed in up/down/left/right positions to indicate the directional button to use to navigate to that character. EX1009, 14:30-15:2. This is shown in Figure 9d for example, where the letter "T" is placed on the left to indicate that the left button will navigate it to that character.



191. And when using *Lee*'s interface, characters are positioned in a ***circular menu over the on-screen keyboard on the television display***. For example, in Figure 16, the character "G" is positioned in a circular menu over the remaining letters in the circular menus, which is an ***on-screen keyboard*** because it allows entry of characters via an on-screen interface. EX1008, 4:11-5:35. As shown in that figure, the placement of the character "G" ***indicates that it can be selected using one of the directions of the directional controller***, specifically the left button in Figure 16.



H. **Claim 7: The system of claim 4, wherein the items are stored in a database and indexed based on the item identifiers and capable of being queried.**

192. In my opinion, *Badarneh* discloses this limitation. *Badarneh*'s discloses that words (*i.e. item identifiers*) are displayed based on commonality, specifically the display "shows the most likely words that begin with the entered letter or letters, preferably in an order determined by how many points the word or

letter combination has been given, such points being related to the frequency of use of such combinations.” EX1007, 16:24-31. *Badarneh* also discloses that the ***item identifiers*** are stored in “a ***database*** which contains options and data that should be available.” *Id.*, 24:15-19. Because the items need to be retrieved from the database to populate the displayed database list, a POSITA would understand that the ***items*** are ***capable of being queried*** and that they are ***indexed based on the item identifiers*** used to populate the list.

- I. ***Claim 8: The system of claim 4, wherein the number of key presses of the remote control keypad to select an item is fewer than the number of key presses required to select an item according to a system that requires an end user to enter one, two, three, or four characters of the item identifier and then scroll through a list of potential items to select the item by additional key presses.***

193. In my opinion, *Badarneh* and *Lee* render obvious this limitation.

194. In my opinion, a POSITA would understand this claim to recite that the claimed system uses less key presses than the prior art systems described in the ’252 patent. The ’252 discloses that the prior art “requires entering several of the initial letters of the search term resulting in a smaller subset of the list and then scrolling through the subset to manually point out the desired items.” EX1001, 1:55-58. The ’252 patent describes several “onerous” methods for entering characters that require multiple keys presses, such as a 0-9 keypad found on older mobile phones, which requires “repeatedly pressing the 12 number keys” to enter a character. *Id.*, 1:59-65. The ’252 patent also describes systems that have “limited ... directional input

mechanisms such as a joystick or selection wheel plus,” where the user has to “select[] each character by navigating around an onscreen list of characters,” such as an on-screen full qwerty keyboard. *Id.*, 2:54-58.

195. *Badarneh* in view of *Lee* render obvious this limitation because they teach an input mechanism where the most common characters are displayed and can be selected using no more than two key presses (a directional input and an action key), as I described above in claim 1, in particular limitation 1i. *Badarneh* further teaches that an **item** can be selected from a list by pressing a dedicated “switch,” which activates a marker for selecting an item within the list. EX1007, 18:31-36. This process requires ***fewer key presses*** than the prior art methods where entry of a character often requires more than two key presses, such as a joystick navigating a full on-screen qwerty keyboard.

196. In addition, this process requires ***fewer key presses*** than entering four characters and scrolling through a long list of ***items***. *Badarneh* teaches that a user can enter most or all of the characters of a desired ***item***, which would greatly reduce the number of items that a user would need to scroll through, thereby requiring ***fewer key presses***. EX1007, Fig. 9l, 14:30-15:2.

J. Claim 9: The system of claim 1, wherein the computer processor is further configured to: iterate the selection until the particular item

identifier is completed, and enable selection of the particular item identifier to select the item.

197. In my opinion, *Badarneh* discloses this limitation. As I discussed above for limitations *1f* and *1g*, *Badarneh* discloses an ***iterative or progressive*** selection process in which the user enters ***parts of item identifiers*** until he/she identifies and ***selects*** the desired ***item identifier*** for the ***selected item***.

198. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “iterating the selections until the item identifiers are completed.” EX1017, 7. In my opinion, that limitation of the '579 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

K. Claim 10: *The system of claim 1, wherein the computer processor configured to generate the initial display further includes selecting the one or more parts of item identifiers to be displayed based on at least one predetermined criterion.*

199. In my opinion, *Badarneh* discloses this limitation. As discussed above for elements *1e* and *1g* and claim 4, *Badarneh* discloses displaying characters based on “the available list of words in the order made according to ***how often these words have been used statistically***.” EX1009, 17:29-31. This is a ***predetermined criterion*** based on ranking. Further, a POSITA would at least understand and consider it obvious that such criterion can be used for any display of characters, including the initial display, although the claimed ***initial display*** could be met by any subsequent

display of characters as long as there are further characters entered afterwards. Also, frequency of ***selection of items associated with item identifiers*** is within the scope of claim 11, below, which depends from claim 10, confirming that the ***predetermined criterion*** is broad enough to include any of the options in the group in claim 11.

200. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “wherein the step of generating the first display includes selecting the parts of the item identifiers for the first and second set of items to be displayed based on predetermined criteria.” EX1017, 8. In my opinion, that limitation of the '579 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

L. Claim 11: *The system of claim 10, wherein the at least one predetermined criterion is selected from the following: a frequency of selection of items associated with the pluralities of portions of the item identifiers, a recency of selection of the items associated with the pluralities of portions of the item identifiers, a likelihood of selection of the items associated with the pluralities of portions of the item identifiers, or a ranking of the pluralities of portions of the item identifiers in relation to a hierarchical classification of the pluralities of portions of the item identifiers.*

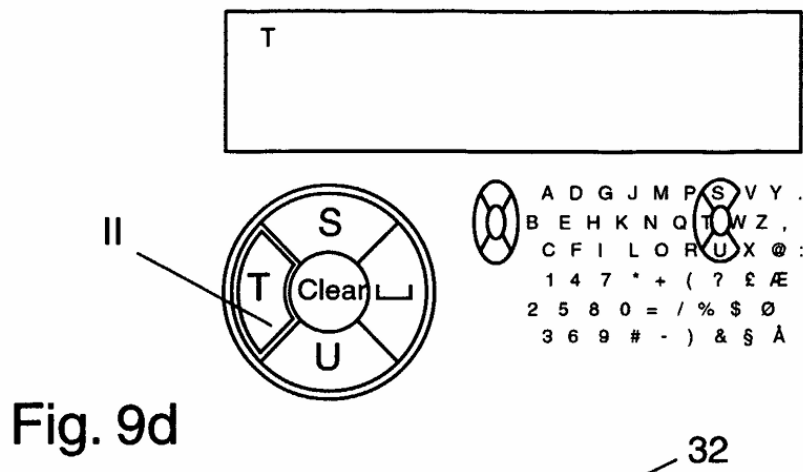
201. In my opinion, *Badarneh* discloses this limitation. As I discussed above for claim 10, *Badarneh* discloses a predetermined criterion, namely the use of statistical analysis and ranking to order the list of words (***item identifiers***) “according to ***how often these words have been used statistically.***” EX1009, 17:29-31. From

the list of criteria in Claim 11, such a statistical ordering constitutes a “frequency of selection of *items* (words) associated with the pluralities of *portions of the item identifiers* (letters)” and “a likelihood of selection of the *items* associated with the pluralities of *portions of the item identifiers*.” As discussed above, examples of statistical analyses of and prioritization rules for the data entries in its database include: the following predetermined criteria: “a) the frequency of previous use of the phrases, or b) standard frequency of the occurrence of the phrases, or c) alphabetical order, or d) most probable phrases in conjunction with other used phrases, or e) style, terminology, dialect or language.” *Id.*, 26:33-27:2. As such, *Badnareh* teaches the use of customizable data organization within its database. A POSITA would be able to employ statistical analysis, as *Badarneh* teaches, to practice any of the predetermined criteria in Claim 11.

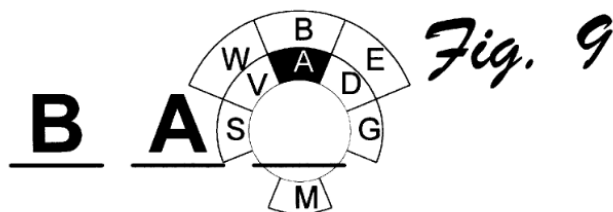
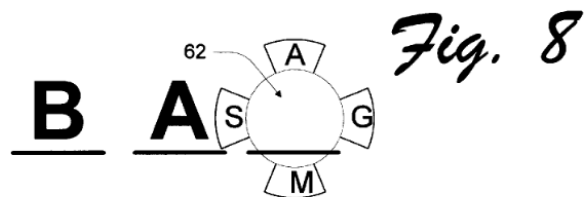
202. I note that in the '579 patent reexamination, the CRU found that *Badarneh* disclosed a limitation requiring “wherein one of the predetermined criteria is a frequency of selection of database items associated within the item identifier parts for the first and second set of items.” EX1017, 8. In my opinion, that limitation of the '579 patent is of at least the same scope as this limitation in the '252 patent and therefore should be found disclosed for the same reasons.

M. **Claim 12:** *The system of claim 1, wherein the computer processor configured to generate the initial display further includes displaying a plurality of parts of item identifiers.*

203. In my opinion, *Badarneh* discloses this limitation. Figure 9d of *Badarneh* depicts the display of a plurality of parts of item identifiers, specifically the letters “S,” “T,” and “U.”



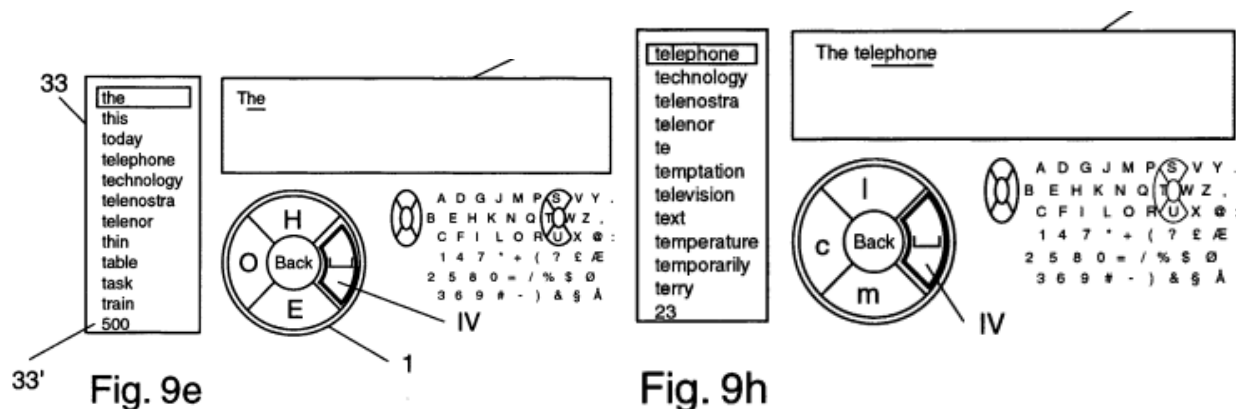
In the second proposed combination of *Badarneh* and *Lee*, the interface also displays a ***plurality of parts of item identifiers***, such as the letters “S”, “A”, “G”, and “M” shown in Figure 8. EX1008, 4:21-29.



- A. **Claim 13:** *The system of claim 1, wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier.*

204. In my opinion, *Badarneh* discloses this limitation. *Badarneh* teaches the user interface can be used to ***select an item***—i.e., a complete word—corresponding to an item identifier. EX1009, 17:28-37, 18:5-10. This is shown in, for example, Figures 9e (selecting the item “the” corresponding to the displayed item identifier using the “space” key) and 9h (selecting item “telephone” corresponding to the displayed item identifier using the “space” key). *See also* EX1009, 18:31-36 (“It will be possible by using the system to turn the switch 1' to a start position as shown in Fig. 9a and to press the switch at the point II' (function field II in animation 31) in order to activate a word list marker 36 and on rotation of the switch 31' to

move this marker 36 downwards until the desired word has been selected. This selected word is confirmed by another depression related to function field II.”).



X. GROUND 5: CLAIMS 6 AND 11 ARE OBVIOUS IN LIGHT OF *BADARNEH*, *LEE* AND *DOSTIE*

A. Motivation to Combine *Badarneh*, *Lee* and *Dostie*

205. In my opinion, it would have been obvious to incorporate *Dostie*’s dictionary trees and rankings based on tree hierarchy classifications into *Badarneh* (as combined with *Lee*) because it was well known at the time of *Badarneh* to conduct database searches using hierarchical trees like the ones described in *Dostie*. Moreover, *Dostie* provides express motivation to incorporate its candidate trees into systems like *Badarneh* to “rapidly predict potential completion candidates” and “provide[] a mechanism for supporting enhanced data entry techniques such as character prediction,” like the mechanisms described in *Badarneh*. EX1006, ¶[0097].

206. A POSITA would have known that hierarchical search trees are the most efficient way to identify matching prefixes because they promote efficient

traversal forward and backward through a series of search candidates stored in nodes of the tree. Database search techniques routinely used search trees and other hierarchical classifications in the searching, ranking, and selection processes. Moreover, as described above, *Badarneh* can already display a sorted list of database items matching the first *N* letters of the user's input and enables the use of predetermined criteria for prioritizing the database items. EX1007, 26:32-27:2.

207. It was well-known this form of search was almost always performed using a hierarchical search tree, including by the time *Badarneh* issued. In my opinion, because of the well-known benefits of using hierarchical search trees to search a database, and a POSITA's knowledge of predictive keypad systems used to query databases, a POSITA would reasonably expect the combination to succeed in achieving the desired result of efficiently calling up and displaying content of interest to a user. As such, the trees *Dostie* teaches would have been a trivial and routine addition to *Badarneh* that would have yielded extremely predictable results (*e.g.*, permitted simple and efficient searching of database entries based on a known prefix, frequency of previous use, standard frequency of occurrence, relationships among and between data entries, alphabetical order, or based on style, dialect, or language), like the searching discussed in *Badarneh*.

208. Because *Lee* is simply a modification to *Badarneh*'s user interface, the above description of the combination and motivations to do so also apply to the combination of *Badarneh* and *Lee*.

B. Claims 6 and 11

209. With respect to dependent claims 6 (requiring a “hierarchical tree”) and 11 (requiring a “hierarchical classification”), they are rendered obvious by *Dostie*'s hierarchical search trees in combination with *Badarneh* and *Lee*.

210. As I discussed above for Ground 2, *Dostie* discloses hierarchical trees and classifications. EX1006, ¶[0088], [0090]-[0097]. As I explained above, it would have been obvious to incorporate *Dostie*'s tree structure into *Badarneh* because *Dostie* itself recognizes that use of a candidate tree helps “to rapidly predict potential completion candidates” and “provides a mechanism for supporting enhanced data entry techniques such as character prediction.” *Id.*, ¶[0097]. The “enhanced data entry techniques” and “character prediction” are the same techniques *Badarneh* describes, so a POSITA would have found it natural to incorporate *Dostie*'s candidate tree into the customizable database organization, structure, prioritization, and searches of *Badarneh*.

XI. SECONDARY CONSIDERATIONS

211. I note that in IPR2020-00737 and IPR2020-00738, secondary considerations was considered and rejected by the Board. Specifically, the Board

rejected Patent Owner's argument that there is a presumption of nexus as to Patent Owner's "proof of concept" software. EX1013, 89. The Board also rejected Patent Owner's argument that there is a presumption of nexus as to Samsung's accused TVs. *Id.*, 91.

212. For actual nexus, the Board addressed each alleged secondary indicia separately. For industry praise and recognition, the Board found that Patent Owner "fail[ed] to sufficiently link the praise and industry recognition to any unique characteristics of the invention" of the claims. *Id.*, 92. For copying, the Board found that Patent Owner "has not shown that Petitioner's product, the Samsung Smart TV, embodies, or is similar to, the product" of the claims. *Id.*, 93. For commercial success, the Board found that Patent Owner had "not shown that the commercial success of Petitioner's products was the result of the unique characteristics of those claims rather than due to other considerations (for example, other technological features included in the Samsung Smart TV product, Petitioner's marketing of that product, or simply by virtue of Petitioner's brand name recognition)." *Id.*, 94. For unexpected results, the Board found that Patent Owner had failed to tie its arguments "to the specific features of the claims at issue." *Id.*

213. In sum, the Board found no nexus, presumed or actual, for any secondary indicia of non-obviousness. *Id.*, 95. On that basis, the Board gave secondary indicia "little weight." *Id.*

214. I have reviewed the Board's findings and agree with them.

XII. CONCLUSION

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

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

Executed: October 21, 2025



/s/ Vijay K. Madisetti, Ph.D.
Vijay Madisetti, Ph.D.

APPENDIX A – CLAIM LISTING

Claim 1	
1a	A system for selecting items associated with corresponding item identifiers from a plurality of items, the system comprising:
1b	a television display
1c	a remote control device comprising a 4-way directional controller; and
1d	a computer processor configured to:
1e	generate, on the television display, a first display of an on-screen keyboard including one or more parts of an item identifier for selection;
1f	enable the selection of the one or more parts by utilizing the 4-way directional controller;
1g	in response to the selection of the one or more parts of item identifiers, generate a display of a further one or more parts of item identifiers for selection, wherein the further one or more parts of item identifiers are arranged on the display relative to one another and corresponding to an up, down, left and right position;
1h	enable selection of the further one or more parts of item identifiers in order to add to the selected one or more parts to build a larger part or whole of a particular item identifier; and
1i	select one of the further one or more parts of item identifiers in response to an activation of a corresponding up, down, left, or right key to navigate to the one of the further one or more parts of item identifiers and activation of a central key on the 4-way directional controller to select the one of the further one or more parts of item identifiers;
1j	wherein the selected one or more parts of item identifiers and the further one or more parts of item identifiers are shorter than a complete word; and
1k	wherein navigation to the further one or more parts of item identifiers is enabled by a key press corresponding to the relative arrangement of the further one or more parts of item identifiers on the display.
Claim 2	
2	The system of claim 1, wherein the processor is located within the television.

Claim 3	
3	The system of claim 1, wherein the processor is further configured to enable navigation and selection of the one or more parts of item identifiers and the further one or more parts of item identifiers by way of the 4-way directional controller.
Claim 4	
4	The system of claim 1, wherein the further one of more parts is selected for display based at least in part on a ranking scheme, and the highest ranked of the further one or more parts of item identifiers is positioned in one of the up, down, left and right positions.
Claim 5	
5	The system of claim 4, wherein the highest ranked of the further one or more parts of item identifiers being positioned in one of the up, down, left and right positions is specifically positioned in a circular menu over the on-screen keyboard on the television display indicating the item identifiers to be selected by movements of the user in the directions left, right, up, and down using the 4-way directional controller.
Claim 6	
6	The system of claim 2, wherein the item identifiers are pre-processed in order to generate a hierarchical tree, which is stored in a computer accessible memory.
Claim 7	
7	The system of claim 4, wherein the items are stored in a database and indexed based on the item identifiers and capable of being queried.
Claim 8	
8	The system of claim 4, wherein the number of key presses of the remote control keypad to select an item is fewer than the number of key presses required to select an item according to a system that requires an end user to enter one, two, three, or four characters of the item identifier and then scroll through a list of potential items to select the item by additional key presses.
Claim 9	
9	The system of claim 1, wherein the computer processor is further configured to: iterate the selection until the particular item identifier is completed, and enable selection of the particular item identifier to select the item.

Claim 10	
10	The system of claim 1, wherein the computer processor configured to generate the initial display further includes selecting the one or more parts of item identifiers to be displayed based on at least one predetermined criterion.
Claim 11	
11	The system of claim 10, wherein the at least one predetermined criterion is selected from the following: a frequency of selection of items associated with the pluralities of portions of the item identifiers, a recency of selection of the items associated with the pluralities of portions of the item identifiers, a likelihood of selection of the items associated with the pluralities of portions of the item identifiers, or a ranking of the pluralities of portions of the item identifiers in relation to a hierarchical classification of the pluralities of portions of the item identifiers.
Claim 12	
12	The system of claim 1, wherein the computer processor configured to generate the initial display further includes displaying a plurality of parts of item identifiers.
Claim 13	
13	The system of claim 1, wherein the computer processor is further configured to enable selection of the item corresponding to the item identifier.