

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Susumu Yoshida, et al. Attorney Docket No.:18768-0217IP6
U.S. Patent No.: 9,818,449
Issue Date: November 14, 2017
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Title: EDITING METHOD AND RECORDING AND REPRODUCING
 DEVICE

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PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES

PATENT NO. 9,818,449 PURSUANT TO 35 U.S.C. §§ 311–319,

37 C.F.R. § 42

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EXHIBITS

- LG-1001 U.S. Patent No. 9,818,449 to Susumu Yoshida, et al. (“the ’449 Patent”)
- LG-1002 Excerpts from the Prosecution History of the ’449 Patent (“the Prosecution History”)
- LG-1003 Declaration and Curriculum Vitae of Dr. Andrew Cockburn
- LG-1004 U.S. Patent Application Publication No. 2001/0056434 to Kaplan et al. (“Kaplan”)
- LG-1005 U.S. Patent Application Publication No. 2004/0201691 to Bryant et al. (“Bryant”)
- LG-1006 U.S. Patent Application Publication No. 2006/0107289 to DeYonker et al. (“DeYonker”)
- LG-1007 U.S. Patent Application Publication No. 2004/0078383 to Mercer et al. (“Mercer”)
- LG-1008 U.S. Reissue Patent No. RE32,632 to Atkinson (“Atkinson”)
- LG-1009 U.S. Patent No. 6,493,006 to Gourdol et al. (“Gourdol”)
- LG-1010 Brent Ethington, *Introducing Microsoft Windows 95*, Microsoft Press (1995), with authenticating declaration of Carmen Debord
- LG-1011 George W. Furnas and Jeff Zacks, 1994, *Multitrees: Enriching and Reusing Hierarchical Structure*, In Proceedings of the SIGCHI Conference on Human Factors in Computer Systems (CHI 1994), Beth Adelson, Susan Dumais, and Judith Olson (Eds.), ACM, New York, NY, USA, 330-336. DOI <http://dx.doi.org/10.1145/191666.191778>, with authenticating declaration of Scott Delman
- LG-1012 Benjamin B. Bederson, 2001, *PhotoMesa: A Zoomable Image Browser Using Quantum Treemaps and Bubblemaps*, In Proceedings of the 14th annual ACM symposium on User Interface Software and Technology (UIST 2001), ACM, New York, NY, USA, 71-80. DOI <http://dx.doi.org/10.1145/502348.502359>

- LG-1013 U.S. Patent No. 6,609,253 to Swix et al. (“Swix”)
- LG-1014 U.S. Patent No. 5,442,744 to Piech et al. (“Piech”)
- LG-1015 U.S. Patent No. 5,884,056 to Steele (“Steele”)
- LG-1016 U.S. Patent No. 6,166,735 to Dom et al. (“Dom”)
- LG-1017 U.S. Patent Application Publication No. 2002/0082730 to Capps et al. (“Capps”)
- LG-1018 U.S. Patent Application Publication No. 2004/0064476 to Rounds (“Rounds”)
- LG-1019 Microsoft Computer Dictionary, 4th Ed., Microsoft Press (1999)
- LG-1020 James Cohoon & Jack Davidson, *C++ Program Design: An Introduction to Programming and Object-Oriented Design*, 3rd Ed., McGraw Hill (2002)
- LG-1021 U.S. Patent Application Publication No. 2004/0177319 to Horn (“Horn”)
- LG-1022 U.S. Patent No. 9,384,783 to Susumu Yoshida, et al. (“the ’783 Patent”)
- LG-1023 U.S. Patent No. 6,903,897 to Wang et al. (“Wang”)
- LG-1024 U.S. Patent No. 7,009,803 to Sharma et al. (“Sharma”)
- LG-1025 Jeppesen et al., “Hard Disk Controller: the Disk Drive’s Brain and Body,” 2001, IEEE.
- LG-1026 Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (USPTO June 21, 2022) (“Director’s Guidance”)
- LG-1027 Federal Court Management Statistics–Profiles (June 30, 2024)
- LG-1028 Complaint, *Maxell, Ltd. v. LG Electronics Inc. et al*, 5-23-cv-00152, E.D. Tex., filed December 29, 2023
- LG-1029 [RESERVED]

LG-1030	[RESERVED]
LG-1031	[RESERVED]
LG-1032	[RESERVED]
LG-1033	[RESERVED]
LG-1034	[RESERVED]
LG-1035	“Change BMP Icon to Thumbnail View,” <i>available at</i> https://www.tiplord.com/customizing/bmpicons.html , with Wayback capture
LG-1036	Declaration of June Ann Munford
LG-1037	[RESERVED]
LG-1038	Patent Owner’s Infringement Contentions in <i>Maxell, Ltd. v. LG Elec-</i> <i>tronics Inc. et al.</i>
LG-1039	[RESERVED]
LG-1040	<i>Fandango Media, LLC v. Maxell, Ltd.</i> , IPR2018-01432, Paper 32 (PTAB February 10, 2020) (“IPR2018-01432”)

LISTING OF CLAIMS

Claim 1	
[1.pre]	An information processing apparatus comprising:
[1.a]	a recording unit configured to record a plurality of video information on a recording medium;
[1.b]	an output unit configured to output a menu display for a user to select one group of video information among a plurality of groups of video information by specifying a position of a character corresponding to the one group of video information;
[1.c]	a reproducing unit configured to reproduce selected video information read out from the recording medium; and
[1.d]	a controller,
[1.e]	wherein, when a first group of video information is selected in the menu display by specifying a position of a character corresponding to the first group of video information, the controller controls the output unit to display a first group of thumbnails corresponding to the first group of video information,
[1.f]	wherein, when a second group of video information is selected in the menu display by specifying a position of a character corresponding to the second group of video information, the controller controls the output unit to display a second group of thumbnails corresponding to the second group of video information, and
[1.g]	wherein, when one video information recorded on the recording medium that is included in both the first group of video information and the second group of video information is deleted from the first group of video information, the controller continues to include the one video information in the second group of video information, and a thumbnail corresponding to the one video information is displayed as one of the thumbnails of the second group of thumbnails when the controller controls the output unit to display the second group of thumbnails.

Claim 2	
[2.a]	The information processing apparatus according to claim 1, wherein the controller controls the output unit to display a first character corresponding to the first group of video information in a first area when the first group of thumbnails is displayed,
[2.b]	wherein the controller controls the output unit to display a second character corresponding to the second group of video information in the first area when the second group of thumbnails is displayed.
Claim 3	
[3.a]	The information processing apparatus according to claim 2, wherein the controller controls the output unit to display the first group of thumbnails in a second area when the first group of thumbnails is displayed, the second area being different from the first area,
[3.b]	wherein the controller controls the output unit to display the second group of thumbnails in the second area when the second group of thumbnails is displayed.
Claim 4	
[4]	The information processing apparatus according to claim 3, wherein, when the one video information is deleted from the first group of video information, the controller removes the one video information from the first group of video information without deleting the one video information recorded on the recording medium.
Claim 5	
[5.pre]	An information processing system comprising:
[5.a]	a recording unit configured to record a plurality of video information on a recording medium;
[5.b]	a reproducing unit configured to reproduce selected video information read out from the recording medium; and
[5.c]	a display unit configured to output a menu display for a user to select one group of video information among a plurality of groups of video

	information by specifying a position of a character corresponding to the one group of video information;
[5.d]	wherein, when a first group of video information is selected in the menu display by specifying a position of a character corresponding to the first group of video information, a first group of thumbnails corresponding to the first group of video information is displayed on the display,
[5.e]	wherein, when a second group of video information is selected in the menu display by specifying a position of a character corresponding to the second group of video information, a second group of thumbnails corresponding to the second group of video information is displayed on the display, and
[5.f]	wherein, when one video information recorded on the recording medium that is included in both the first group of video information and the second group of video information is deleted from the first group of video information, the one video information continues to be included in the second group of video information, and a thumbnail corresponding to the one video information is displayed as one of the thumbnails of the second group of thumbnails when the second group of thumbnails is displayed on the display.
Claim 6	
[6.a]	The information processing system according to claim 5, wherein the display displays a first character corresponding to the first group of video information in a first area when the first group of thumbnails is displayed on the display,
[6.b]	wherein the display displays a second character corresponding to the second group of video information in the first area when the second group of thumbnails is displayed on the display.
Claim 7	
[7.a]	The information processing system according to claim 6, wherein the display displays the first group of thumbnails in a second area when the first group of thumbnails is displayed on the display, the second area being different from the first area,

[7.b]	wherein the display displays the second group of thumbnails in the second area when the second group of thumbnails is displayed on the display.
Claim 8	
[8]	The information processing system according to claim 7, further comprising: a controller, wherein, when the one video information is deleted from the first group of video information, the controller removes the one video information from the first group of video information without deleting the one video information recorded on the recording medium.
Claim 9	
[9.pre]	An information processing method comprising:
[9.a]	recording, by a recording unit, a plurality of video information on a recording medium;
[9.b]	outputting, by an output unit, a menu display for a user to select one group of video information among a plurality of groups of video information by specifying a position of a character corresponding to the one group of video information;
[9.c]	reproducing, by a reproducing unit, selected video information read out from the recording medium;
[9.d]	controlling, by a controller, the output unit to display a first group of thumbnails corresponding to the first group of video information, when a first group of video information is selected in the menu display by specifying a position of a character corresponding to the first group of video information,
[9.e]	controlling, by a controller, the output unit to display a second group of thumbnails corresponding to the second group of video information, when a second group of video information is selected in the menu display by specifying a position of a character corresponding to the second group of video information,
[9.f]	wherein, when one video information recorded on the recording medium that is included in both the first group of video information and

	the second group of video information is deleted from the first group of video information, the controller continues to include the one video information in the second group of video information, and a thumbnail corresponding to the one video information is displayed as one of the thumbnails of the second group of thumbnails when the controller controls the output unit to display the second group of thumbnails.
Claim 10	
[10.a]	The information processing method according to claim 9, further comprising: controlling, by the controller, the output unit to display a first character corresponding to the first group of video information in a first area when the first group of thumbnails is displayed; and
[10.b]	controlling, by the controller, the output unit to display a second character corresponding to the second group of video information in the first area when the second group of thumbnails is displayed.
Claim 11	
[11.a]	The information processing method according to claim 10, further comprising: controlling, by the controller, the output unit to display the first group of thumbnails in a second area when the first group of thumbnails is displayed, the second area being different from the first area; and
[11.b]	controlling, by the controller, the controller controls the output unit to display the second group of thumbnails in the second area when the second group of thumbnails is displayed.
Claim 12	
[12]	The information processing method according to claim 11, wherein, when the one video information is deleted from the first group of video information, the controller removes the one video information from the first group of video information without deleting the one video information recorded on the recording medium.
Claim 13	
[13.pre]	An information processing system comprising:

[13.a]	a recording unit configured to record a plurality of video information on a recording medium;
[13.b]	a reproducing unit configured to read video information from the recording medium;
[13.c]	a display unit; and
[13.d]	a controller, wherein the controller is configured to:
[13.e]	control the display unit to display a menu display that includes a plurality of selectable characters that respectively correspond to a plurality of groups of video information,
[13.f]	upon selection of a character corresponding to a first group of video information in the menu display by specifying a position of the character corresponding to the first group of video information, control the display unit to display a first group of thumbnails corresponding to the first group of video information, and
[13.g]	upon selection of a character corresponding to the second group of video information in the menu display by specifying a position of the character corresponding to the second group of video information, control the display unit to display a second group of thumbnails corresponding to the second group of video information,
[13.h]	wherein when one video information recorded on the recording medium is included in both the first group of video information and the second group of video information, and upon deletion of the one video information from the first group of video information, the one video information continues to be included in the second group of video information, and the controller controls the display unit to display a thumbnail corresponding to the one video information as one of the thumbnails of the second group of thumbnails.

Claim 14

[14.a]	The information processing system according to claim 13, wherein upon display of the first group of thumbnails on the display unit, the control unit controls the display unit to display a first character corresponding to the first group of video information in a first area,
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[14.b]	wherein upon display of the second group of thumbnails on the display unit, the controller controls the display unit to display a second character corresponding to the second group of video information in the first area.
Claim 15	
[15.a]	The information processing system according to claim 14, wherein upon display of the first group of thumbnails on the display unit, the controller controls the display unit to display the first group of thumbnails in a second area, the second area being different from the first area, and
[15.b]	wherein upon display of the second group of thumbnails on the display unit, the controller controls the display unit to display the second group of thumbnails in the second area.
Claim 16	
[16]	The information processing system according to claim 15, wherein, upon deletion of the one video information from the first group of video information, the controller removes the one video information from the first group of video information without instructing the deletion of the one video information recorded on the recording medium.

LG Electronics Inc. and LG Electronics U.S.A., Inc. (“**Petitioners**” or collectively “**LG**”) petitions for *Inter Partes* Review (“**IPR**”) of claims 1-16 (“**the Challenged Claims**”) of U.S. Patent No. 9,818,449 (“**the ’449 Patent**”). Compelling evidence presented in this Petition demonstrates at least a reasonable likelihood that LG will prevail with respect to at least one of the Challenged Claims.

The ’449 Patent shares a specification with U.S. Patent No. 9,384,783 (LG-1022), whose claims recite similar features as the ’449 Patent’s claims. Indeed, in an unappealed Final Written Decision, the PTAB found all challenged claims (claims 2, 5 and 6) to be unpatentable. LG-1040, 48. Given the overlap in claimed subject matter and the similarities between the combinations presented herein and in IPR2018-01432¹, it follows that the Challenged Claims are also unpatentable.

I. REQUIREMENTS FOR IPR

A. Grounds for Standing

Petitioners certify that the ’449 Patent is available for IPR. This petition is being filed within one year of service of a complaint against LG. LG is not barred

¹ Petitioners find no reason to deviate from the Board’s reasoning here, even though it reached its conclusions under the broadest reasonable interpretation standard.

or estopped from requesting review of the Challenged Claims on the below-identified grounds.

B. Challenge and Relief Requested

LG requests an IPR of the Challenged Claims on the grounds noted below.

Dr. Andrew Cockburn provides supporting testimony in his Declaration. LG-1003.

Ground	Claim(s)	35 U.S.C. §103
1	1-16	Bryant
2	1-16	Kaplan
3	1-16	Bryant in view of Kaplan
4	1-16	Kaplan in view of Bryant
5	1-16	Horn

Grounds 1-5 are further supported by the expert testimony of Dr. Cockburn.

See LG-1003, ¶¶25-339. Among other things, Dr. Cockburn offers an extensive description of relevant background technology and the state of the art before the '449 Patent. *Id.*, ¶¶39-58.

The '449 Patent claims priority to a number of other applications, including three Japanese applications, the earliest of which was filed December 2, 2004.

LG-1001, Cover (63), (30). As shown below, each prior art reference that forms the basis of Grounds 1-5 of this Petition pre-dates the '449 Patent's earliest proclaimed priority date (December 2, 2004; "Critical Date"), which Petitioners do not concede.

Reference	Filing Date	Publication Date	Prior Art Status
Bryant	04/11/2003	10/14/2004	§§102(a),(e)
Kaplan	03/29/2001	12/27/2001	§§102(a),(b),(e)
Horn	07/17/2003	09/09/2004	§§102(a),(e)

C. Claim Construction

The Challenged Claims are interpreted using the same claim construction standard that is used to construe the claim in a civil action in federal district court. 37 C.F.R. § 42.100(b). Claim terms not addressed below should be construed according to their plain and ordinary meaning to a POSITA. LG-1003, ¶¶28-32.

Petitioners reserve the right to respond to any constructions offered by Patent Owner or adopted by the Board. Petitioners are not conceding that each Challenged Claim satisfies all statutory requirements, nor are Petitioners waiving arguments concerning indefiniteness or claim scope that can only be raised in district court or otherwise outside the context of an IPR. *Mylan Pharm. Inc. v. Horizon Pharma USA, Inc.*, IPR2018-00272, Paper 35, 6-8 (PTAB 2019). The Board has regularly compared indefinite claims to the prior art for purposes of considering unpatentability. *See, e.g., Chicago Mercantile Exchange, Inc. v. 5th Market, Inc.*, CBM2013-00027, Paper 33, 3 (PTAB 2014); *SAP America, Inc. v. Lakshmi Arunachalam*, CBM2013-00013, Paper 61, 29 (PTAB 2014).

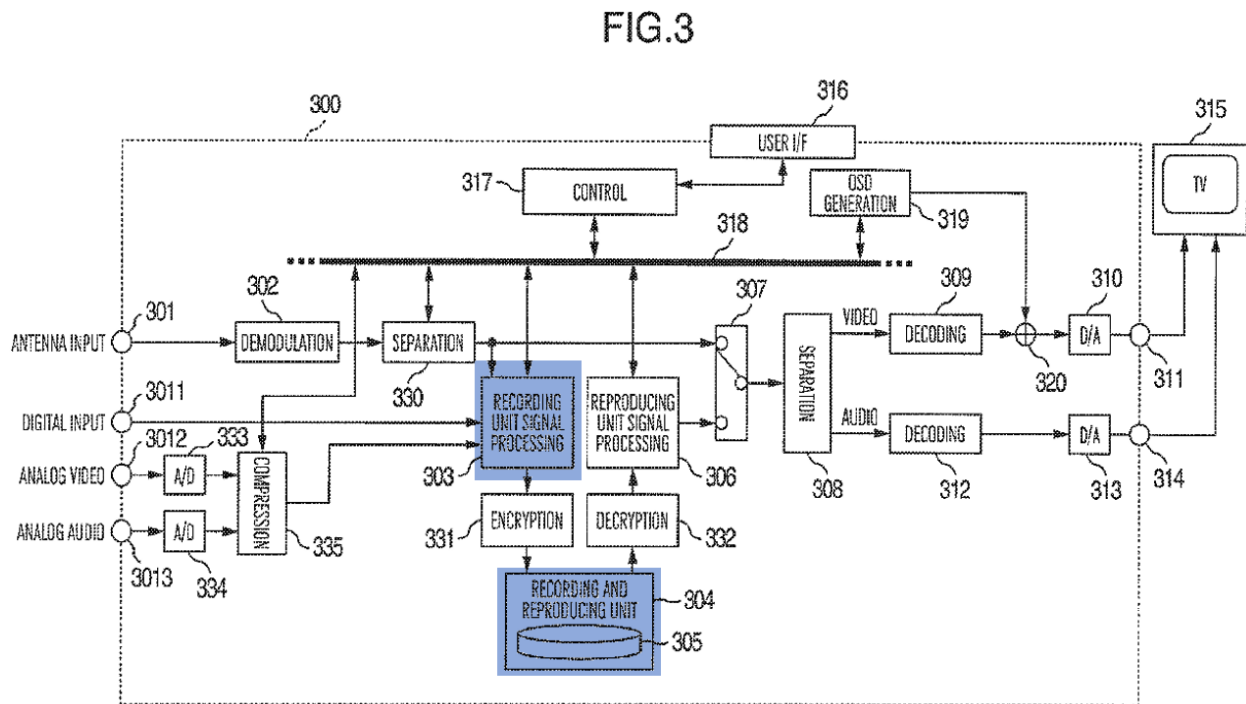
However, during prosecution of the application that issued as the '449 Patent, the Notice of Allowance included this "Examiner's Comment": "the claimed 'recording unit', 'output unit', 'reproducing unit' are limitations that invoke 35 U.S.C. 112, sixth paragraph, and the corresponding structure are found in figure 3: "recording unit signal processing 303', 'reproducing unit signal processing 306' and TV 315, also see figures 4-7." LG-1002, 217. Applicant did not disagree. *See, generally*, LG-1002. Notably, however, in IPR2018-01432, which was directed to a patent related to the '449 Patent and with which the '449 Patent shares a specification (U.S. Patent No. 9,384,783), the Board did not determine that the similar terms "recording unit" and "display device" are means-plus-function terms. LG-1040, 9-15; *see also* LG-1022, 8:58-59.

In the event that these terms are deemed to invoke §112(6), consistent with the requirements of 37 C.F.R. §42.104(b)(3), Petitioners identify the "specific portions of the specification" that purportedly describe structures that correspond to the recited function of each §112(6) element below. The analysis and prior art mapping presented in this Petition applies regardless of whether §112(6) is deemed to apply. LG-1003, ¶31.

Additionally, the Board's Final Written Decision in IPR2018-01432 construed other terms that implicate terms of the '449 Patent, further discussed below. LG-1040, 9-15.

1. “recording unit”

The “recording unit” recited in claims 1, 5, 9, and 13 performs the function of “record[ing] a plurality of video information on a recording medium.” LG-1001, 8:40-41; *see also id.*, 9:35-36, 10:29-30, 11:24-25. The corresponding structure in the ’449 Patent includes “recording unit signal processing circuit” 303 and/or “recording and reproducing unit” 304. LG-1001, 4:38-5:17 (“digital signal ... is subjected to necessary signal processing such as timing adjusting data addition and modulation in the recording unit signal processing circuit 303,” “recorded on the recording medium 305 by the recording and reproducing unit 304”), FIG. 3; LG-1003, ¶33.

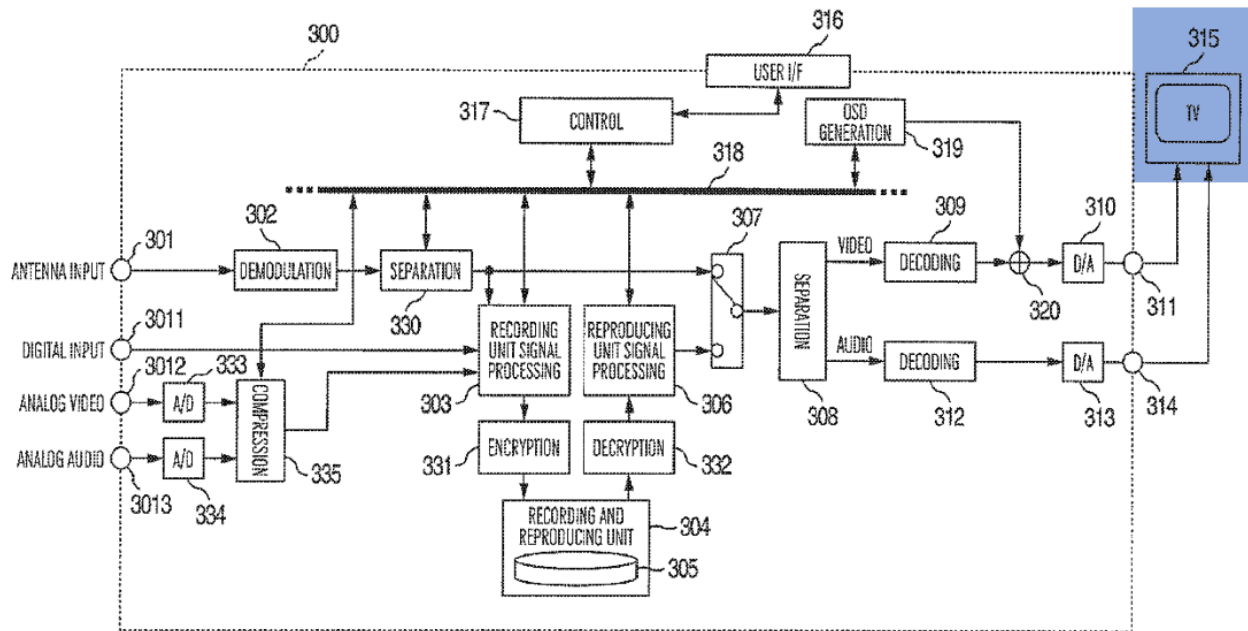


LG-1001, FIG. 3 (annotated)

2. “output unit”

The “output unit” recited in claims 1, 2, 3, 9, 10, and 11 performs the functions of “output[ting] a menu display for a user,” “display[ing] a first group of thumbnails corresponding to the first group of video information,” and “display[ing] a second group of thumbnails corresponding to the second group of video information.” LG-1001, 8:42-46, 8:53-55, 8:59-61; *see also id.*, 9:40-44, 9:45-57, 10:31-35, 10:38-49, 11:28-12:3. It further performs the function of “display[ing] a [first/second] character corresponding to the [first/second] group of video information in the first area when the [first/second] group of thumbnails is displayed” and “display[ing] the [first/second/ group of thumbnails in a second area when the [first/second] group of thumbnails is displayed.” LG-1001, 9:8-16, 9:19-25; *see also id.*, 10:3-10, 10:13-19, 10:64-11:4, 11:8-15, 12:16-23, 12:27-34. The corresponding structure in the ’449 Patent is “TV set 315.” LG-1001, 4:61, 5:26-30, 5:41-46, FIG. 3; LG-1003, ¶34; *see also* LG-1001, FIGS. 4-7, 12 and related text.

FIG.3



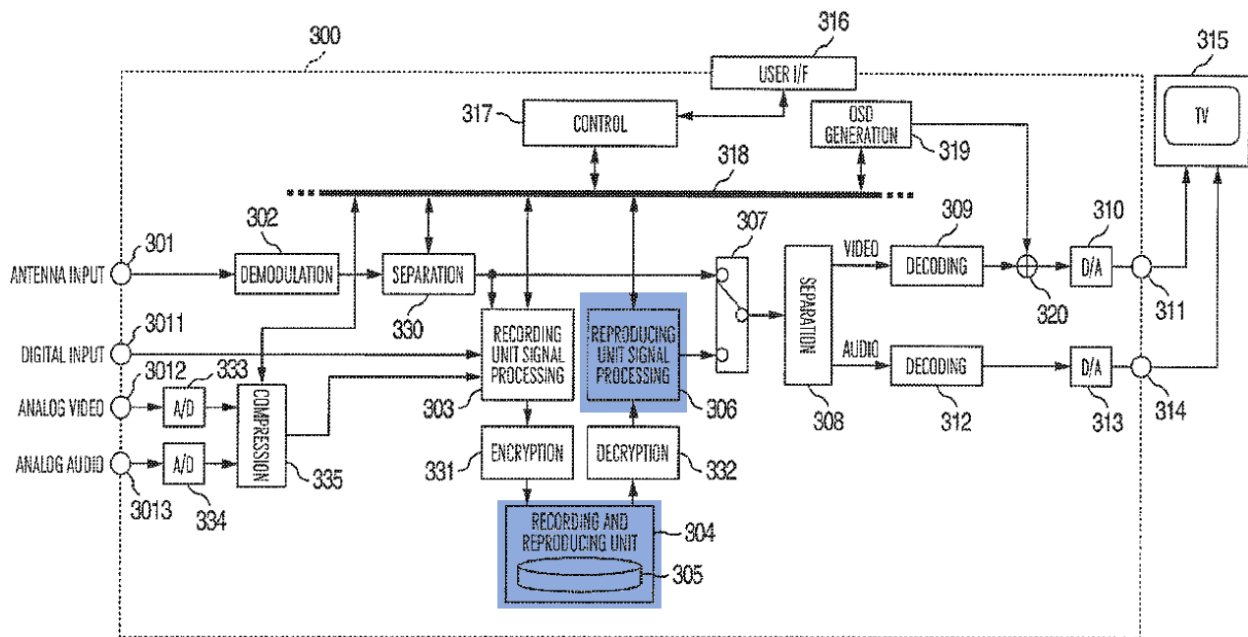
LG-1001, FIG. 3 (annotated)

3. “reproducing unit”

The “reproducing unit” recited in claims 1, 5, 9, and 13 performs the function of “reproduc[ing] selected video information read out from the recording medium.” LG-1001, 8:47-48; *see also id.*, 9:38-39, 10:36-37, 11:26-27. The corresponding structure in the ’449 Patent includes “reproducing unit signal processing circuit” 306 and/or “recording and reproducing unit” 304. LG-1001, 4:38-63, 5:18-36 (“At the time of reproducing, encrypted digital data read out from the recording medium 305 via the recording and reproducing unit 304 ... is decrypted in the decryption circuit 332, [and] subjected to signal processing required for reproduction such as demodulation in a form based on a predetermined modulation

scheme in the reproducing unit signal processing circuit”), FIG. 3; LG-1003, ¶35.

FIG.3



LG-1001, FIG. 3 (annotated)

4. “one video information”

The Board determined that the “one video information” included in the first and second groups is the same “one video information,” not merely copies thereof as argued by Patent Owner in IPR2018-01432. LG-1040, 13-15. This construction should be maintained here. LG-1003, ¶36. The limitation uses the article “one” to refer to “one video information,” and subsequent references recite “the one video information.” The plain usage of these words implies that the same “one video information” is initially included in each group. *Id.*, 11. If different copies of video

information existed in the first and second groups, then the “one video information” deleted from the first group could not “continue[] to be included in the second group” because there would be different video information in the second group. *Id.*, 11-12. The specification of the ’449 Patent supports this construction, which describes two users’ groups (i.e., user-defined unified information for “mother” and “father”) ultimately referring to the same “one video information” (e.g., underlying AV data for program #1). *Id.*, 12-13; LG-1001, 2:53-61, 3:37-50, 6:9-30, FIG. 1; LG-1003, ¶36.

5. “one video information ... is deleted from the first group of video information”

The Board also construed the usage of “deleted” in the phrase “one video information ... is deleted from the first group of video information” in IPR2018-01432. LG-1040, 13-15. There, the Board determined that “delet[ing]” video information from the first group includes reversing a registration (i.e., unregistering) of video information from the first group. *Id.*, 14-15. The Board further determined that “delet[ing]” video information from a group does not necessarily require deleting underlying AV data. *Id.*, 15.

There is no reason to deviate from the Board’s reasoning here for the terms in Challenged Claims 1, 4-5, 8-9, 12-13, and 16 even though the Board reached its conclusions under the broadest reasonable interpretation standard. The deletion “from the first group of video data” implies that the deletion may relate to group

membership, rather than to the underlying video data themselves. *Id.*, 14; LG-1003, ¶¶37-38.

D. Level of Ordinary Skill in the Art

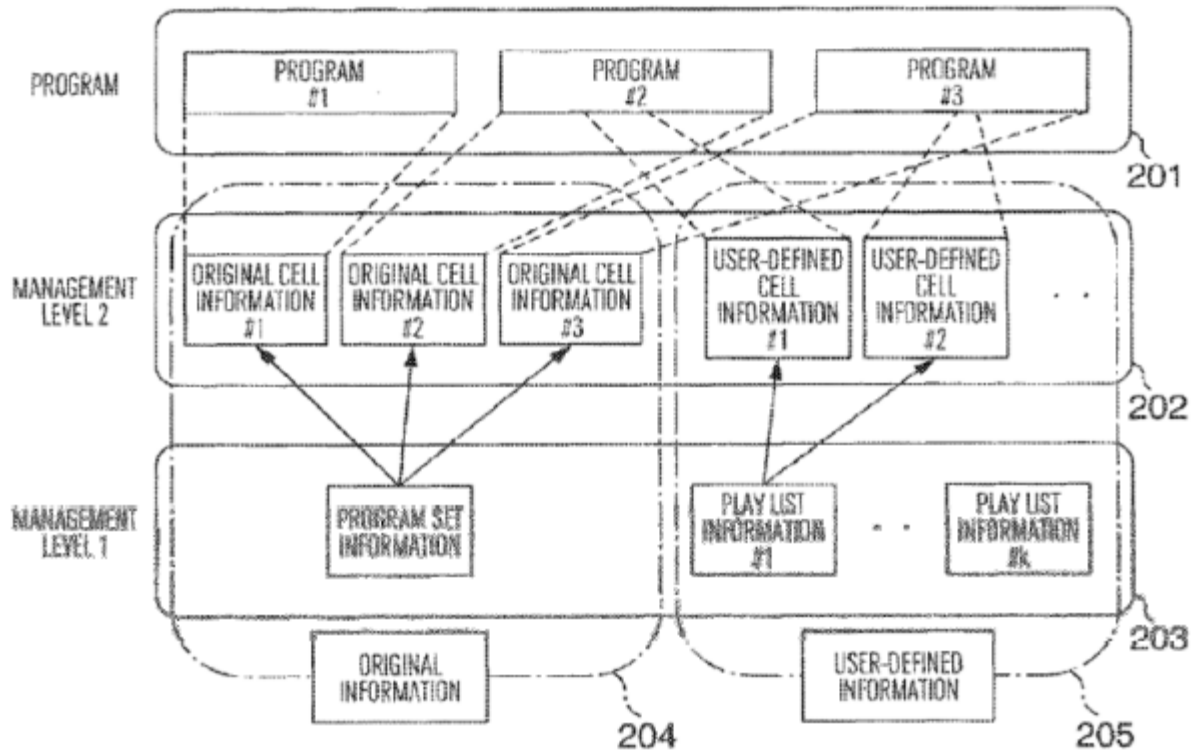
A person of ordinary skill in the art (“POSITA”) relating to the subject matter of the ’449 Patent as of December 2, 2004, would have had at least a bachelor’s degree in computer science, electrical engineering, computer engineering, or a related field, and about 1-2 years of practical experience in the relevant industry. LG-1003, ¶¶26-27. Additional graduate education could substitute for professional experience, and *vice versa*. *Id.*

II. THE ’449 PATENT

A. Technology Background and the Admitted Prior Art

The ’449 Patent admits that “conventional techniques” for managing “AV data on a recording medium” were known, and describes a known two-level management scheme for such management. LG-1001, 1:51-2:16 (“In the above-described conventional technique, it is mentioned that the play list indicates the reproduction sequence by linking portions of AV data together.... By conducting reproduction on the basis of the program set information, the user can reproduce all AV data recorded on the recording medium.”), FIG. 2:

FIG.2
PRIOR ART



3:6-7, 1:29-47; LG-1003, 59. Thus, “the patent admits that at least: (1) hierarchical management levels for AV data; (2) reproduction of AV data stored on a recording medium; and (3) user-defined playlists, were known.” LG-1003, 60.

Moreover, the data management techniques of the '449 Patent, including its use of menus, thumbnails, and pointers, were well known in the field by 2004. *See* LG-1003, ¶¶40-43 (describing graphical user interfaces (GUIs) and video information display), 44-45 (describing filing systems and aliases/links), 46-49 (describing computer pointers and data structures), 50-58 (describing digital media, reproduction, and playlists).

Before the '449 Patent, GUIs presented information using menus, such as the well-known “desktop” metaphor employed since “Windows 95.” LG-1003, ¶¶40-43 (discussing existing menus). Further, it was well-known that media, including digital video content in a playlist, could be played back on a standard computer. LG-1003, ¶¶50-51. For example, it was known that a computer could be used to act as a DVR, with menus displaying thumbnails to organize a user’s recorded media. LG-1006, Abstract, [0002]-[0004], [0014]-[0017], [0020]-[0022], [0037], FIGS. 3-5; LG-1003, ¶52.

Importantly, a common computer programming concept used in the management and display of digital media was the “pointer.” LG-1003, ¶46. A “pointer” refers to the idea of storing an indicator of the *location* of data in memory, and was used for data (*e.g.*, files) that needed to be used in multiple places, without duplicating that data. *Id.* By using a pointer to the location of the data—rather than a copy of the data itself—a single stored file or item of data could be used by multiple programs or displayed in different menus (or other GUIs). “It is the nature of pointers that when a pointer to an original object is deleted, the original object is unaffected.” *Id.* Indeed, with this type of storage, “items may be removed from a collection” without “otherwise delet[ing] the item from the source (*e.g.* the file sys-

tem) or any other collection.” LG-1021, [0165]. Also, pointers enable “data structures,” which in turn enable efficient access and modification of that data. LG-1003, ¶¶47-49 (example of the use of pointers with “multitrees”).

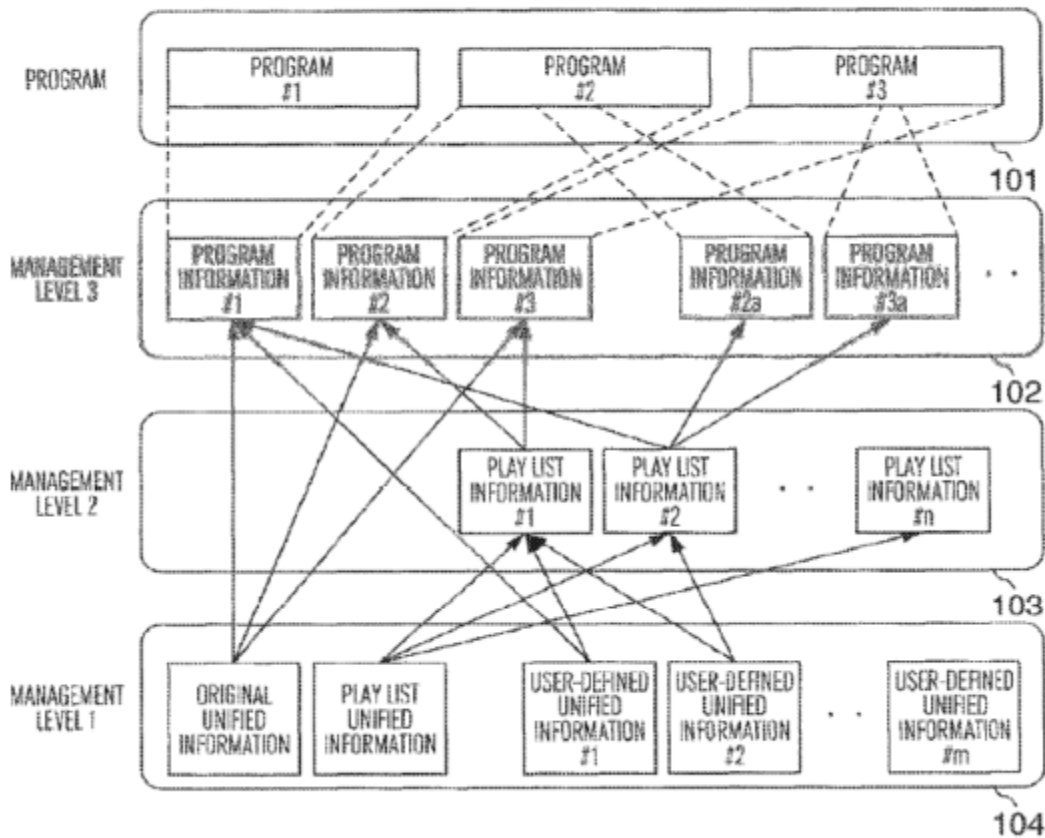
The foregoing were all well-known and commonplace features of standard computing systems and software at the time of filing.² LG-1003, ¶58.

B. Brief Description of the ’449 Patent

The ’449 Patent was filed June 8, 2016, and claims priority to several Japanese applications, the earliest of which was filed December 2, 2004. LG-1001, Cover. The ’449 Patent is directed to managing data, such as multimedia digital data files (e.g., audio and video files) that a user may want to reproduce. *See, e.g., id.*, Abstract, 1:24-46; LG-1003, ¶¶62-63. The ’449 Patent uses a “management” scheme with hierarchical levels, and provides the following summary of a “management state of AV data on a recording medium”:

² The Declaration of June Ann Munford (LG-1036) is provided in support of the prior art status of certain exhibits discussed in Dr. Cockburn’s declaration (LG-1003).

FIG. 1

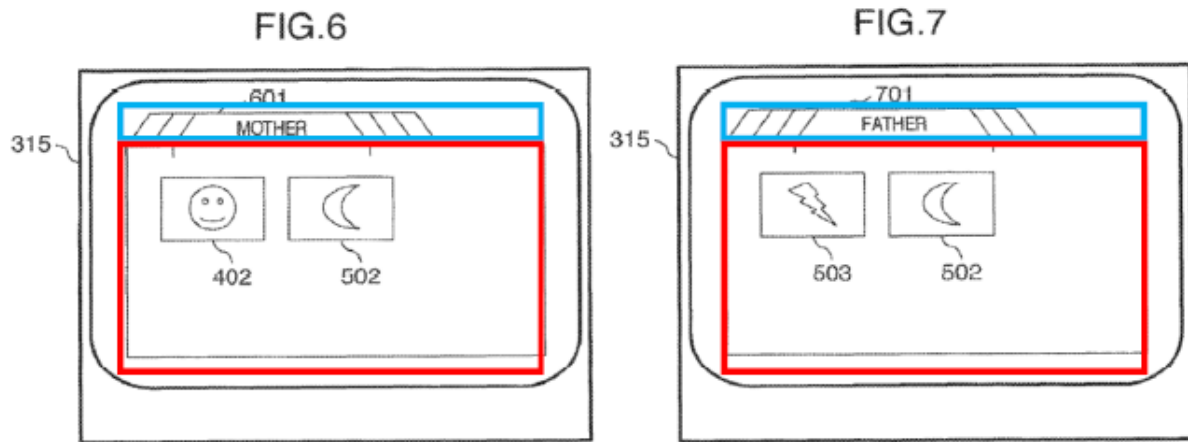


LG-1001, FIG. 1

Figure 1 depicts a management state of AV data on a recording medium in an exemplary recording and reproducing device. LG-1001, 3:38-41.

The '449 Patent purports to solve problems with “conventional technique[s]” by allowing users to have more control over manipulating and rearranging of their content. LG-1001, 2:16-2:67. The primary example used in the specification is with respect to “play lists.” *See, e.g., Id.*, Abstract.

Specifically, the '449 Patent uses an example where there is a first playlist for a “mother” and a second playlist for a “father.” LG-1001, 6:9-30. As shown in FIGS. 6 and 7, two menu areas (“601” Mother and “701” Father) each display a list of thumbnails (402, 502) and (503, 502) corresponding to “play list information” #1 and #2, respectively:



LG-1001, FIGS. 6-7 (annotated).

As shown above, each menu has a first area (circled blue) that indicates a group, classified as “Mother” or “Father” in this example, and a second area (circled red), which displays thumbnails of data corresponding to the group. LG-1001, FIGS. 6-7; LG-1003, ¶¶64-66. The '449 Patent explains that if the father and mother each have the same video on their respective lists (*e.g.*, 502), the father can delete the video from his list without that video being automatically deleted from the mother’s list. *See* LG-1001, 6:9-30.

C. Prosecution History

During prosecution of the '449 Patent, the Office issued no prior art rejections. *See, generally*, LG-1002. As “reasons for allowance,” the Examiner stated that “[t]he prior arts did not disclose continue [sic] to include deleted information of the first group in the second group when the deleted information recorded on the recording medium was included in both the first group and the second group.” *Id.*, 216.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. [GROUND 1] – Bryant Renders Claims 1-16 Obvious

1. Bryant (LG-1005)

Bryant is directed to “grouping and classifying digital still images and digital motion images captured using a handheld digital camera.” LG-1005, [0029].

Grouping and classification data are stored in a database on a host computer. *Id.*

The classification provides information that relates to the feelings or emotions of a person toward images, such as whether the image is a “favorite.” *Id.*, [0030].

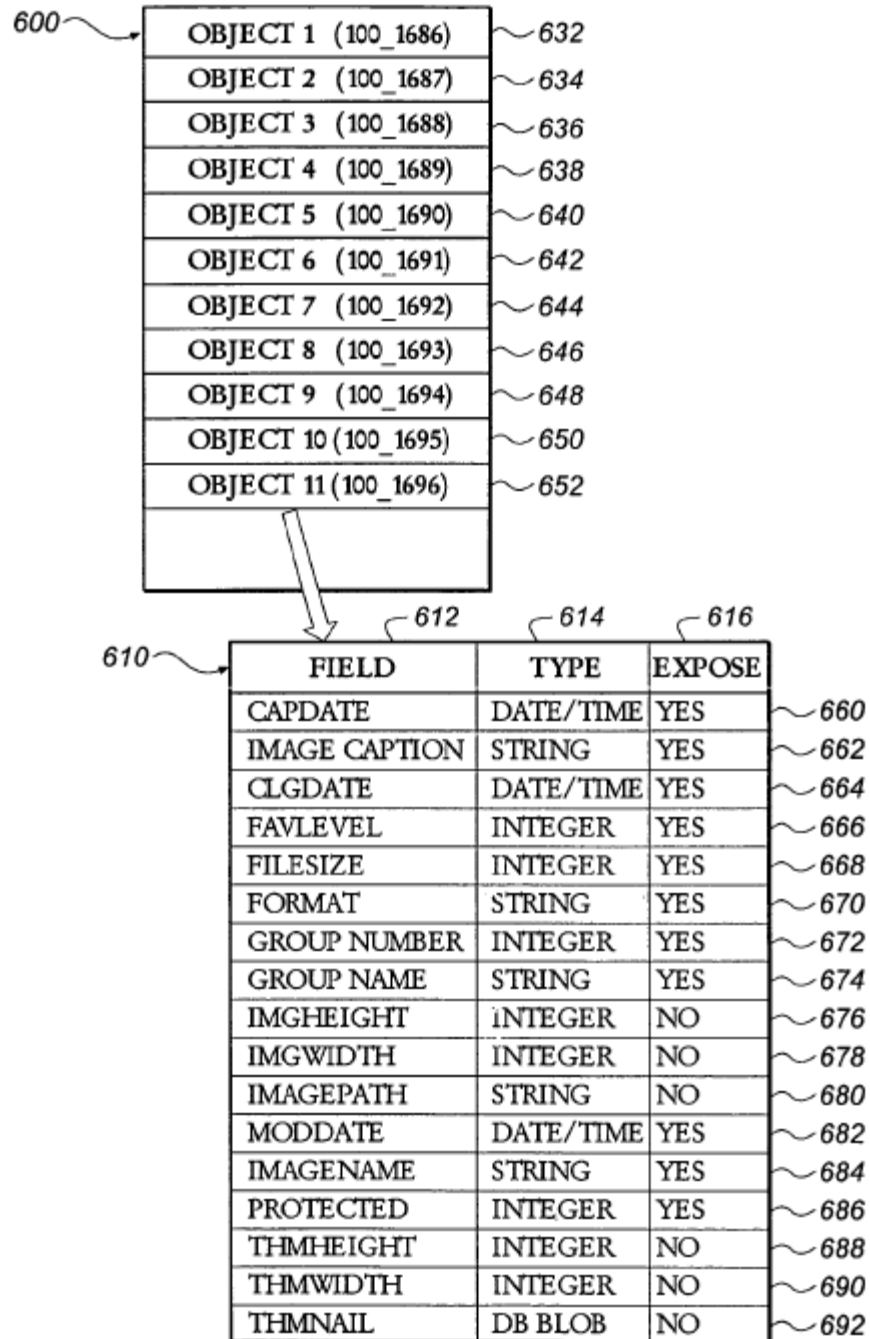


FIG. 8

LG-1005, FIG. 8

Figure 8 (above) depicts database information including general assets table 600 that includes image data objects corresponding to various transferred image files (e.g., “100_1686”). LG-1005, [0082]. For example, object 11 includes table of data fields 610, and each row of table 610 includes a particular type of metadata describing the image. Among the rows of table 610 are “favlevel” metadata in row 666, which indicates whether the user has selected the image as a favorite; “group number” metadata in row 672, which indicates the number of the group of images of which the image is a part; “group name” metadata in row 674, which indicates an optional name for the group; and “thmnail” metadata in row 692, which holds a copy of the compressed thumbnail image as stored by the digital camera. *Id.*, [0084], [0085], [0087].

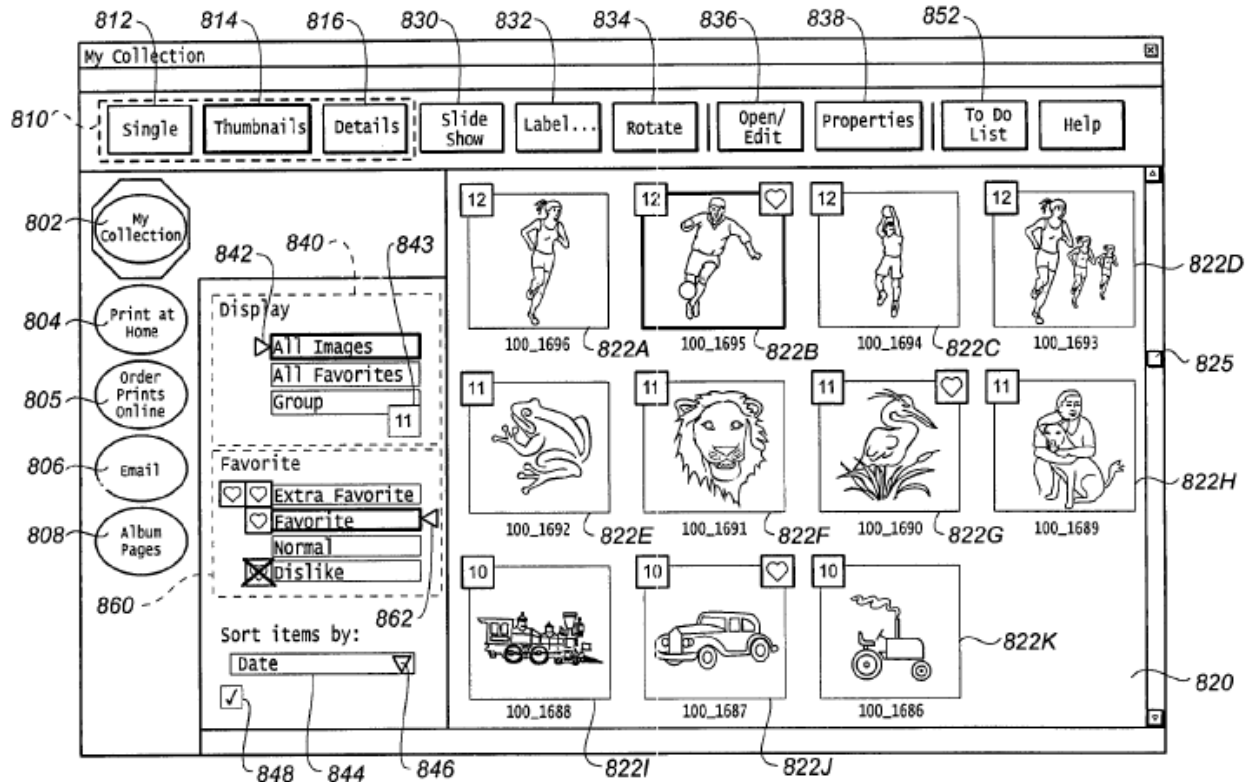


FIG. 9A

LG-1005, FIG. 9A

Figure 9A (above) depicts an example computer user interface screen for displaying the transferred images. LG-1005, [0089]. The user interface screen includes area 820 for displaying the thumbnail images provided using “thmnnail” metadata 692 of each object from general assets table 600. *Id.* By moving selector 842 within display selection area 840, the user can select among the display of “All Images,” “All Favorites,” or “Group” based on group number/name box 843. *Id.* The user also can change the level of a selected image to be, for example, a “Favorite” image using selector 862 in favorites level selection area 860. LG-1005, [0096].

2. Claim 1

[1.pre]

To the extent the preamble is limiting, Bryant discloses or renders obvious [1.pre]. LG-1005, Abstract, [0006]-[0007], [0011], [0014], [0029], [0037], [0089], claim 1, FIGS. 1, 3B; LG-1003, ¶9-. Specifically, Bryant discloses a “method for producing a plurality of electronic job pages using a digital camera and a computer,” including “produc[ing] a first electronic job page including the first group of digital images and a second electronic job page including the second group of digital images.” LG-1005, Abstract. Thus, a POSITA would have understood that Bryant discloses an apparatus and/or system (e.g., computer, or computer plus other device, such as camera) that performs a method of processing information (e.g., digital image data). LG-1003, ¶90; LG-1005, FIGS. 1, 3A-3B.

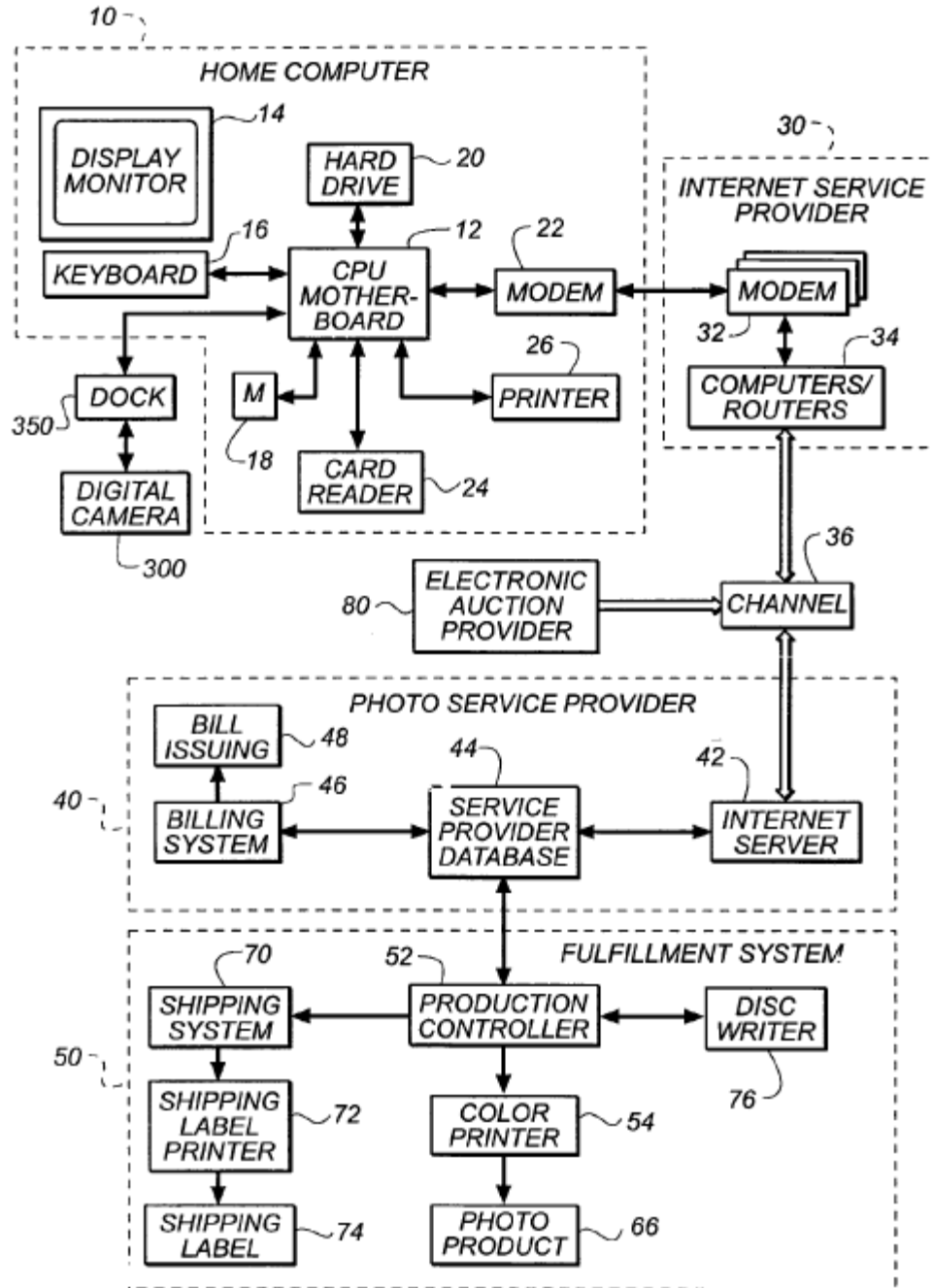


FIG. 1

LG-1005, FIG. 1

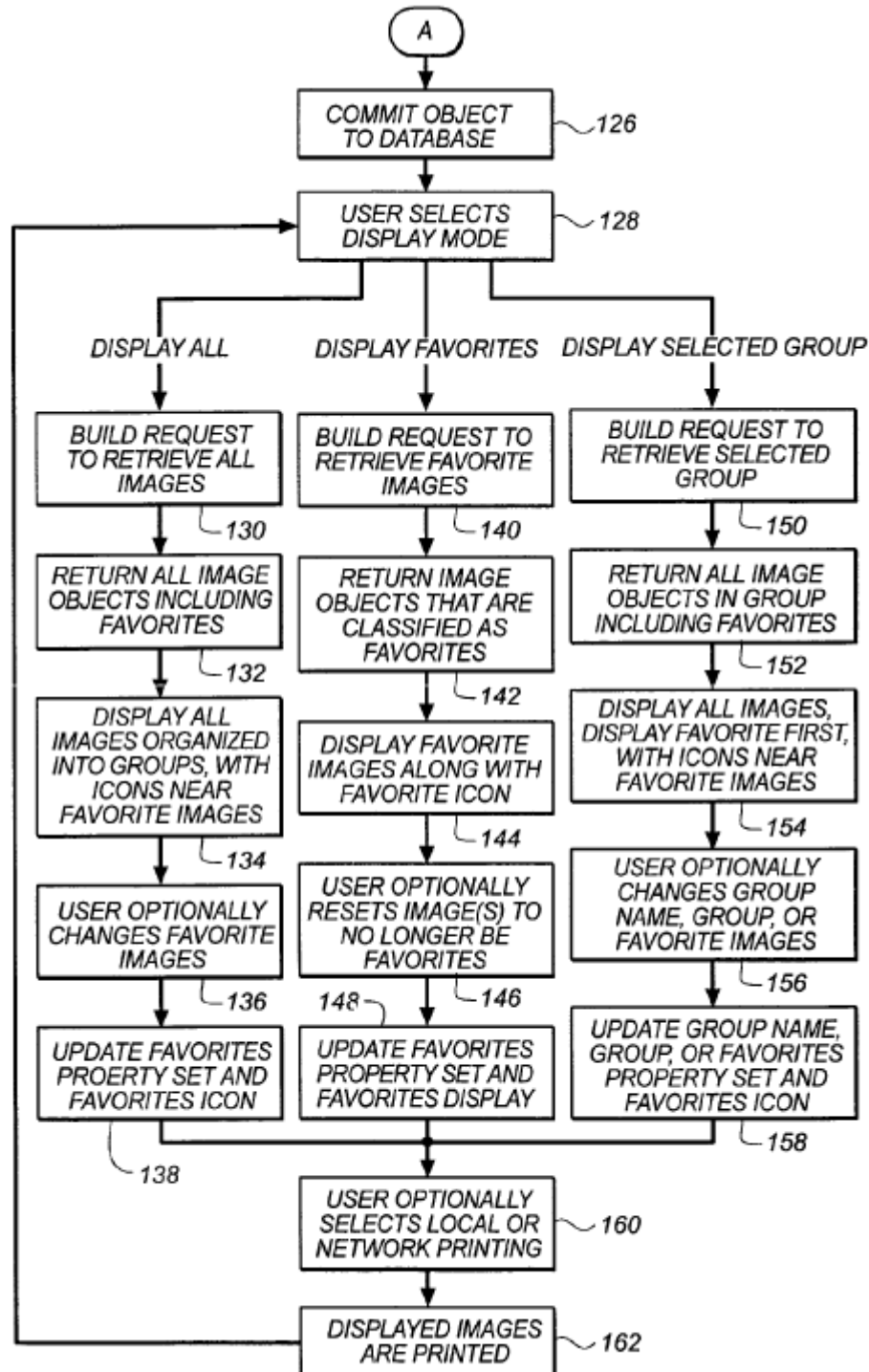


FIG. 3B

LG-1005, FIG. 3B

[1.a]

Bryant discloses or renders obvious a recording unit that records a plurality of video information (e.g., “motion video images”) on a recording medium (e.g., “hard drive 20”). LG-1005, [0007], [0032], [0036]-[0039], [0067], [0080]-[0081], FIG. 1; LG-1003, ¶¶91-94. Specifically, Bryant discloses a computer that receives files captured by and/or stored on a digital camera. LG-1005, [0007], [0032] (“images are transferred from the digital camera to a host computer”), [0038]-[0039], [0067], [0080]. The files from the digital camera include “still and motion video images.” LG-1005, [0036]. After the computer receives the transferred image files, the files are stored on the “hard drive 20 of the home computer 10” in “a default directory, such as in a ‘my collection’ directory.” LG-1005, [0081].

A POSITA would have understood that the “hard drive 20” of Bryant necessarily includes a circuitry (“recording unit”), e.g., a hard disk controller, that serves as an intermediary between the CPU and the physical storage platter of the hard drive in order for “the hard drive 20 ... to store images downloaded from the digital camera.” LG-1003, ¶¶92-94; LG-1005, [0037], FIG. 1. Indeed, such circuitry was well known long before the Critical Date to include in hard drives to provide buffering, error correction, servo control, etc. for writing data to the hard drive. LG-1023, 1:11-46, 2:64-4:18 (“the control system 202 sends to and receives signals from the head 114 during read and write operations performed on

the disk 102”), FIGS. 1-2; LG-1024, 5:50-6:4 (“embedded disk controller Printed Circuit Board (PCB)”), FIG. 2; LG-1025, Abstract, 3 (“the servo block refers to general logic used in aiding the spinning of the discs and in the positioning of the actuator on the disc”).

[1.b]

Bryant discloses or renders obvious an output unit (“display monitor 14,” “computer user interface screens”) that performs the function of outputting a menu display (“user interface”) for a user to select one group of video information (e.g., “All Images,” “All Favorites,” “Group”) among a plurality of groups of video information (circled blue in FIGS. 9A-9C, e.g., “All Images,” “All Favorites,” “Group”) by specifying a position of a character (“By moving a selector 842 within a display section area 840, the user can select a display of ...”) corresponding to the one group of video information. LG-1005, [0037]-[0038], [0087], [0089], [0149], [0154], FIGS. 9A-9C; LG-1003, ¶¶95-98; *see also* [1.e]-[1.f].

Bryant teaches “computer user interface screens” that facilitate user selection of desired video information to be played back and a “display monitor 14” that is a display device on which “images and information” are displayed “as a computer user interface screen (GUI screen).” LG-1005, [0029], [0036]-[0038], [0088]-[0090], [0149], FIGS. 1, 9A-9C. Bryant explains that images from a digital camera are transferred from a digital camera and stored on the computer, and then

“[e]ach group of digital images is then organized as an electronic album, using the data in the local database, and is displayed on the display monitor 14.” LG-1005, [0154]. Referencing Figure 9A, Bryant describes a “GUI screen 800A [that] includes an area 820 for displaying the thumbnail images,” where, “[b]y moving a selector 842 within a display selection area 840, the user can select a display of ‘All Images’, a display of ‘All Favorites’, or a display of a ‘Group’ of images selected using a group number/name box 843.” LG-1005, [0089].

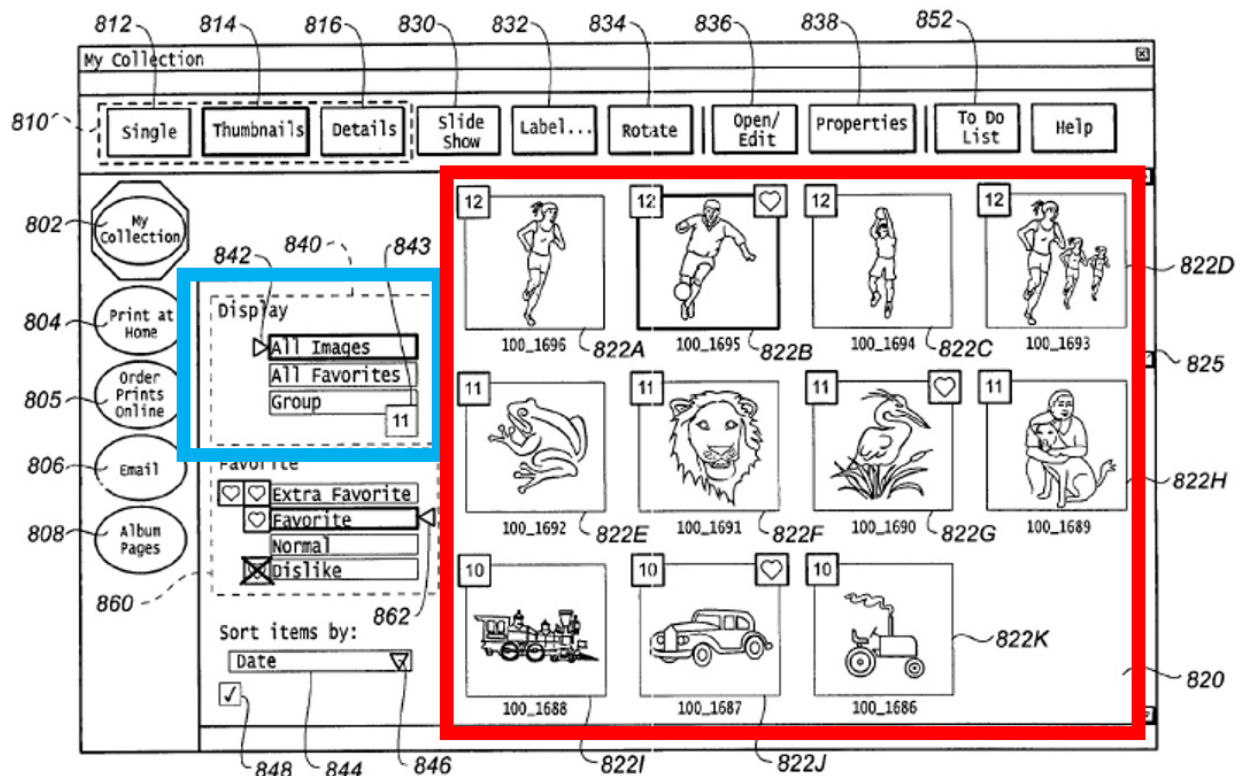


FIG. 9A

LG-1005, FIG. 9A (annotated)

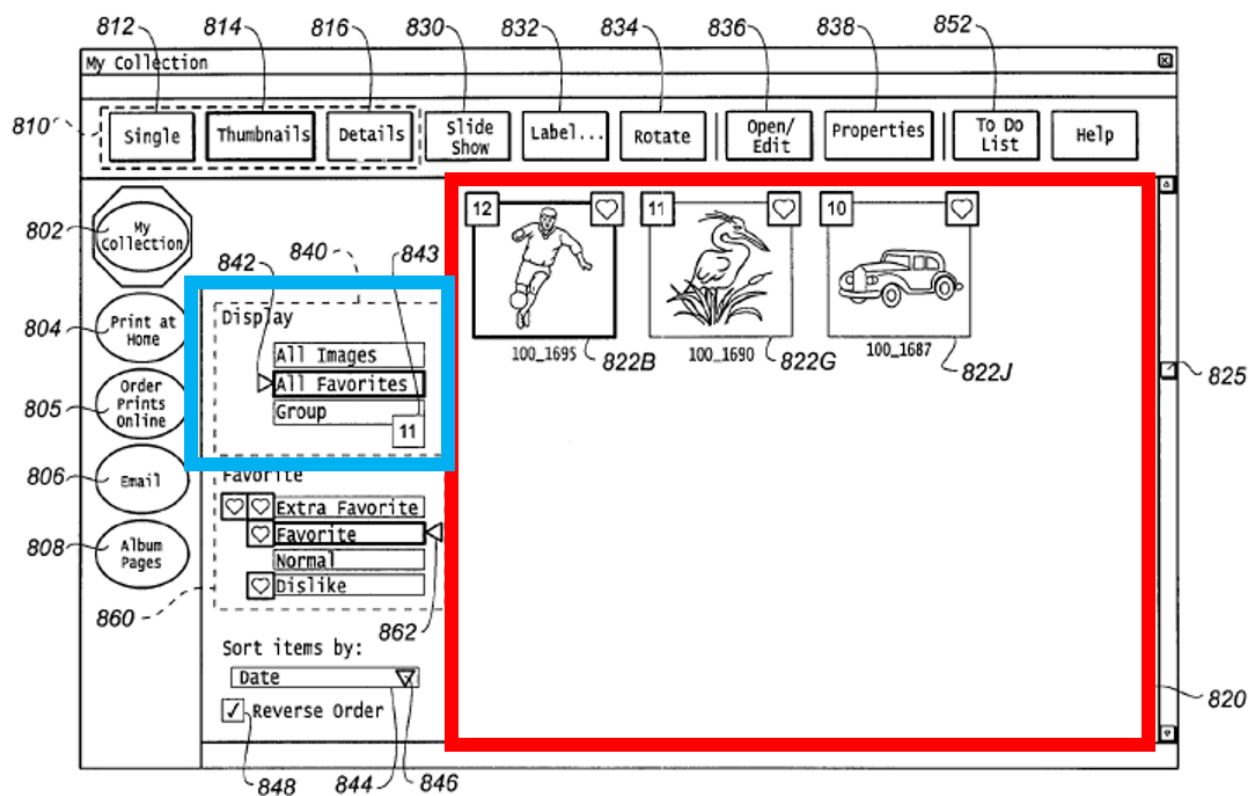


FIG. 9B

LG-1005, FIG. 9B (annotated)

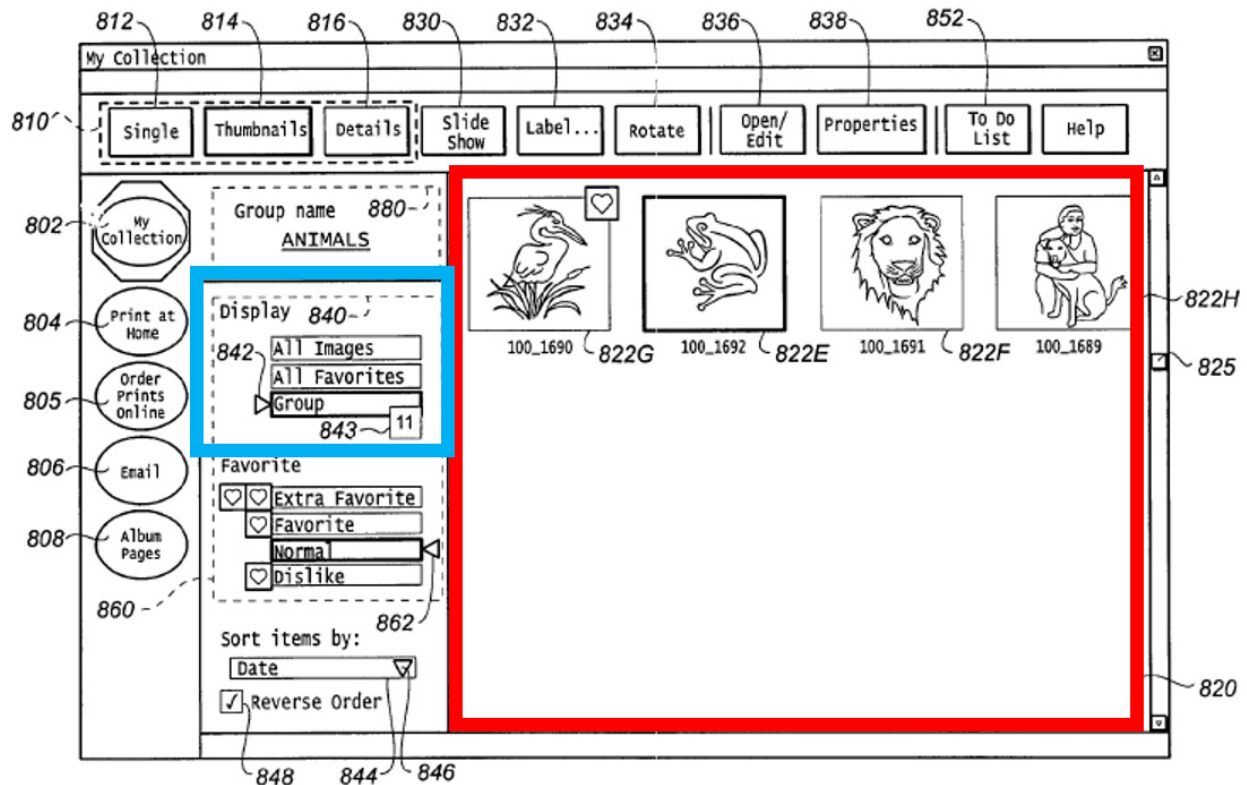


FIG. 9C

LG-1005, FIG. 9C (annotated)

In FIG. 9A, for example, a user has selected the “All Images” group by specifying a position of a character (e.g., selecting and determining the position of a character) corresponding to the one group of video information, either by clicking on the position of one or more characters in the name of the group or by moving the triangle selector character to the position next to the name of the group. *Id.*; LG-1003, ¶¶96-98; *see also* LG-1001, 5:67-6:8.

[1.c]

Bryant discloses or renders obvious [1.c]. LG-1005, [0029], [0036]-[0038], [0080]-[0081], FIGS. 1, 3B, 9A-9C; LG-1003, ¶¶99-108. A POSITA would have understood that Bryant suggests reproducing selected video information from the recording medium (“hard drive”). LG-1003, ¶101. Bryant discloses capturing “motion video images” with a camera and loading them onto a home computer on which the images can be “**viewed**, stored, retrieved and printed.” LG-1005, [0003] (emphasis added), [0036]-[0038], [0080]-[0081]. A POSITA would have understood that a reason to transfer a video (“motion video image”) to a user’s computer is to reproduce for display and viewing (e.g., playback) the video from the recording medium when the user wants to view it. LG-1003, ¶101; LG-1005, [0036]. Moreover, a POSITA would have understood that “retrieving” an image, per Bryant, further teaches or suggests reproducing an image, especially in the case of retrieving those images for “viewing.” LG-1003, ¶101. Thus, Bryant discloses or renders obvious reproduction from a recording medium with a reproducing unit for display, for example, on display monitor 14. *Id.*; LG-1005, FIG. 1.

A POSITA would have understood that the purpose of Bryant’s multimedia platform is to organize, display, and **play back** digital content, such as video. LG-1003, ¶¶102-104. Moreover, reproducing the user selected video information

(“motion video images”) from a plurality of video information recorded on a recording medium by a recording unit were well-known (*see* §II.A (Technology Background)), and a POSITA would have understood that Bryant’s computer coupled to a display device “execut[ing] software stored on a hard drive 20, for example, the well-known Windows XP operating system software and the Internet Explorer web browser software” would have been capable of playing back video. *See* LG-1005, [0037]-[0038]; LG-1003, ¶104 (“[A] POSITA would have understood that Bryant’s system would play back the videos using the known programs that were commonly available at that time.”).

To the extent it is argued that [1.c] is not disclosed, a POSITA would have been motivated to incorporate video playback in Bryant’s system. LG-1003, ¶105. As Dr. Cockburn explains, “users in this time frame would have wanted to use the available functions on their computer to access all of the media produced by their digital cameras, and would have expected as much given the state of the art.” *Id.* (“The inclusion of such a standard feature would have been well within the skill of a POSITA.”).

Moreover, a POSITA would have understood that the “hard drive 20” of Bryant necessarily includes a circuitry (“reproducing unit”), e.g., a hard disk controller, that serves as an intermediary between physical storage platter of the hard drive and the CPU in order to retrieve data from memory to display “images and

information ... on the display monitor 14 as a computer user interface screen (GUI screen).” LG-1003, ¶¶106-108; LG-1005, [0149], FIGS. 7A-7B, 9A-9C, 15-16. Indeed, such circuitry was well known long before the Critical Date to include in hard drives to provide buffering, error correction, servo control, etc. for reading data from the hard drive. LG-1023, 1:11-46, 2:64-4:18, FIGS. 1-2; LG-1024, 5:50-6:4, FIG. 2; LG-1025, Abstract, 3. In particular, the hard drive necessarily includes circuitry to send and receive signals from a transducer head in the hard drive “during read and write operations performed on the [hard] disk.” LG-1023, 3:16-18; LG-1003, ¶108.

[1.d]

Bryant discloses or renders obvious a controller (“CPU motherboard”). LG-1005, [0037], [0038], [0039], [0088], [0098], FIG. 1; LG-1003, ¶109. The CPU motherboard is connected to the hard drive that stores the image/video files and to the display monitor 14 and controls the display, by the display monitor, of thumbnails and images. LG-1005, [0038], [0088], [0098], FIG. 1. Thus, a POSITA would have understood that Bryant’s CPU motherboard controls display of content by the display monitor. LG-1003, ¶109.

[1.e]

Bryant discloses or renders obvious that, when a first group of video data (e.g., “All Favorites”) is selected in the menu display by specifying a position of a

character (e.g., selecting and determining a position of a character) corresponding to the first group of video information (e.g., the user has selected “All Favorites” “[b]y moving a selector 842 within [the] display selection area 840”), the controller controls the output unit to display a first group of thumbnails corresponding to the first group of video information (circled in red below in FIG. 9B). LG-1005, [0089]-[0103], FIGS. 9A-9C; LG-1003, ¶¶110-113; *see also* LG-1001, 5:67-6:8.

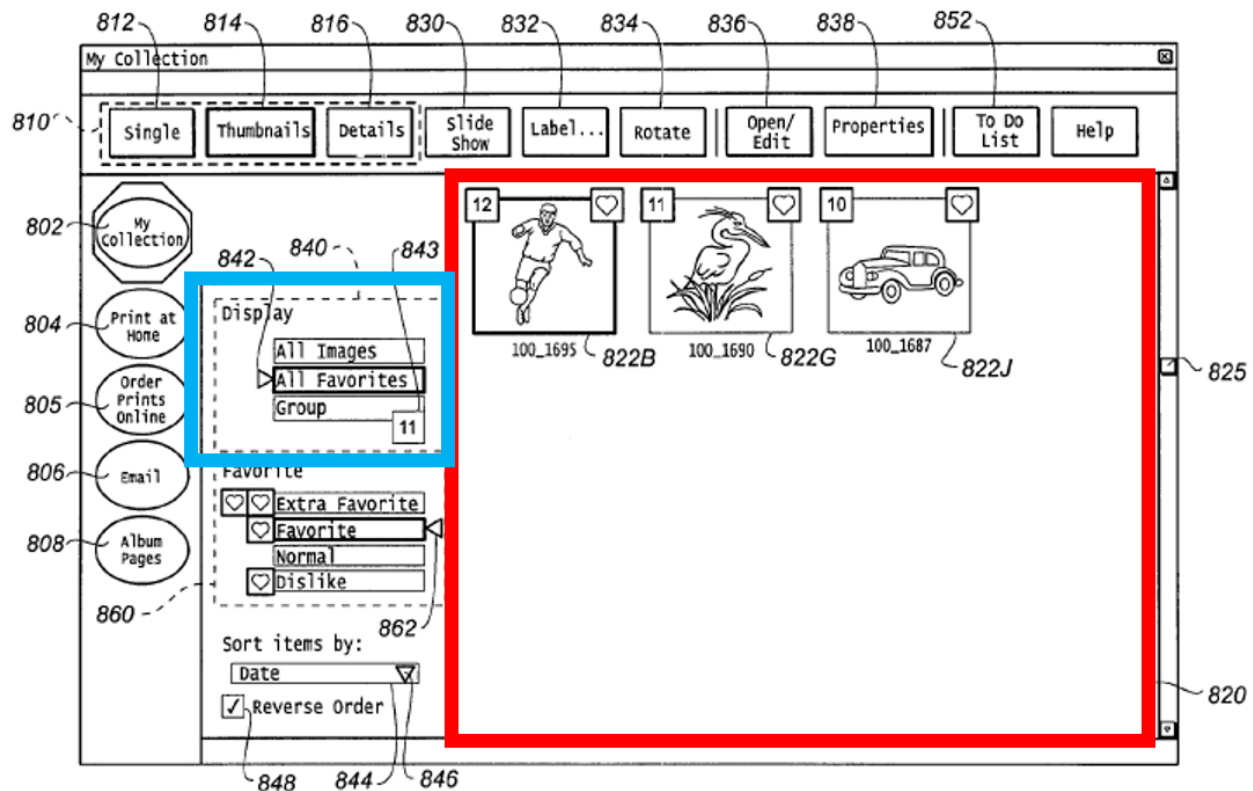


FIG. 9B

LG-1005, FIG. 9B (annotated)

[1.f]

Bryant discloses or renders obvious that, when a second group of video data (e.g., “All Images”) is selected in the menu display by specifying a position of a

character (e.g., selecting and determining a position of a character) corresponding to the second group of video information (e.g., the user has selected “All Images” “[b]y moving a selector 842 within [the] display selection area 840”), the controller controls the output unit to display a second group of thumbnails corresponding to the second group of video information (circled red below in FIGS. 9A for “All Images”). LG-1005, [0089]-[0103], FIGS. 9A-9C; LG-1003, ¶¶114-115; *see also* LG-1001, 5:67-6:8.

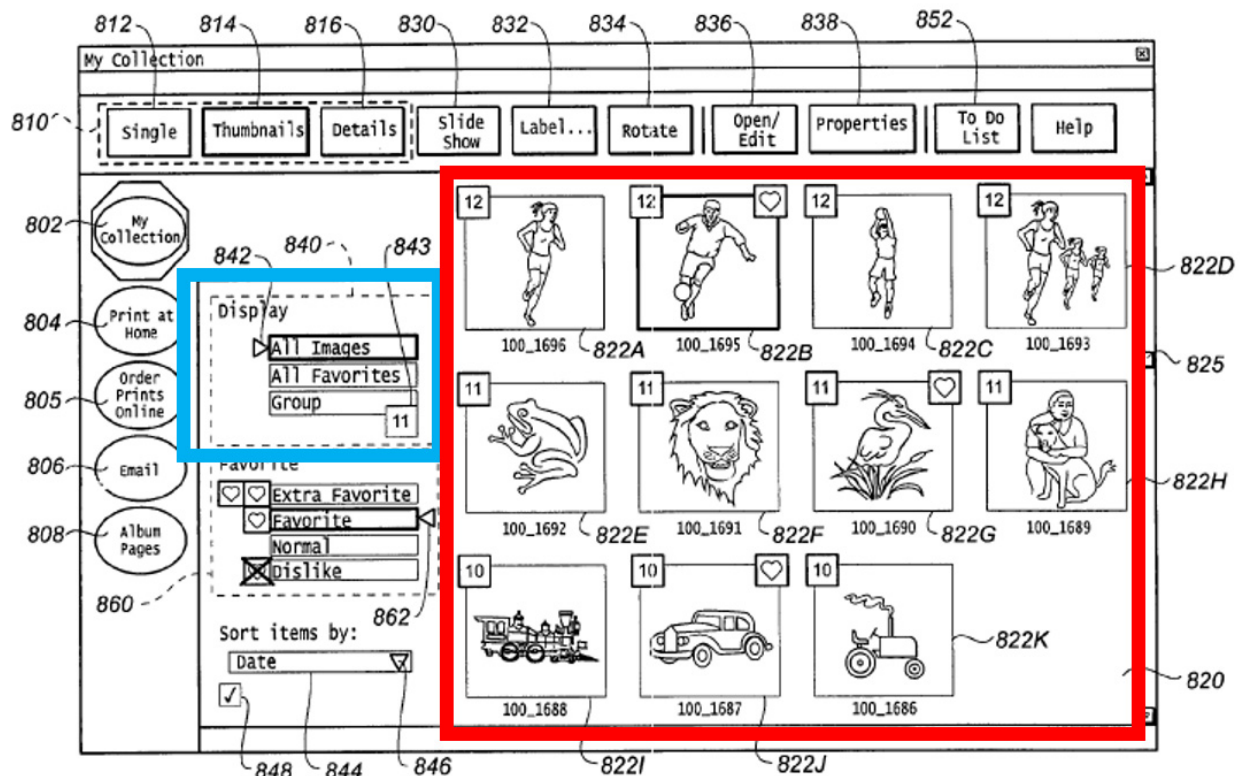


FIG. 9A

LG-1005, FIG. 9A (annotated)

[1.g]

Bryant discloses or renders obvious [1.g]. LG-1005, [0082]-[0087], [0096]-[0101], FIG. 8; LG-1003, ¶¶116-123.

For example, Bryant discloses a local database with an assets table 600 and data fields 610 for a given media object:

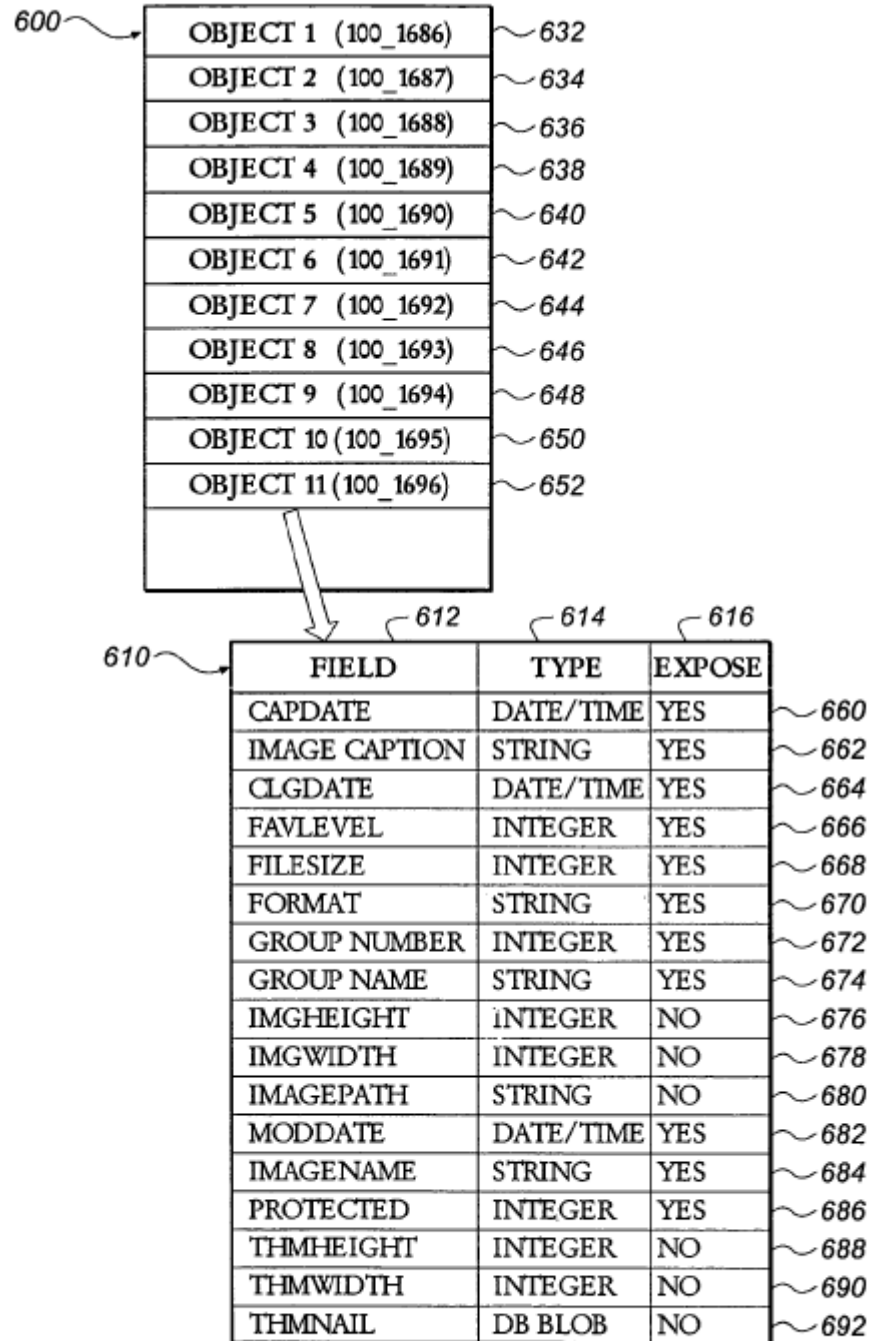


FIG. 8

LG-1005, FIG. 8

Given this structure—and the interfaces shown in FIGS. 9A-9C—a POSITA would have understood that a media file can be simultaneously classified in multiple categories in Bryant. LG-1003, ¶¶117-118. For example, the media file corresponding to the crane, 100_1690 (822G), is classified as a “Favorite,” as part of “Group/ 11,” and is included in “All Images.” LG-1005, FIGS. 9A-9C.

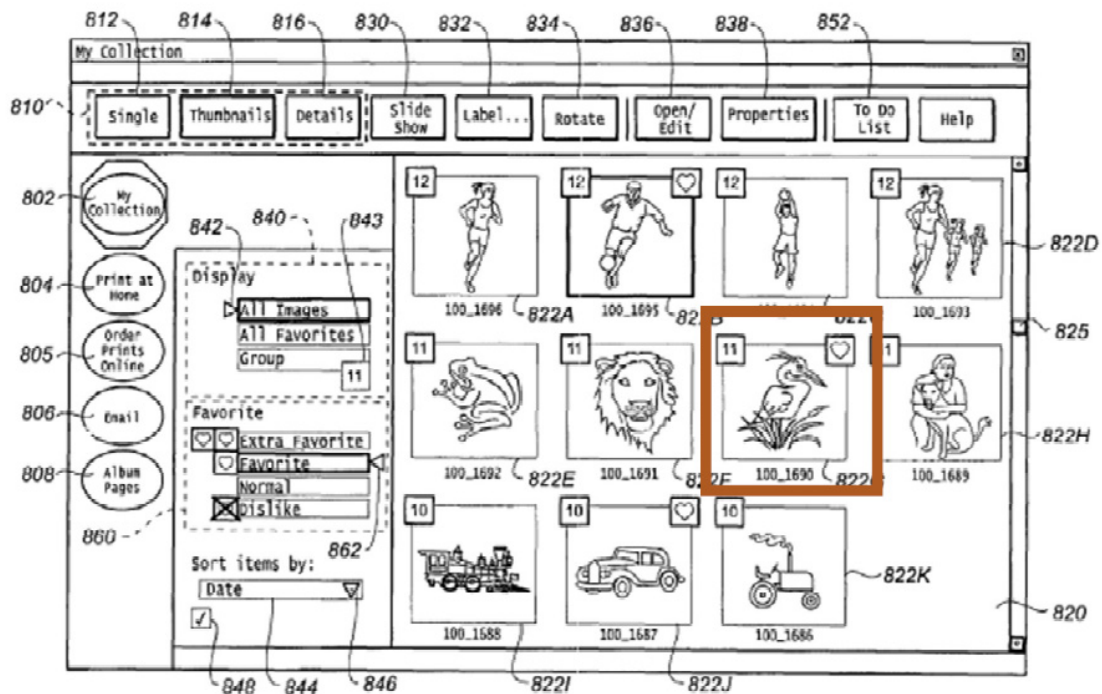


FIG. 9A

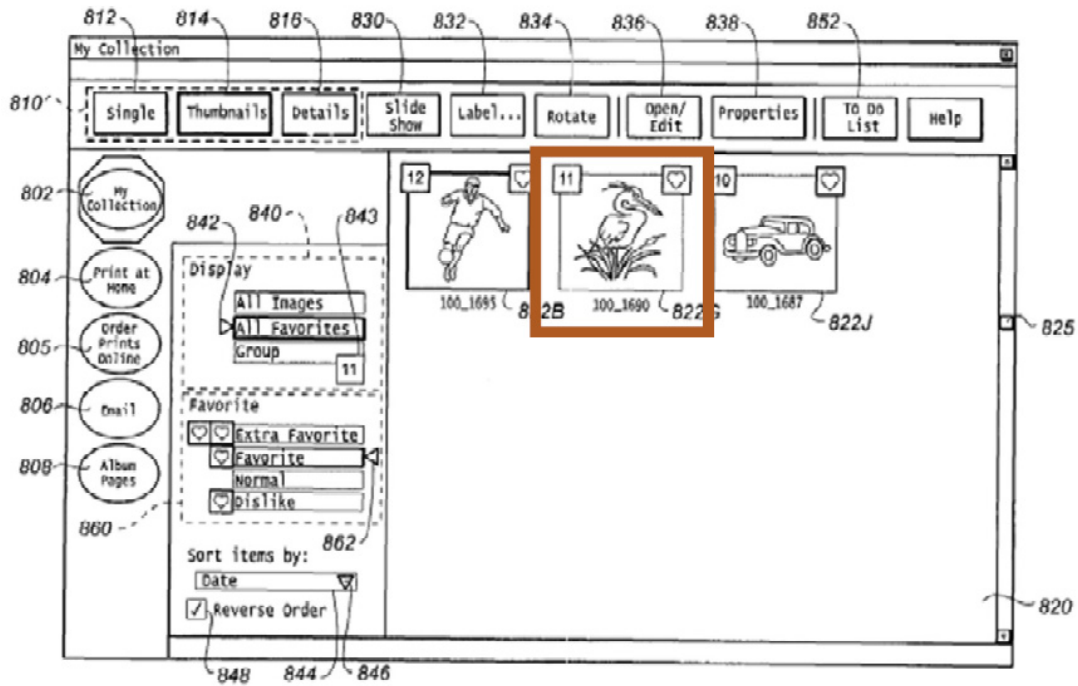


FIG. 9B

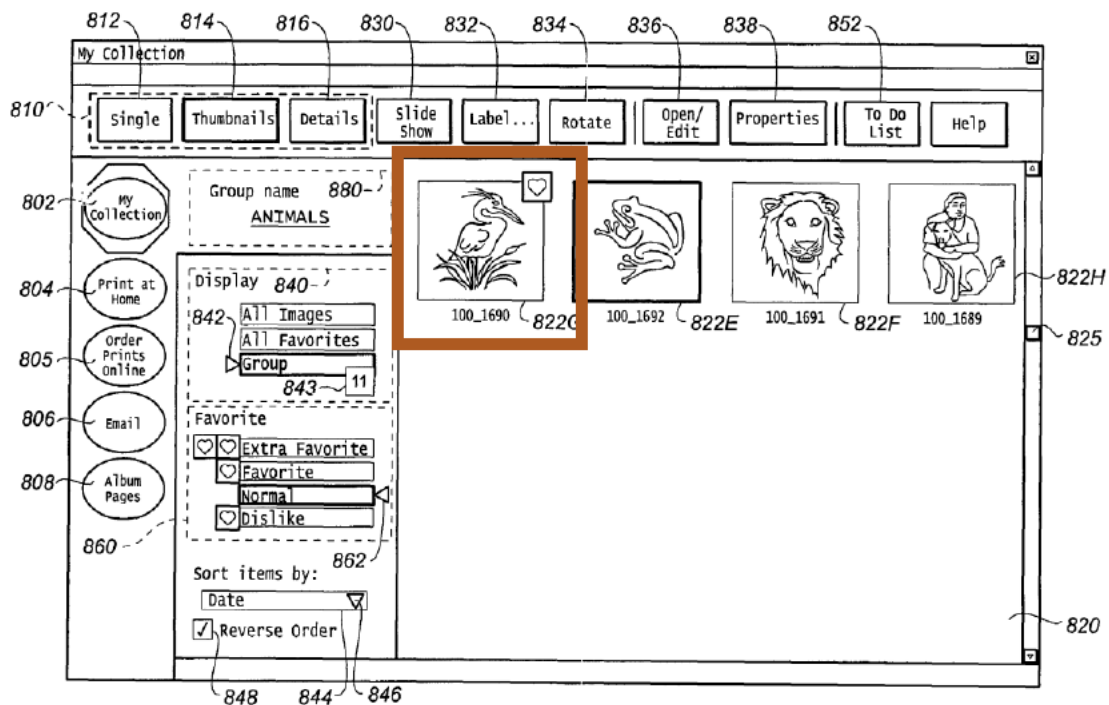


FIG. 9C

LG-1005, FIGS. 9A-9C (annotated)

A POSITA would have recognized from Bryant that, if the crane media object were removed as a favorite, the media object would continue to be included in the “All Images” and “Group/11” groups, with its thumbnail continuing to be displayed as one of the thumbnails in the All Images” and “Group/11” groups. LG-1005, [0100]; LG-1003, ¶119. Rather than being deleted from other groups, merely the favorite information is reset and the media object is retained in the e.g., “All Images” group. LG-1005, [0100]; *see id.*, [0082]-[0087], [0096]-[0099], [0101] (“the favorites ***metadata is updated*** in the general assets table 600, and the icon displayed next to each thumbnail image is also updated, as was described earlier in relation to block 138”) (emphasis added).

Moreover, a POSITA would have understood that a user would expect to be able to modify groups independently by deleting a video from one group (such as its inclusion in All Favorites), without removing its membership in a second group (such as All Images or Group/11). LG-1003, ¶120 (“that would have limited the utility of the system and caused confusion for the user”). Thus, to the extent it is argued that Claim Element [1.g] is not disclosed in Bryant, it would have been obvious in view of Bryant. *Id.*, ¶¶121-122. In practice, this is accomplished using references to data stored in memory that are called “pointers, and the use of pointers to data objects, such as video files, was well-known and commonplace, and

Bryant expressly indicates the use of pointers. LG-1005, [0081]-[0083], [0086]; LG-1003, ¶¶122, 289-291 (citing Horn’s teachings); *see* §II.A, §III.D.1-2.

Additionally, a POSITA would have understood that, because the video remained in the second group, its thumbnail would also remain when the second group of thumbnails is displayed, given the way that Bryant displays thumbnails associated with a group when that group is selected. LG-1003, ¶123; LG-1005, FIG. 3B (explaining the flow of steps 146-148-162-128-130-132-134).

3. Claim 2

[2.a]

Bryant discloses [2.a]. LG-1005, [0098]-[0102], [0254]-[0256], FIGS. 3B, 9A-9C; LG-1003, ¶¶124-125.

As shown in FIG. 9B, below, a first character (one or more letters of “All Favorites”) corresponding to the first group of video information (“All Favorites” folder) is displayed in a first area (circled blue) when the first group of thumbnails is displayed (circled red). LG-1005, [0099]-[0102], FIG. 9B. Bryant explains that, if “the user selects the ‘Display Favorites’ option, for example, by selecting the ‘All Favorites’ option using selection window 840 in FIG. 9A,” then, in FIG. 9B, “GUI screen 800B displays in area 820 the thumbnail images 822B, 822G, and 822J that correspond to favorite images.” LG-1005, [0098]-[0099]; FIGS. 9A-9B.

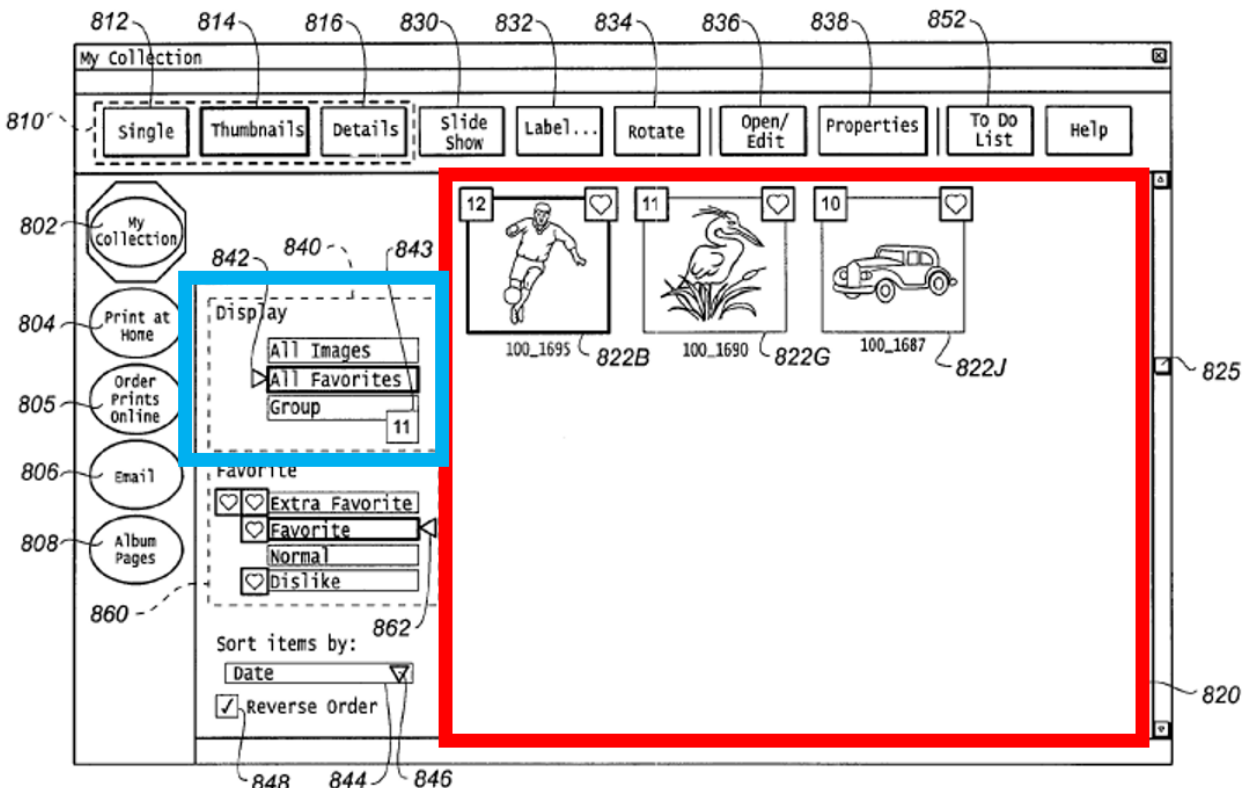


FIG. 9B

LG-1005, FIG. 9B (annotated)

[2.b]

Bryant discloses [2.b]. LG-1005, [0088]-[0090], [0098]-[0102], [0254]-[0256], FIGS. 3B, 9A-9C; LG-1003, ¶¶126-127; *see* [2.a].

As shown in FIG. 9A, below, a second character (one or more letters of “All Images”) corresponding to the second group of video information (“All Images” folder) is displayed in the first area (circled blue) when the second group of thumbnails is displayed (circled red). LG-1005, [0089]-[0098], FIG. 9A. Referencing

FIG. 9A, Bryant explains that, “[b]y moving a selector 842 within a display selection area 840, the user can select a display of ‘All Images,’” and the thumbnails in the “All Images” folder are displayed. LG-1005, [0089], FIG. 9A.

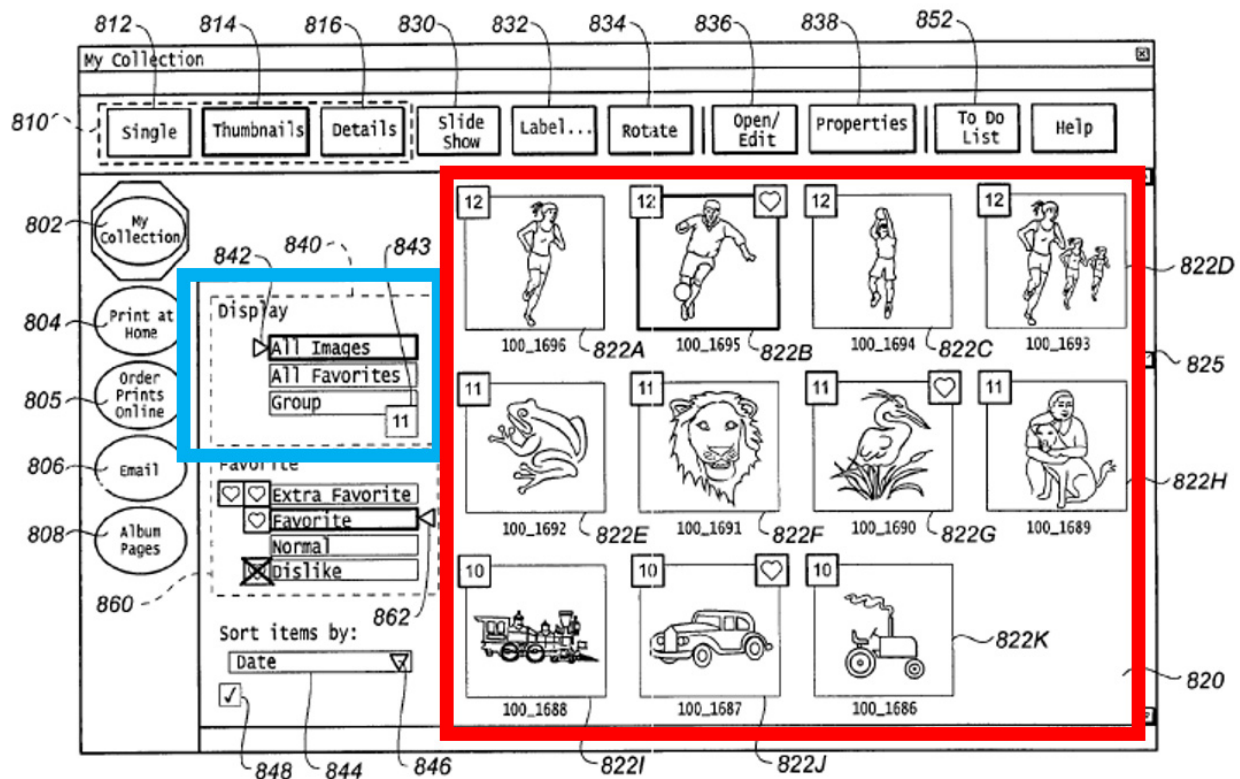


FIG. 9A

LG-1005, FIG. 9A (annotated)

4. Claim 3

[3.a]

Bryant discloses [3.a]. LG-1005, [0088]-[0090], FIGS. 3B, 9A-9C; LG-1003, ¶¶128-129; *see* [2.a]-[2.b]. As shown in FIG. 9B, below, the first group of

thumbnails (thumbnails in the “All Favorites” folder) is displayed in a second area (circled red) that is different from the first area (circled blue). LG-1005, FIG. 9B.

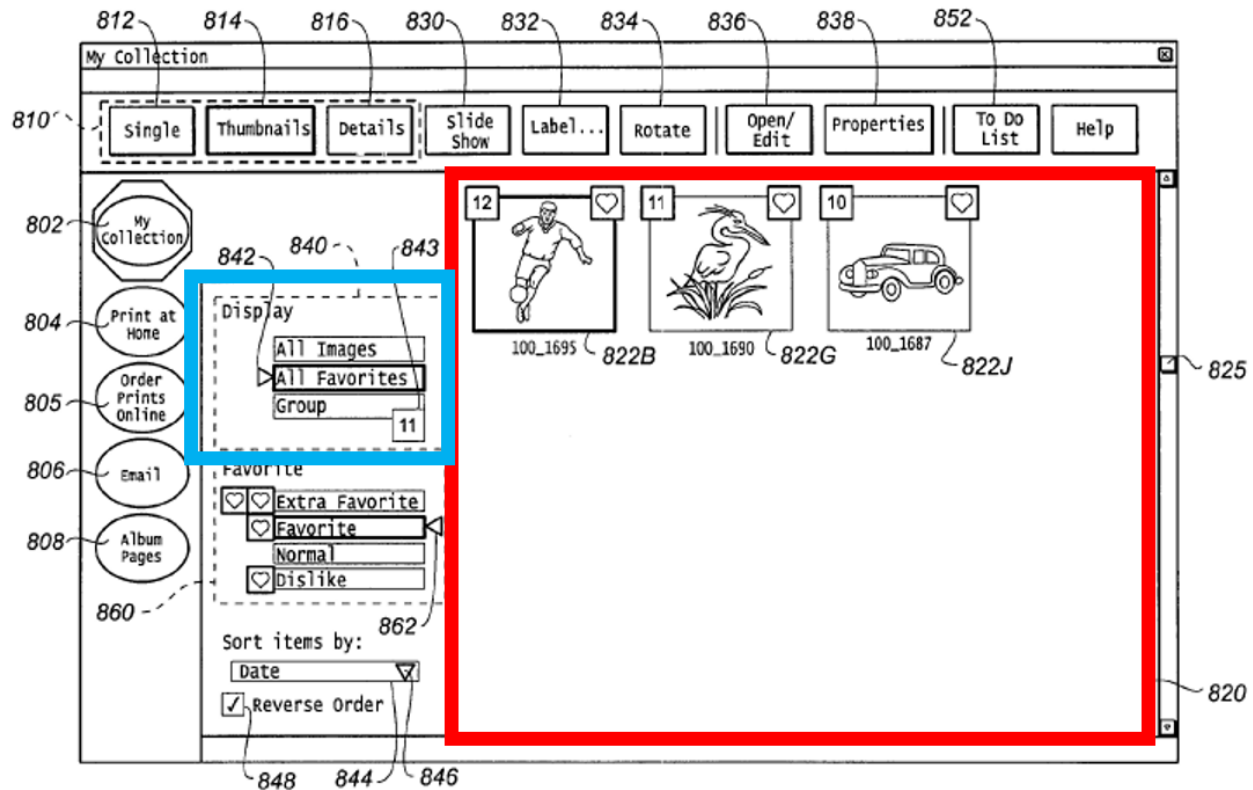


FIG. 9B

LG-1005, FIG. 9B (annotated)

[3.b]

Bryant discloses the controller controlling the output unit to display the second group of thumbnails in the second area when the second group of thumbnails is displayed. LG-1005, [0088]-[0090], FIGS. 3B, 9A-9C; LG-1003, ¶¶130-131; *see* [3.a]. As shown in the examples of FIG. 9A, below, the second group of thumbnails (thumbnails in the “All Images” folder) is displayed in a second area

(circled red) that is different than the first area (circled blue). LG-1005, FIG. 9A;

see also id., FIG. 9C.

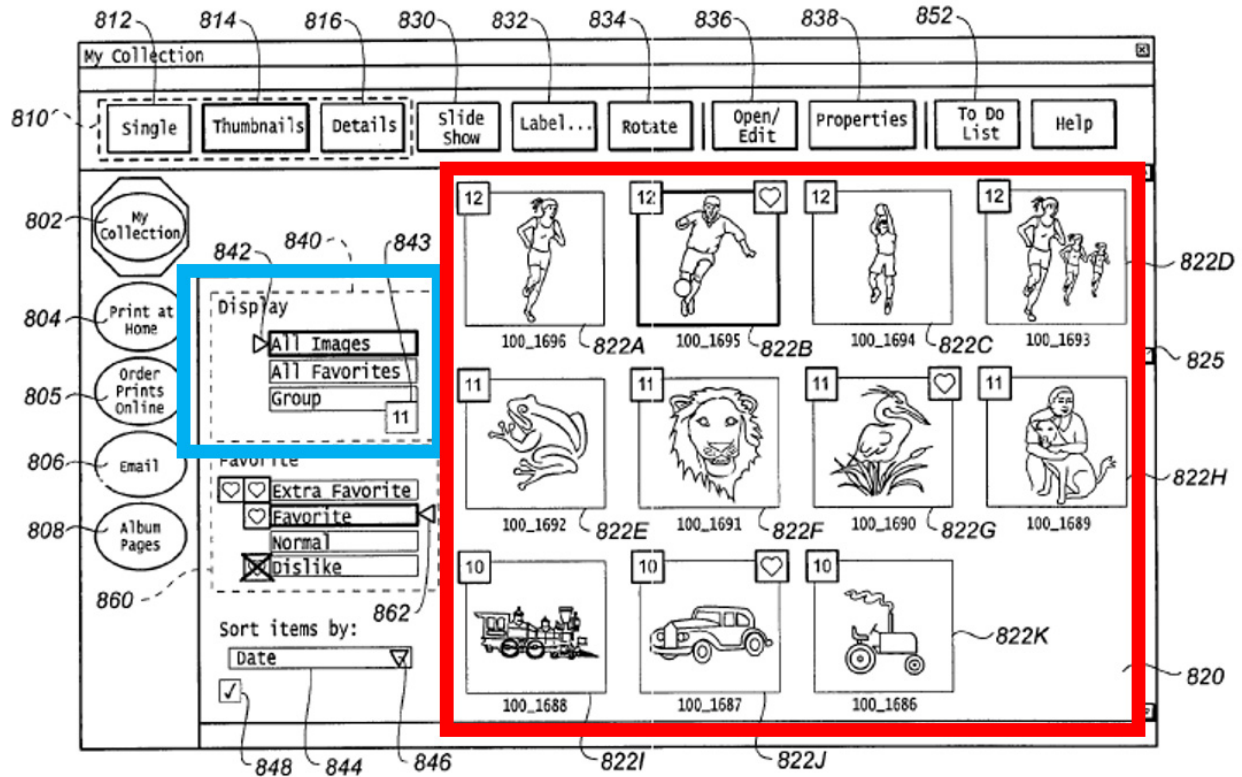


FIG. 9A

LG-1005, FIG. 9A (annotated)

5. Claim 4

[4]

See [1.g].

A POSITA would have understood that, if deleting the one video data from the first group of video data does not delete the one video data from the second group of video data, then it would have been obvious for the one video data to re-

main recorded on the recording medium, at least so that it can continue to be available in the second group of video data. LG-1003, ¶¶132-133. For instance, a POSITA would have found it obvious that deleting one video data from the “All Favorites” group would not remove that data from the “All Images” group. *Id.* In order for the data to remain in the “All Images” group, a POSITA would have found it obvious for the data to remain recorded on the recording medium. *Id.*

6. Claim 5

[5.pre]

See [1.pre].

[5.a]

See [1.a].

[5.b]

See [1.c].

[5.c]

See [1.b].

[5.d]-[5.f]

See [1.e]-[1.g].

7. Claim 6

See [2.a]-[2.b].

8. Claim 7

See [3.a]-[3.b].

9. Claim 8

See [4].

10. Claim 9

[9.pre]-[9.c]

See [1.pre]-[1.c].

[9.d]

See [1.d]-[1.e].

[9.e]

See [1.d], [1.f].

[9.f]

See [1.g].

11. Claim 10

See [2.a]-[2.b].

12. Claim 11

See [3.a]-[3.b].

13. Claim 12

See [4].

14. Claim 13

[13.pre]

See [1.pre].

[13.a]

See [1.a].

[13.b]

See [1.c].

[13.c]

See [1.b].

[13.d]

See [1.d].

[13.e]

See [1.b].

[13.f]-[13.h]

See [1.e]-[1.g].

15. Claim 14

See [2.a]-[2.b].

16. Claim 15

See [3.a]-[3.b].

17. Claim 16

See [4].

B. [GROUND 2] – Kaplan Renders Claims 1-16 Obvious

1. Kaplan (LG-1004)

Kaplan is directed to “a multimedia management system for storing, manipulating, and displaying multimedia content.” LG-1004, [0004]. To facilitate the storage and subsequent retrieval of multimedia data files, the system includes a user interface with a plurality of predefined functions to uniquely index multimedia files, create an index database file, and create visual representations of the files for

later retrieval. *Id.*, [0044]. The indexed file stores a pointer in a management system database to a physical file location, while providing a thumbnail image that can be used to represent the file in the user interface. *Id.* Multiple pointers in the database may be related to a single physical file stored on computer media, so there is no need to store multiple physical files of the same multimedia data. *Id.*

Figure 4 of Kaplan is reproduced below.

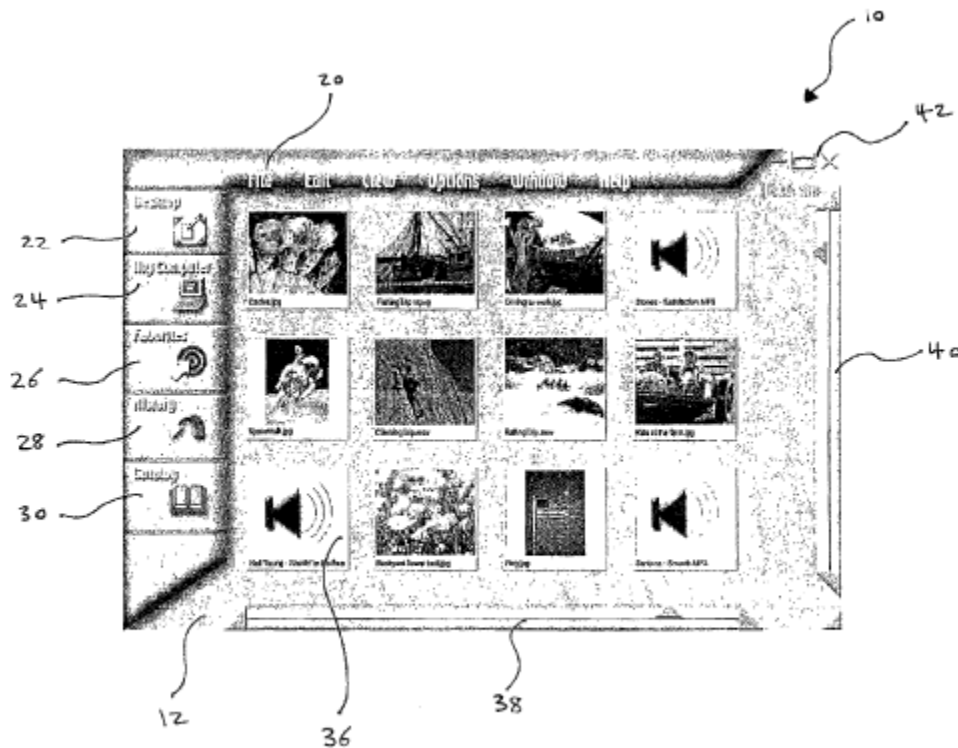


FIG-4

LG-1004, FIG. 4.

Figure 4 is a graphical representation of control options available to a user via interface 12 that can be displayed on a “monitor or TV.” LG-1004, [0014], [0039]. Functions associated with user interface 12 may be carried out via control

buttons for various primary options in user interface 12, including Desktop 22, My Computer 24, Favorites 26, History 28, and Catalog 30. *Id.*, [0039]-[0040]. For example, users may store their favorite multimedia content by way of the Favorites 26 primary option. *Id.*, [0042]. All information and multimedia content is displayed through thumbnails 36, which are small image representations of larger images. *Id.*, [0040]. A user may click on thumbnails to view and/or listen to multimedia content. *Id.*, [0050]. Playback may occur within the thumbnail itself, in a partial screen mode, or in a full screen mode. *Id.*, [0051].

2. Claim 1

[1.pre]

To the extent the preamble is limiting, Kaplan discloses or renders obvious [1.pre]. LG-1004, [0004], [0037], [0038] (“multimedia management system 10 for storing, manipulating, and displaying multimedia content”), [0043]-[0044], [0068], [0069]; LG-1003, ¶¶172-173.

Kaplan discloses a “multimedia management system for storing, manipulating, and displaying multimedia content” selected by a user, and can be implemented on a number of devices, including a computer. LG-1004, [0004], [0037]-[0038], [0068]-[0069]; LG-1003, ¶173. The computer may further include a computer-readable storage medium for storing multimedia content, such as video infor-

mation. LG-1004, [0034] (“Any suitable computer readable medium may be utilized including hard disks.....”), claim 7 (“storing a multimedia data file in a data storage system”). Both the recording medium and the recording unit are disclosed as being on the display side. LG-1004, [0034], [0037]-[0038], [0068]-[0069].

[1.a]

Kaplan discloses or renders obvious a recording unit configured to record/store a plurality of video data/information (“multimedia data file”; “multimedia content, which can include digital video”) on a recording medium (“hard disks, flash memory cards, CD-ROMs, optical storage devices, or magnetic storage devices”). LG-1004, Abstract, [0004], [0034], [0037], [0038], [0068], [0069], [0070] (“high density removable media”), [0071], claim 7 (“storing a multimedia data file in a data storage system”); LG-1003, ¶¶174-177. In particular, Kaplan explains that the “system provides users with a simple and intuitive method and computer program for reviewing multimedia content, which can include digital video,” and that the “multimedia management system [is] for storing, manipulating, and displaying multimedia content,” including “digital video.” LG-1004, Abstract, [0004]; *see id.*, [0038]. Kaplan explains that “[a]ny suitable computer readable medium may be utilized including hard disks, flash memory cards, CD-ROMs, optical storage devices, or magnetic storage devices.” LG-1004, [0034].

A POSITA would have understood that, for example, the “hard disk” of Kaplan necessarily includes a circuitry (“recording unit”), e.g., a hard disk controller, that serves as an intermediary between the CPU and the physical storage platter of the hard drive in order to read data from the disk drive. LG-1003, ¶¶175-177. Indeed, such circuitry was well known long before the Critical Date to include in hard drives to provide buffering, error correction, servo control, etc. for reading data from the hard drive. LG-1023, 1:11-46, 2:64-4:18 (“control system”), FIGS. 1-2; LG-1024, 5:50-6:4 (“embedded disk controller Printed Circuit Board (PCB)”), FIG. 2; LG-1025, Abstract, 3.

[1.b]

Kaplan discloses or renders obvious an output unit (computer monitor or television) that performs the function of outputting a menu display (user interface 12) for a user to select one group of video information (e.g., “Desktop”) among a plurality of groups of video information (e.g., “Desktop,” “My Computer,” “Favorites,” “History,” “Catalog”) by specifying a position of a character (“To select one of the primary options, the user typically will move and click a mouse pointer over the desired button.”) corresponding to the one group of video information. LG-1004, [0039]-[0040], [0050]-[0051], [0056]-[0057], FIGS. 1 (“user interface”), 3 (“user interface”), 4-12 (“user interface 12”), 14 (“user interface 12”), 16 (“user interface 12”), claim 16; LG-1003, ¶¶178-180; *see also* discussion of [1.e]-[1.f].

In particular, Kaplan explains that the “multimedia management system 10 may include a user interface 12 as shown in FIG. 2.” LG-1004, [0039]. “The interface 12 may also have control buttons 15 for controlling viewing and other operations associated with the multimedia management system 10, as well as organizing and handling media and media presentation.” LG-1004, [0039]. FIG. 3 shows the functions associated with the user interface 12. LG-1004, [0040]. “These functions may be carried out via control buttons provided in association with an interface such as shown in FIG. 2, or on a further interface accessed by the user, such as shown in FIG. 4.” LG-1004, [0040].

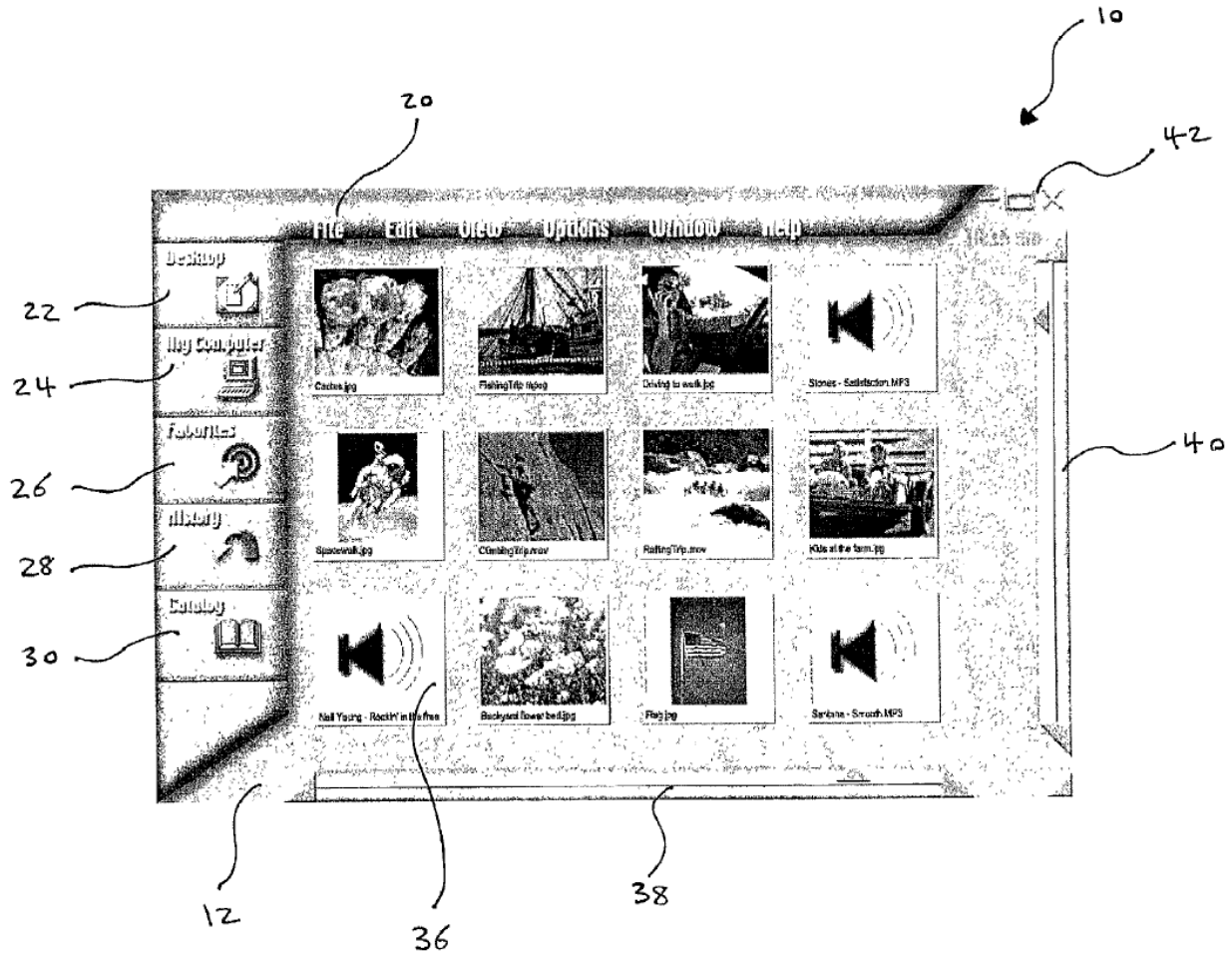
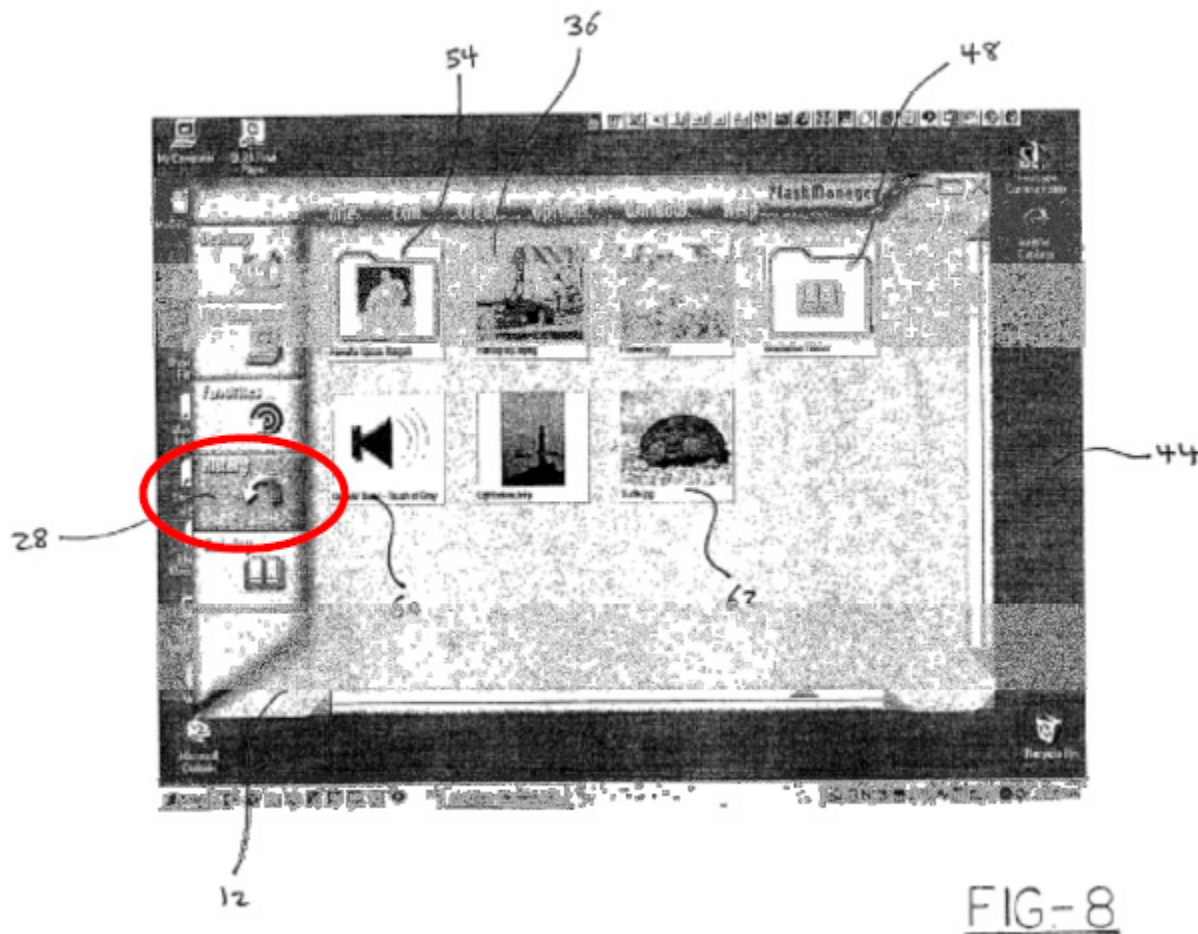


FIG. 4

LG-1004, FIG. 4

Kaplan's menu display is shown, for example, in Figure 8 (below), where a user has selected "History" (annotated below). LG-1004, FIG. 8; *see also id.*, FIGS. 7 ("Favorites"), 11 ("Catalog"). A POSITA would have understood that Kaplan's menu (interface 12) displays, for user selection, a group of video information (e.g., the displayed categories, such as "Favorites" or "History") among a plurality of groups of video information (e.g., "Desktop," "My Computer," "Favorites," "History," "Catalog"). LG-1003, ¶180. Kaplan explains that, "[t]o select

one of the primary options, the user typically will move and click a mouse pointer over the desired button,” thereby specifying a position of a character (e.g., selecting and determining the position of a character) that corresponds to the one group of video information (e.g., by clicking the mouse pointer on one or more characters in the name of the desired category, such as the “F” of “Favorites”). LG-1004, [0040]; *see also* LG-1001, 5:67-6:8. That is, a user specifies a position of a letter in the name of the desired category by clicking on a position of that character/letter where it is displayed on the user interface. *Id.*



LG-1004, FIG. 8 (annotated)

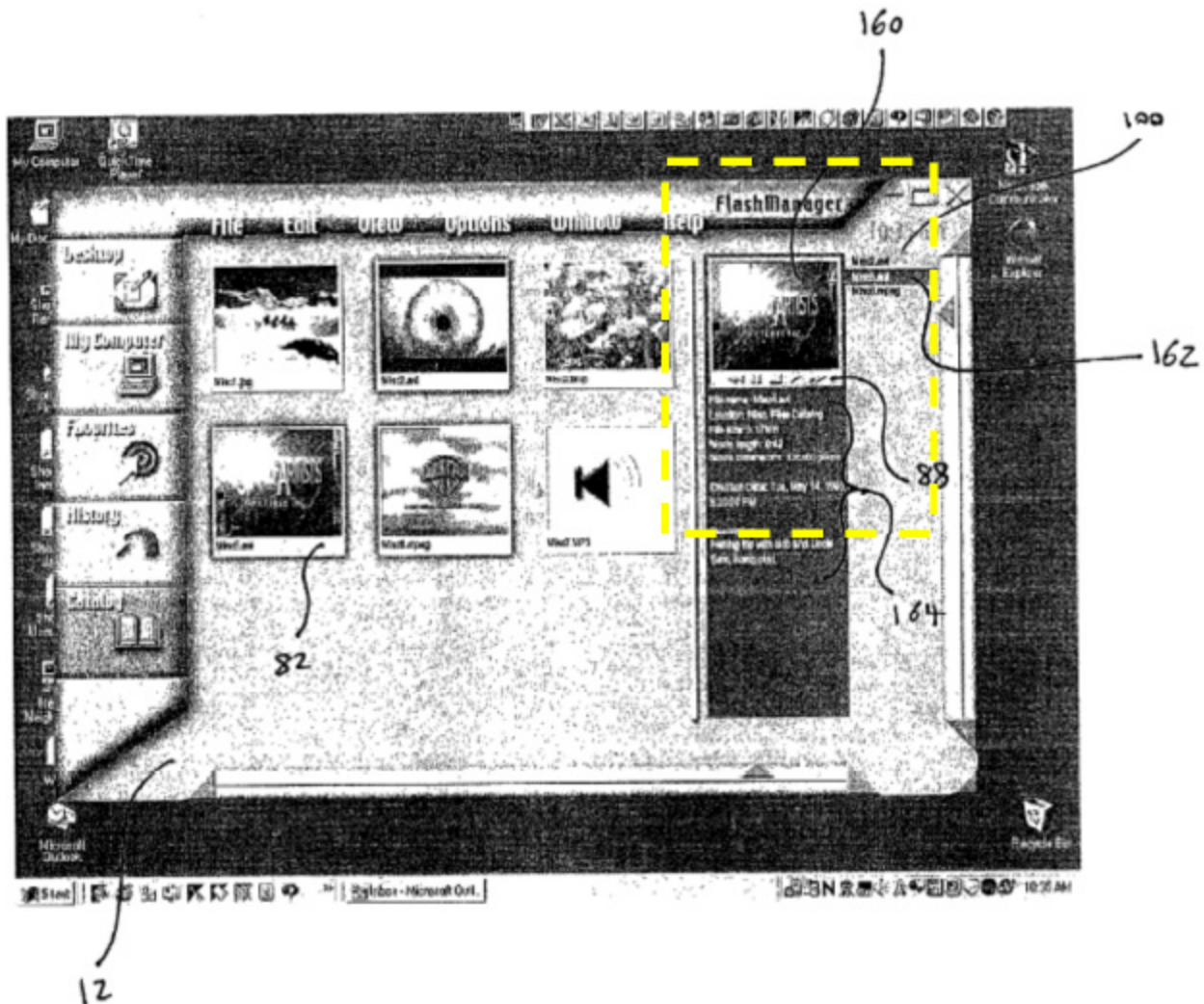
[1.c]

Kaplan discloses or renders obvious a reproducing unit configured to reproduce selected video information read out from the recording medium. LG-1004, [0004] (“multimedia management system for storing, manipulating, and displaying multimedia content” on a computer), [0006] (“Users activate video and audio multimedia content directly within thumbnails...”), [0034], [0037], [0038] (“displaying multimedia content,” “reviewing their multimedia content, which can include digital video”), [0044], [0050] (“thumbnails 80, 82, and 84 display images representing movies saved in the AVI and MPEG multimedia file formats”), [0051] (“allows users to play multimedia content, such as video and audio recordings”), [0052]-[0057], [0068]-[0069]; LG-1003, ¶¶181-186. Kaplan discloses a computer-readable storage medium for storing multimedia content, such as video information. LG-1004, [0034] (“Any suitable computer readable medium may be utilized including hard disks ...”), claim 7 (“storing a multimedia data file in a data storage system”).

Kaplan discloses an interface 12 for reproducing for display user selected video information from among a plurality of video information recorded on a recording medium by the recording unit (*e.g.*, computer). LG-1004, [0038] (“multimedia management system 10 for storing, manipulating, and displaying multimedia content”); *see* LG-1003, ¶¶181-182. For example, video files can be played

back directly from a user-selected thumbnail in the interface, as shown in FIG. 16.

LG-1004, [0057] (“For the convenience of the user, Player Controls 88 are included within the thumbnail 160, thereby allowing the user to preview the video/audio thumbnail selected while reviewing the detailed information.”), [0051] (“system 10 allows users to play multimedia content ... in place”), FIGS. 12, 13A-13B, 14 (“Play List,” element 100), 16. Video files can also be played “full screen.” LG-1004, [0057].



LG-1004, FIG. 16 (annotated)

To the extent that it is argued that [1.c] is not disclosed in Kaplan, it would have been obvious. LG-1003, ¶183 (“It would have been an obvious design choice to include reproduction, such that a user could enjoy the video, and the inclusion of such a standard feature would have been well within the skill of a POSITA”). The ’449 Patent itself admits that reproduction of video from a recording medium, for instance with a playlist, was “conventional.” *See* §II.A.

Moreover, a POSITA would have understood that the hard disk of Kaplan necessarily includes a circuitry (“reproducing unit”), e.g., a hard disk controller, that serves as an intermediary between physical storage platter of the hard drive and the CPU in order to retrieve data from memory to display “images and information ... on the display monitor 14 as a computer user interface screen (GUI screen).” LG-1003, ¶¶184-186; LG-1005, [0149], FIGS. 7A-7B, 9A-9C, 15-16. Indeed, such circuitry was well known long before the Critical Date to include in hard drives to provide buffering, error correction, servo control, etc. for reading data from the hard drive. LG-1023, 1:11-46, 2:64-4:18 (“the control system 202 sends to and receives signals from the head 114 during read and write operations performed on the disk 102”), FIGS. 1-2; LG-1024, 5:50-6:4 (“embedded disk controller Printed Circuit Board (PCB)”), FIG. 2; LG-1025, Abstract, 3 (“the servo block refers to general logic used in aiding the spinning of the discs and

in the positioning of the actuator on the disc”). In particular, the hard drive necessarily includes circuitry to send and receive signals from a transducer head in the hard drive “during read and write operations performed on the [hard] disk.” LG-1023, 3:16-18; LG-1003, ¶186.

[1.d]

Kaplan discloses or renders obvious a controller (“processor”). LG-1004, [0037]; LG-1003, ¶187. In particular, Kaplan explains that “various computers and/or processors may be used to carry out the present invention.” LG-1004, [0037] (“it should be understood that the **present invention could be implemented using other computers and/or processors**, including, but not limited to, mainframe computers and mini-computers”).

[1.e]

Kaplan discloses or renders obvious that, when a first group of video data (e.g., “Favorites” or “History”) is selected in the menu display (circled green) by specifying a position of a character (e.g., selecting and determining a position of a character) corresponding to the first group of video information (e.g., the user has selected “Favorites” or “History” by “mov[ing] and click[ing] a mouse pointer over the desired [Favorites or History] button”), the controller controls the output unit to display a first group of thumbnails corresponding to the first group of video

information (circled red below). LG-1004, [0040], [0042]-[0047] (discussing button displays, such as “Favorites,” “History,” and “Catalog”), [0048]-[0050], FIGS. 7-12, 14, 16; LG-1003, ¶¶188-192; *see also* LG-1001, 5:67-6:8.

The user interface 12 of Kaplan includes a first area (illustrated in blue) and a second area (illustrated in red) that are displayed within a menu display (illustrated in green). LG-1004, FIG. 4; *see also id.*, FIGS. 2, 5-12, 14, 16, 17 (each illustrating an interface with a similar layout); LG-1003, ¶¶79-82 (summarizing Kaplan’s menus).

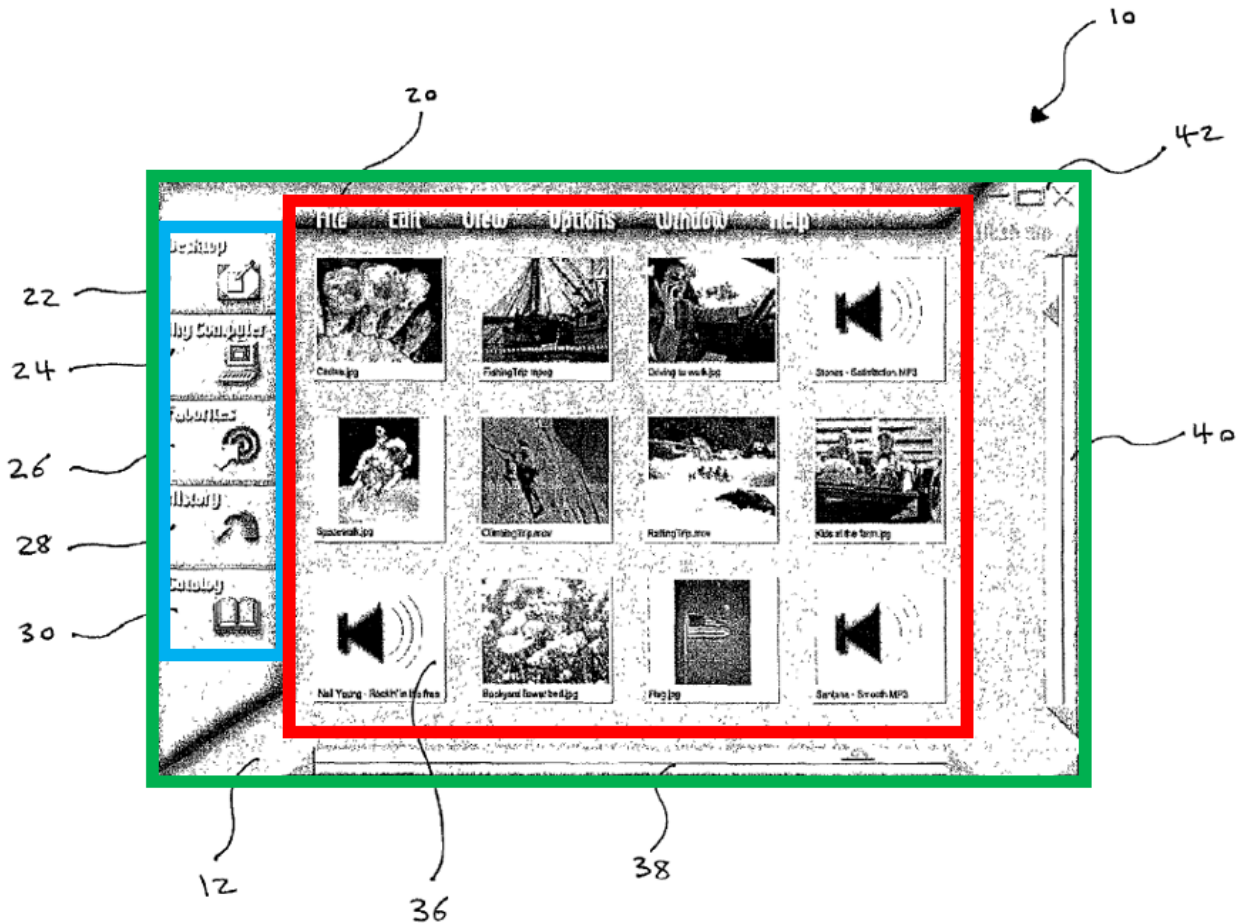
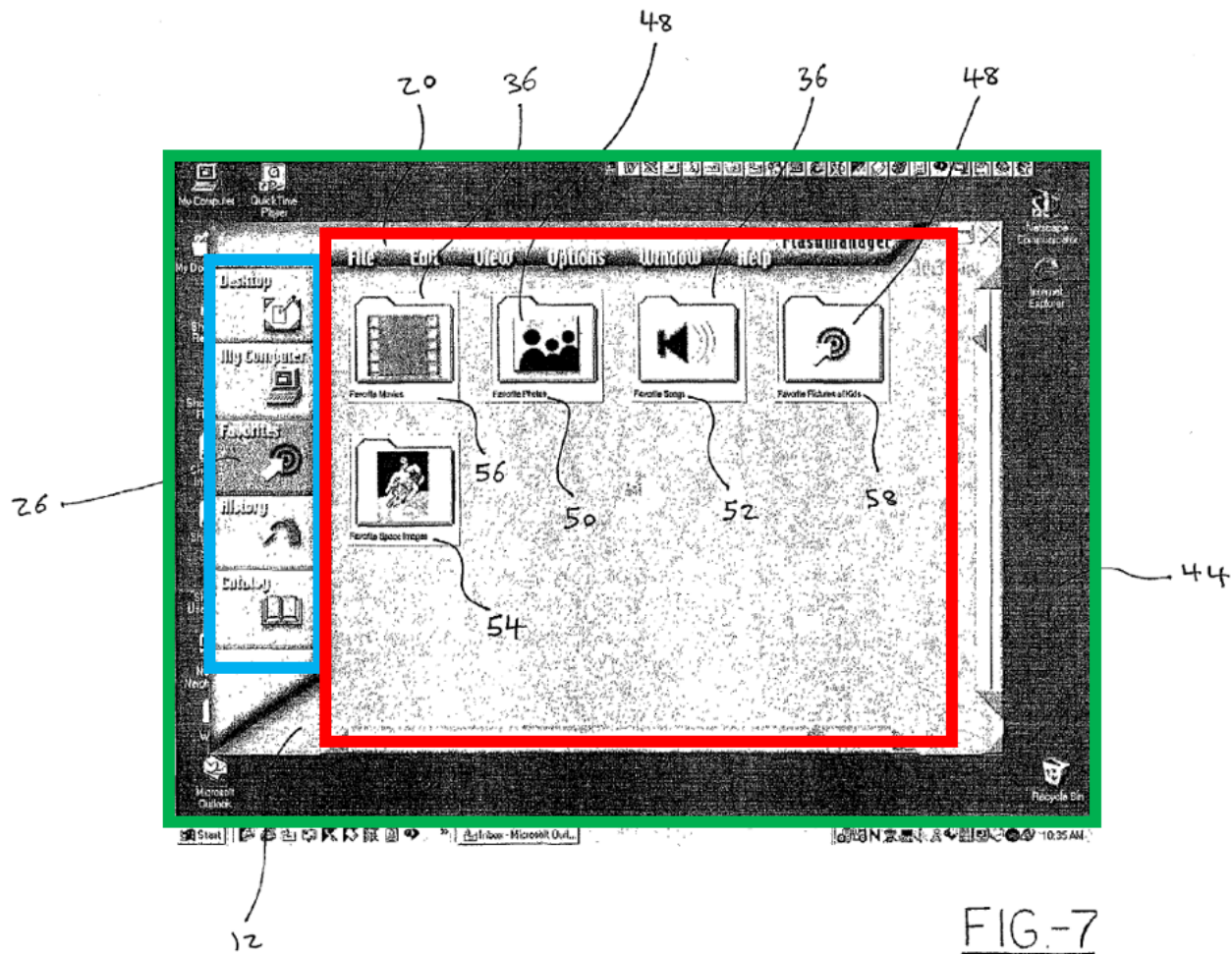


FIG.-4

LG-1004, FIG. 4 (annotated)

The first area (blue) is configured to display at least a first group of video information. LG-1004, FIGS. 2, 4-12, 14, 16-17; LG-1003, ¶190. The second area is configured to display thumbnails corresponding to video information recorded on the recording medium by the recording unit for a given, selected group of video information. LG-1004, [0044]-[0050], FIGS. 2, 4-12, 14, 16-17; LG-1003, ¶190. For instance, when a user selects “Favorites,” as shown in FIG. 7, the thumbnails corresponding to a user’s favorites are displayed on the interface by the display

monitor. LG-1004, [0040]-[0042], FIG. 7; *see also id.*, FIG. 8 (“History”), FIG. 11 (“Catalog”); LG-1003, ¶¶190 (“Thus, when a user specifies a position of a character corresponding to one group of video information, the corresponding thumbnails for the associated group of video information are shown in the second area.”), 79-82 (summarizing Kaplan’s menus).



LG-1004, FIG. 7 (annotated)

To the extent it is argued that Kaplan does not disclose this feature, the claimed menu features would have been obvious. LG-1003, ¶¶191-192. Each of the menu requirements was an obvious design choice given the state of the art and

knowledge of a POSITA at the time of the patent. *See* §II.A; LG-1003, ¶191. The inclusion of such standard menu features and media management techniques would have been well within the skill of a POSITA; Kaplan uses conventional components and programming. *See* LG-1003, ¶192; LG-1004, [0037]-[0038], [0040], FIG. 3 (“Operating System Standard Functions”).

[1.f]

Kaplan discloses or renders obvious that, when a second group of video data (e.g., “Catalog”) is selected in the menu display (circled green) by specifying a position of a character (e.g., selecting and determining a position of a character) corresponding to the second group of video information (e.g., the user has selected “Catalog” by “mov[ing] and click[ing] a mouse pointer over the desired [Catalog] button”), the controller controls the output unit to display a second group of thumbnails corresponding to the second group of video information (circled red below). LG-1004, [0040], [0042]-[0047] (discussing button displays, such as “Favorites,” “History,” and “Catalog”), [0048]-[0050], FIGS. 7-12, 14, 16; LG-1003, ¶¶193-195; *see also* LG-1001, 5:67-6:8.

For instance, when a user selects “History” (in first area circled blue) as shown in FIG. 8 below, “a predetermined number of thumbnails that the user has recently accessed” are displayed on the interface by the display monitor (in second area circled red). LG-1004, [0045], FIG. 8; *see also id.*, FIGS. 7 (“Favorites”),

FIG. 8 (“History”); LG-1003, ¶¶194 (“Thus, when a user specifies a position of a character corresponding to one group of video information, the corresponding thumbnails for the associated group of video information are shown in the second area.”), 79-82 (summarizing Kaplan’s menus).

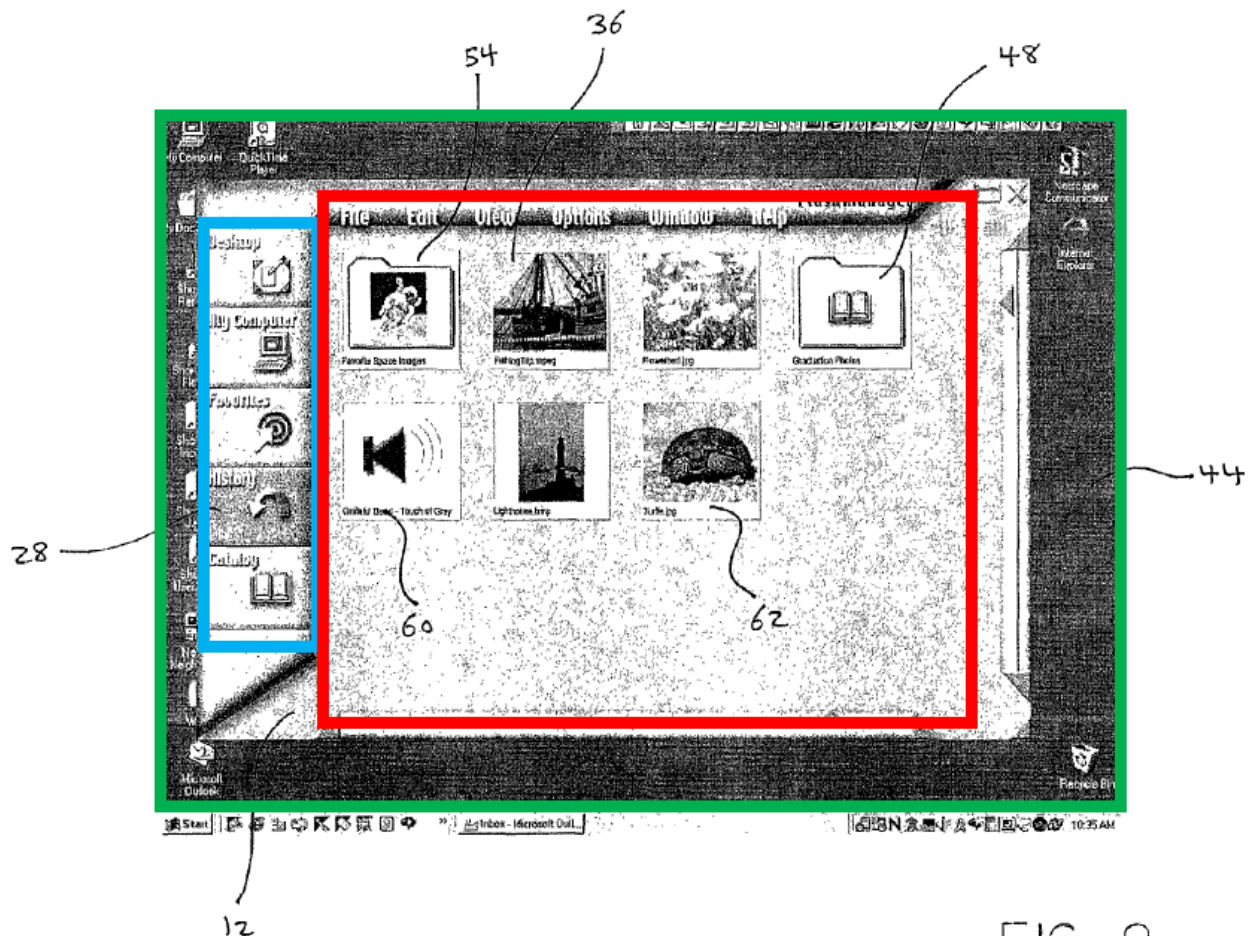


FIG-8

LG-1004, FIG. 8 (annotated)

To the extent it is argued that Kaplan does not disclose this feature, the claimed menu features would have been obvious. *See* [1.e]; LG-1003, ¶195.

[1.g]

Kaplan discloses or renders obvious [1.g]. LG-1004, [0042], [0044] (“The indexed file stores a pointer in the management system database to the physical file location, while providing a thumbnail image that can be used to represent the file in the management system user interface...”), FIGS. 7-12, 14, 16, claim 20; LG-1003, ¶¶196-201.

Through its use of an indexed database file and pointers, Kaplan discloses [1.g]. LG-1004, [0042], [0044] (describing Kaplan’s “visual inventory of all multimedia content ... to facilitate retrieval of desired content”), FIGS. 7-12, 14, 16, Kaplan claim 20; LG-1003, ¶¶197-201. Kaplan teaches that “[t]he indexed file stores a pointer in the management system database to the physical file location, while providing a thumbnail image that can be used to represent the file in the management system user interface.” LG-1004, [0044]. With indexed database file and pointers, the groups of video information in the different categories are “independently editable”—a single data file is represented by multiple representations in the user interface, when a representation in one group (*e.g.*, “Favorites”) is deleted, the representation of that file in other groups (*e.g.*, “History” or “Catalog”) remain. *See* LG-1003, ¶198. In fact, Kaplan included a claim to this very concept:

20. A system for managing multimedia data files comprising
a database of multimedia data files,
a user interface having representations of the data files, wherein ***multiple representations of a data file can be presented in the user interface,***

with any representation of a data file having a ***pointer to a single data file stored on computer readable memory.***

LG-1004, claim 20.

In Kaplan, content is indexed by the system for easy retrieval by reference to a relevant index file:

The indexed file stores a pointer in the management system database to the physical file location, while providing a thumbnail image that can be used to represent the file in the management system user interface. This allows multiple pointers in the media management database, which relate to a single physical file stored on computer media. Thus, there is no need to store multiple physical files of the multimedia data, thereby saving storage space. Additionally, the media management system ***allows organization of the multimedia files into virtual albums of favorite multimedia files for easy access,*** while archiving the source material.

LG-1004, [0044] (emphasis added).

A POSITA would have understood from Kaplan's description of its indexing and use of multiple pointers that, even if one video information recorded on the recording medium included in both the first group of video information and the second group of video information is deleted from the first group of video information, the one video information continues to be included in the second group of video information. LG-1003, ¶¶199-200 ("With its use of multiple pointers to a single, stored file: (1) video information recorded on a recording medium can be included in multiple groups (e.g., first and second groups); and (2), if video information is deleted from a first group ... it will continue to be included in a second

group.”). Additionally, a POSITA would have recognized that the way video information is included in a particular group is by including pointers to an indexed video. *Id.* (“In this way, if a pointer is removed from either group, the underlying indexed video and pointers to that video in other groups are not affected.”); LG-1004, [0042]. A POSITA would further have understood that, because the video remained in the second group, its thumbnail would also remain when the second group of thumbnails is displayed. LG-1003, ¶¶199-200.

To the extent that it is argued that [1.g] is not disclosed in Kaplan, it would have been obvious in view of Kaplan—the use of pointers to data objects, such as video files, was well-known and commonplace. LG-1003, ¶201; §II.A (Technology Background). It would have been an obvious design choice to include independently editable groups in Kaplan, and the inclusion of such a standard feature would have been well within the skill of a POSITA given the well-known and ubiquitous use of pointers in the field. As Dr. Cockburn states, “given the state of the art at the time, a user would have found the *absence* of such a feature surprising.” LG-1003, ¶201. Indeed, the well-known nature of this use of pointers is further corroborated by Bryant, whose teachings on this topic are consistent with those of Kaplan and further explicitly taught by Horn. *Id.*, ¶¶289-291 (citing Horn’s teachings); *see* §II.A, §III.D.1-2.

3. Claim 2

[2.a]

Kaplan discloses [2.a]. LG-1004, [0040] (“a primary set of options may be provided via an interface to a user”), [0042]-[0047] (discussing button displays, such as “Favorites,” “History,” and “Catalog”), [0048]-[0050]; LG-1003, ¶¶202-204.

For example, as shown in FIG. 4, below, the user interface 12 of Kaplan includes a first area (illustrated in blue) and a second area (illustrated in red) that are displayed within a menu display (illustrated in green). LG-1004, FIG. 4.

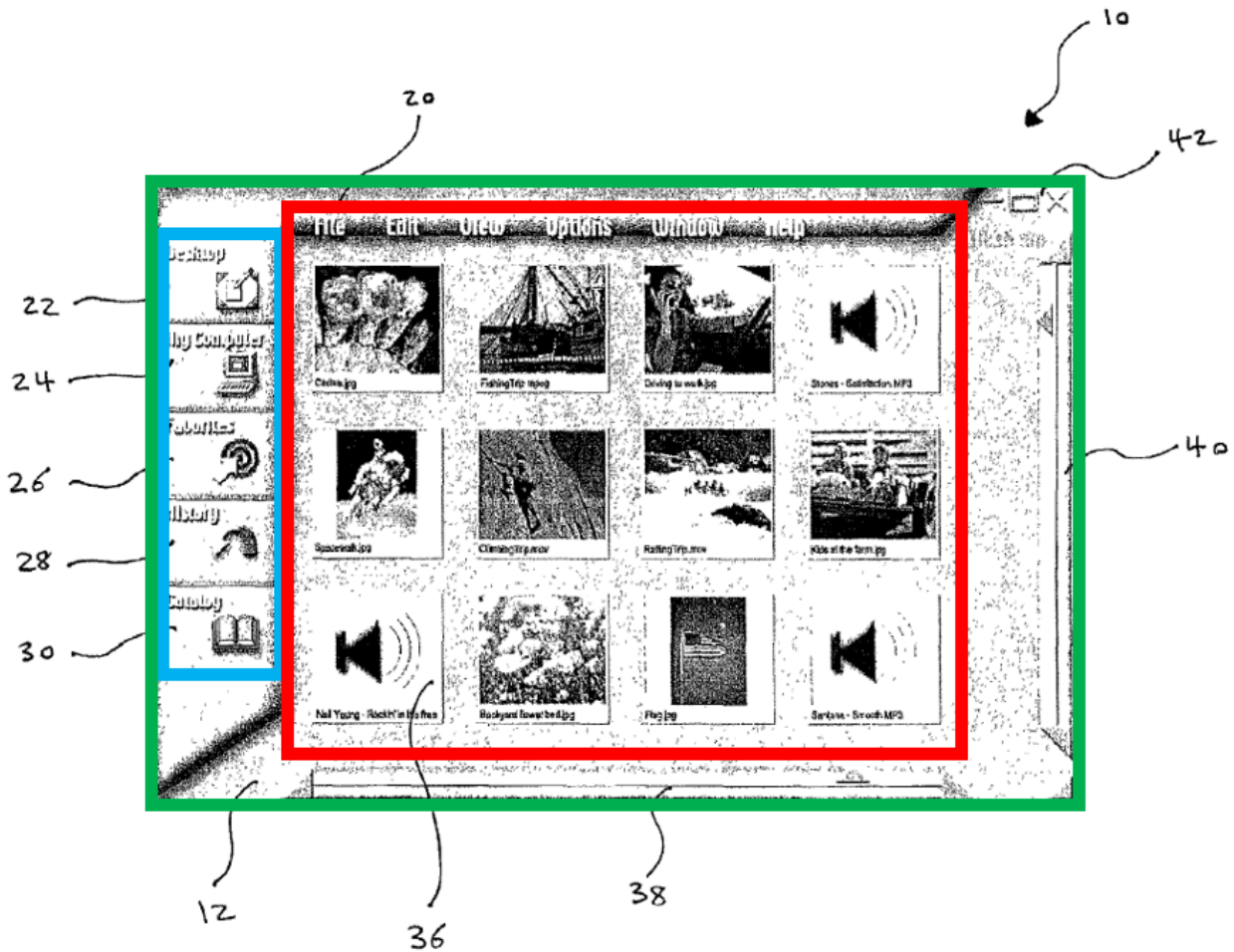
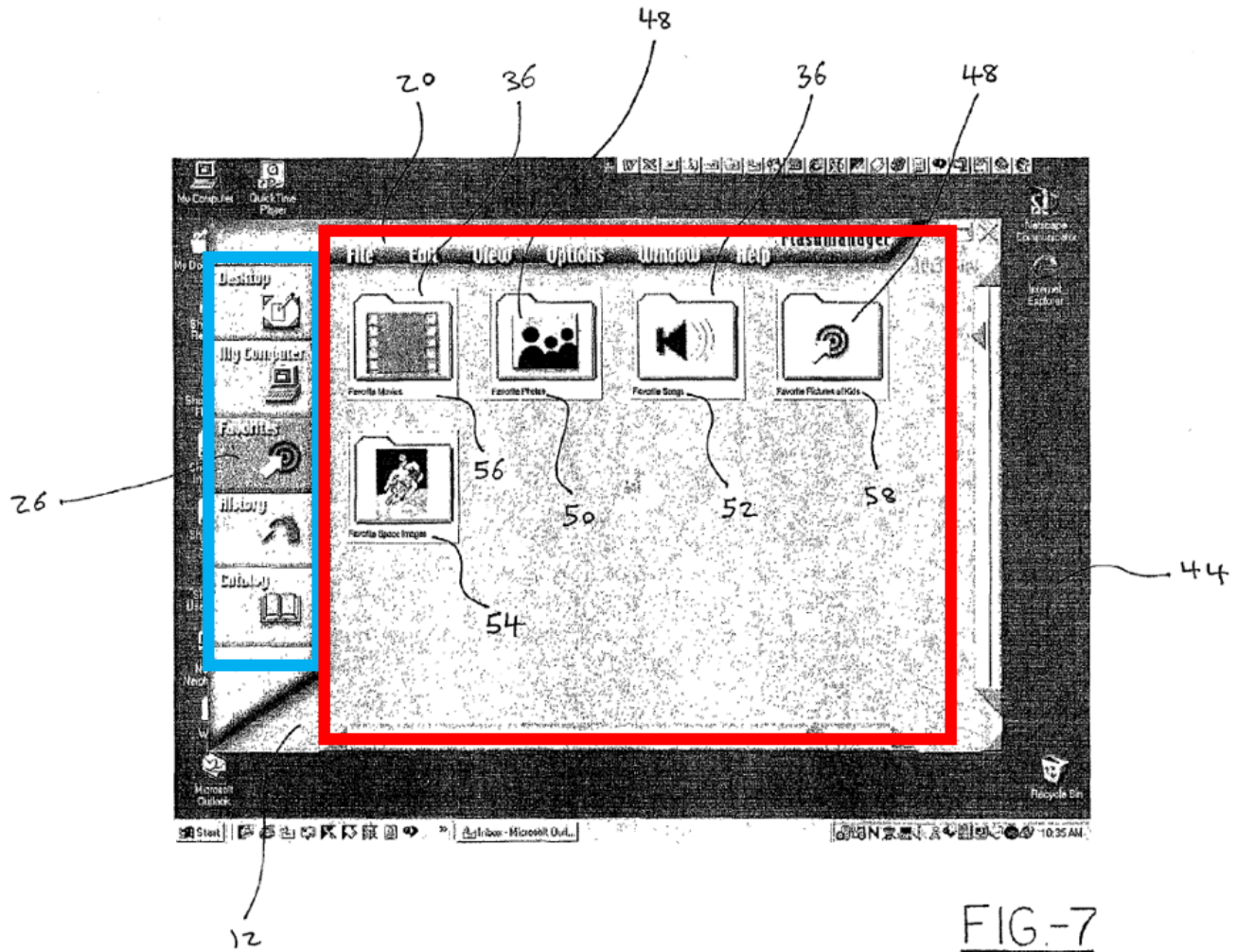


FIG.-4

LG-1004, FIG. 4 (annotated)

As shown in FIG. 7, below, a first character (one or more letters of “Favorites”) corresponding to the first group of video information (“Favorites” folder) is displayed in a first area (circled blue) when the first group of thumbnails is displayed (circled red). LG-1004, FIG. 7; LG-1003, ¶204.

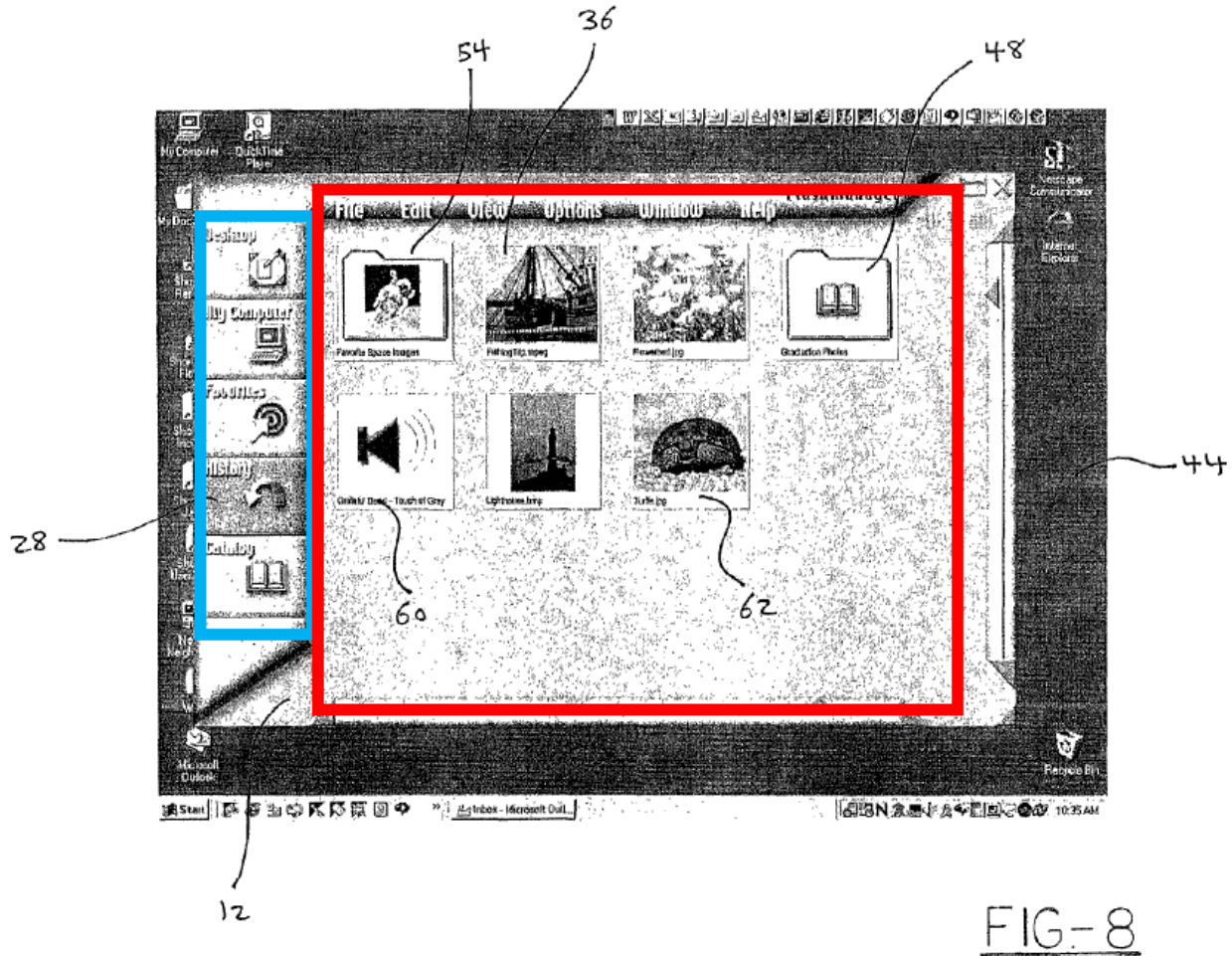


LG-1004, FIG. 7 (annotated)

[2.b]

Kaplan discloses [2.b]. LG-1004, FIGS. 7-12, 14, 16; LG-1003, ¶¶205-206; see [2.a].

As shown in FIG. 8, below, a second character ("History") corresponding to the second group of video information ("History" folder) is displayed in a first area (circled blue) when the second group of thumbnails is displayed (circled red). LG-1004, FIG. 8; LG-1003, ¶206.



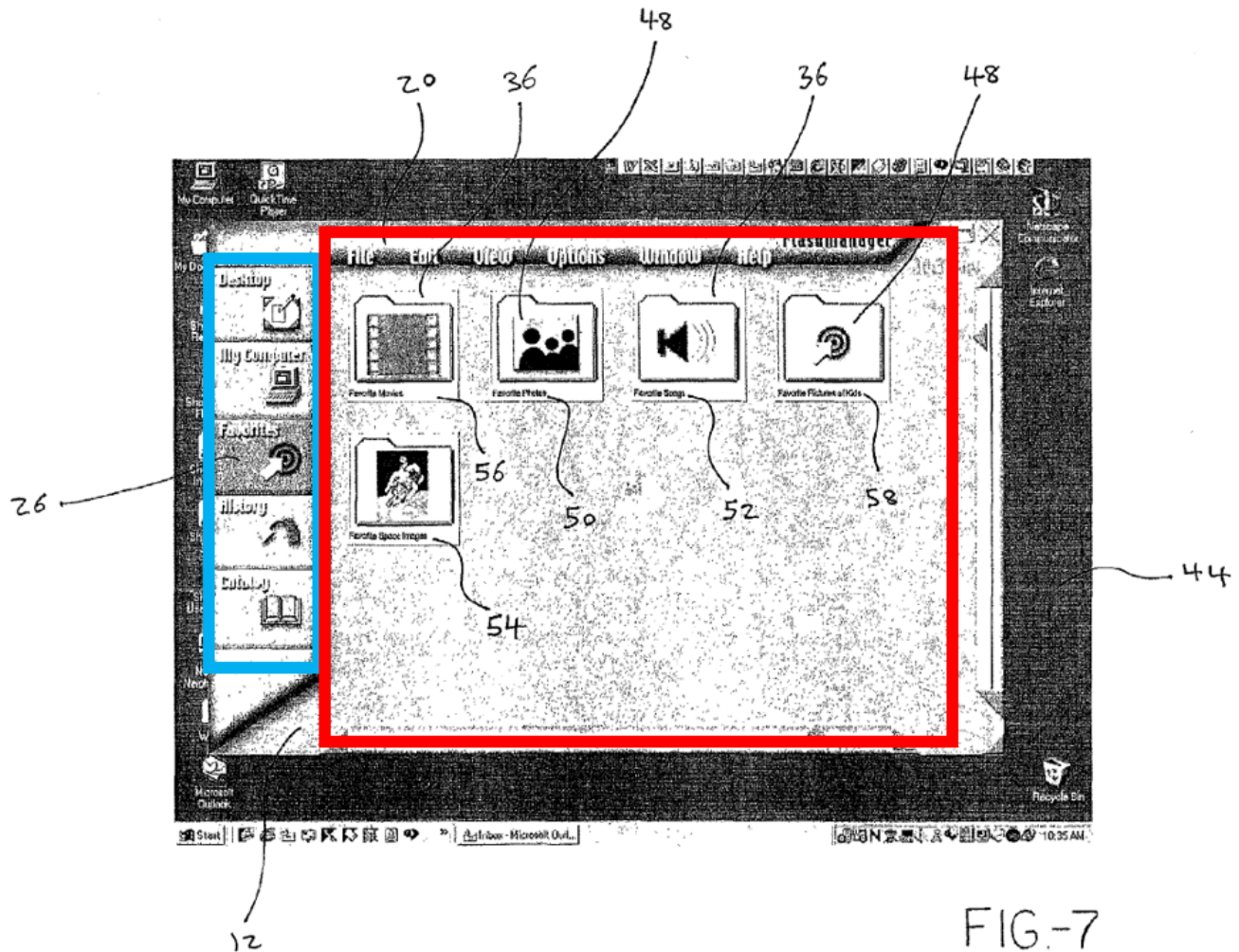
LG-1004, FIG. 8 (annotated)

4. Claim 3

[3.a]

Kaplan discloses [3.a]. LG-1004, FIGS. 7-12, 14, 16; LG-1003, ¶¶207-208; see [2.a]-[2.b].

As shown in FIG. 7, below, the first group of thumbnails is displayed in a second area (circled red) that is different than the first area (circled blue). LG-1004, FIG. 7; LG-1003, ¶208.

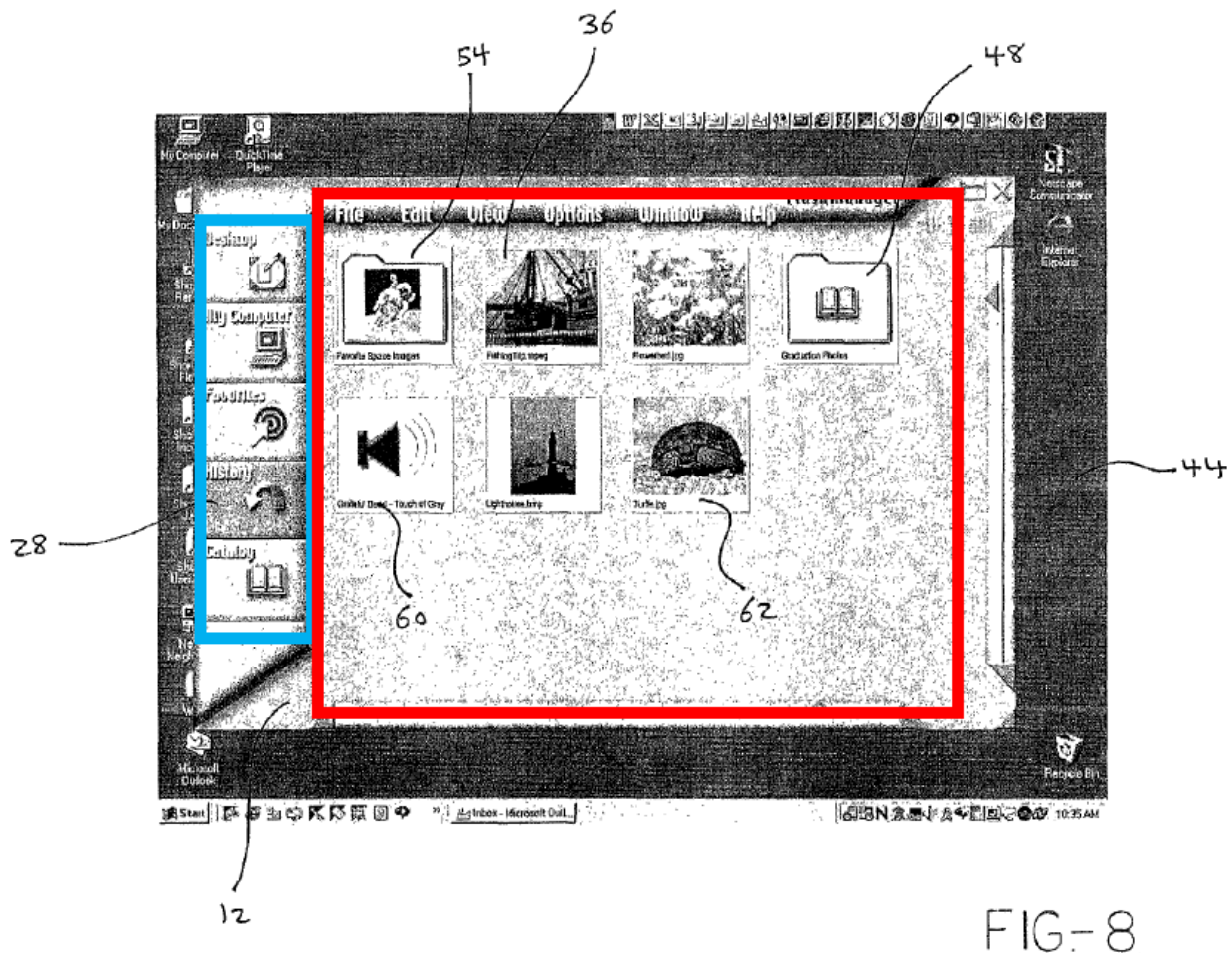


LG-1004, FIG. 7 (annotated)

[3.b]

Kaplan discloses [3.b]. LG-1004, FIGS. 7-12, 14, 16; LG-1003, ¶¶209-210; *see* [3.a].

As shown in FIG. 8, below, the second group of thumbnails is displayed in a second area (circled red) that is different than the first area (circled blue). LG-1004, FIG. 8; LG-1003, ¶210.



LG-1004, FIG. 8 (annotated)

5. Claim 4

[4]

See [1.g]; LG-1003, ¶¶211-216.

Kaplan describes its “media management database” as storing pointers for multimedia content stored in containers such that “there is no need to store multiple physical files of the multimedia data, thereby saving storage space.” LG-1004, [0044]; *see also id.*, [0042]; LG-1003, ¶212. Thus, a POSITA would have understood that deleting the one video information from the first group merely removes

the pointer for the one video information in Kaplan's "media management database" that references the first group and does not delete the one video information recorded on the recording medium. *Id.*

Additionally, a POSITA would have understood that, if deleting the one video information from the first group of video information does not delete the one video information from the second group of video information, then it would have been obvious for the one video information to remain recorded on the recording medium, at least so that it can continue to be available in the second group of video information. LG-1003, ¶¶213-214.

For instance, a POSITA would have found it obvious that deleting one video information from the "Favorites" group would not remove that information from the "My Computer" group or the "History" group. LG-1003, ¶¶215-216. A POSITA would have further found obvious for the information to remain recorded on the recording medium for the video information to remain in the "My Computer" group or the "History" group. *Id.*; see LG-1004, claim 20 ("wherein multiple representations of a data file can be presented in the user interface, with any representation of a data file having a pointer to a single data file stored on computer readable memory"). Thus, Kaplan discloses or renders obvious the one video data is not deleted from the recording medium. LG-1003, ¶216.

6. Claim 5

[5.pre]

See [1.pre].

[5.a]

See [1.a].

[5.b]

See [1.c].

[5.c]

See [1.b].

[5.d]-[5.f]

See [1.e]-[1.g].

7. Claim 6

See [2.a]-[2.b].

8. Claim 7

See [3.a]-[3.b].

9. Claim 8

See [4].

10. Claim 9

[9.pre]-[9.c]

See [1.pre]-[1.c].

[9.d]

See [1.d]-[1.e].

[9.e]

See [1.d], [1.f].

[9.f]

See [1.g].

11. Claim 10

See [2.a]-[2.b].

12. Claim 11

See [3.a]-[3.b].

13. Claim 12

See [4].

14. Claim 13

[13.pre]

See [1.pre].

[13.a]

See [1.a].

[13.b]

See [1.c].

[13.c]

See [1.b].

[13.d]

See [1.d].

[13.e]

See [1.b].

[13.f]-[13.h]

See [1.e]-[1.g].

15. Claim 14

See [2.a]-[2.b].

16. Claim 15

See [3.a]-[3.b].

17. Claim 16

See [4].

**C. [GROUNDS 3 AND 4] – Bryant in view of Kaplan and/or
Kaplan in view of Bryant Renders Claims 1-16 Obvious**

The combination of Bryant and Kaplan discloses all features of claims 1-16. This is true of both Bryant in view of Kaplan (Ground 3), and Kaplan in view of Bryant (Ground 4). An identification of where each limitation of the claim is disclosed in each reference is set forth above with respect to Ground 1 and Ground 2. See discussion §§III.A and III.B.

1. Bryant in view of Kaplan

A POSITA would have been motivated to update Bryant by adding Kaplan's specific reproduction (e.g., playback) features into the user interface of Bryant (see, e.g., LG-1005, FIGS. 9A-9C). LG-1003, ¶¶255-260. This would include one or more of Kaplan's in-window thumbnail playback mechanism, or the specific full/partial screen playback mechanisms. See LG-1004, [0051]; see also *id.*, FIG.

12, FIG. 16 (annotated below), [0057] (“Referring to FIG. 16 ... [f]or the convenience of the user, Player Controls 88 are included within the thumbnail 160, thereby allowing the user to preview the video/audio thumbnail selected while re-viewing the detailed information. Another feature of user interface 12 is the ability to preview any selected video computer file in full screen mode.”); LG-1003, ¶¶257-258.

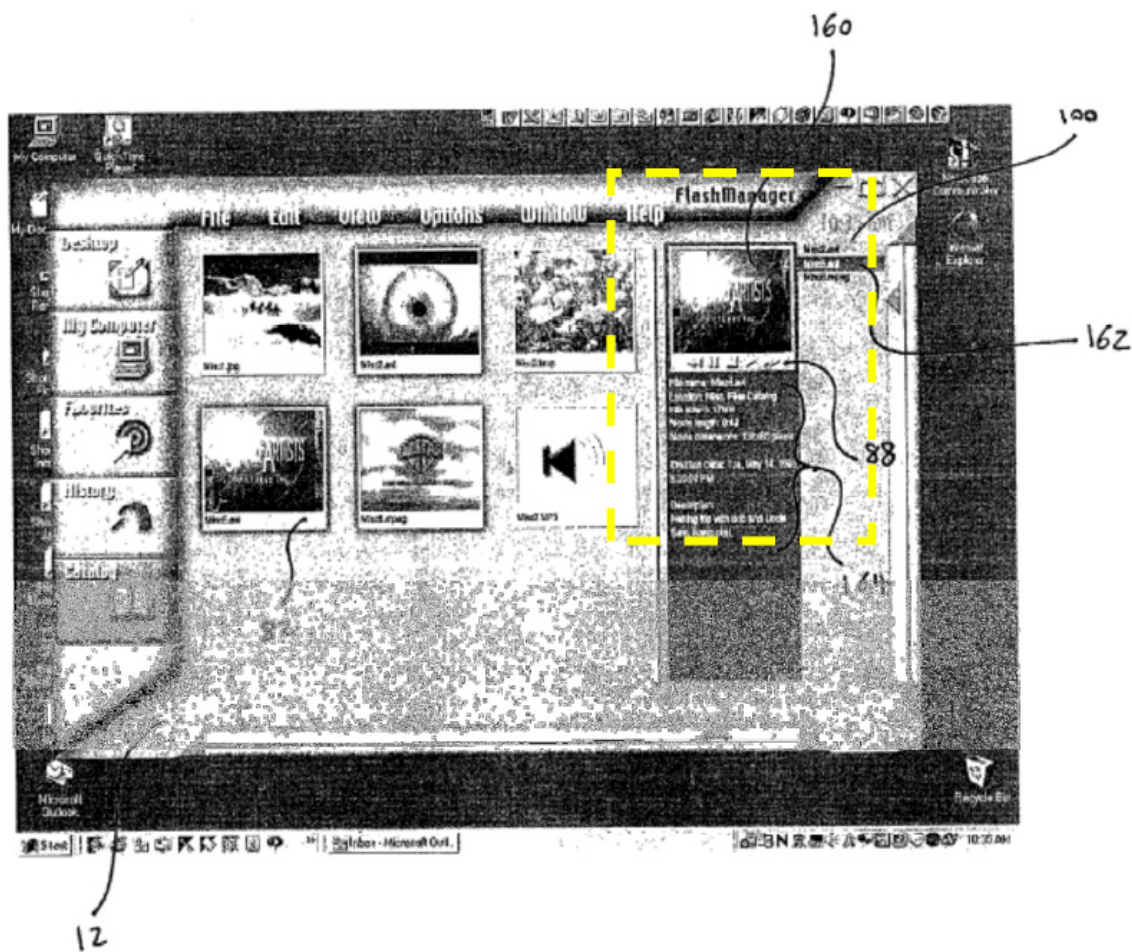


FIG.-16

LG-1004, FIG. 16

The combination would provide an improved playback mechanism for the user. For instance, in-window playback would allow a user to continue to see their other media or adjust their categorization settings. Including this feature would be “[f]or the convenience of the user.” *See* LG-1004, [0057]. As explained below, combining Kaplan and Bryant would have been straightforward, had a reasonable expectation of success, and yielded predictable results. *See* discussion below, §III.C.2. Additionally,

A POSITA would have understood that one of the reasons for [in-window viewing] was to let the user keep their eye focused on the area of the screen they were already working with. [A]pplying this technique with in-window video as taught by Kaplan would have been nothing more than the use of a known technique to improve similar devices in the same way.

LG-1003, ¶258 (“The concept of providing previews of media in-window was well known”). As Dr. Cockburn notes, “the ability to playback video was already supported by the standard Windows operating systems of both Bryant and Kaplan.” LG-1003, ¶259 (“Thus, incorporating playback of video within Bryant would have been a straightforward use of technology that was already integrated into the operating system and would have been well within the skill of a POSITA.”).

A POSITA would additionally have had a reasonable expectation of success in the combination of Bryant and Kaplan because Bryant describes loading files onto a home computer where they can be “viewed, stored, retrieved, and printed,”

and Kaplan's in-window playback is merely a form of allowing files to be viewed.

LG-1005, [0003]; LG-1004, [0057]; LG-1003, ¶260. A POSITA thus would have had a reasonable expectation that the modification Bryant with Kaplan would be successful because a POSITA would have found that the teachings of Bryant and Kaplan could have been predictably combined due to the predictability of the computer system art and the known interchangeability of the various elements, including file storage, organization, recording, and playback. LG-1003, ¶260; §III.C.2.

2. Kaplan in view of Bryant

A POSITA would have been motivated to combine Kaplan and Bryant for at least two reasons: (1) to supplement the teachings of Kaplan by using Bryant's methods regarding image capture and "affectation information"; and (2) to use Bryant's robust disclosure of user-customizable metadata, such as editable "groups" (e.g., Animals, Sports) with corresponding areas of the interface menu. *See* LG-1003, ¶¶261-266.

Kaplan "provides users with a simple and intuitive method and computer program for reviewing their multimedia content, which can include digital video" (LG-1004, [0038]), and the camera and upload system of Bryant provides "digital still images and digital motion images" (LG-1005, [0029], [0036]), which can provide the content to Kaplan's system. Specifically, a benefit of using a digital cam-

era, in the manner disclosed in Bryant, is that it can include user controls for categorizing the images, including metadata that enables subsequent organization. *See, e.g.*, LG-1005, [0003]-[0005], [0029]; LG-1003, ¶263. Bryant explains that, by using multimedia according to its systems and methods, a particular user's "affective information" can be captured, which can be stored with video images. LG-1005, [0029]-[0034]. "A POSITA would have recognized that inclusion of the richer metadata in Bryant would have improved the Kaplan system, allowing for more effective (e.g., more detailed or more personalized) organization and retrieval of multimedia information." LG-1003, ¶263. The teachings of Bryant itself motivate the combination. *Id.*

With Bryant's robust disclosure of user-customizable metadata, such as "groups" (e.g., Animals, Sports), the corresponding areas of the interface menu in Kaplan could be updated. *See* discussion regarding [1.b] and [1.e]-[1.g] in §III.A; *see also* LG-1005, FIGS. 8, 9A-9C. For instance, a POSITA would have used the display arrangement and controls set forth in Bryant's FIGS. 9A-9C, which would allow for more effective (e.g., more detailed or more personalized) organization and retrieval of multimedia information. LG-1003, ¶264; LG-1005, [0100] ("[T]he user optionally resets images that are no longer considered favorites. This is accomplished using the favorites level selection area 860."). For instance, the metadata of Bryant would be useful with respect to the search functions in Kaplan.

See LG-1004, [0065]-[0066]. With its emphasis on user-customization and control, Bryant itself further motivates the combination.

Moreover, a POSITA would have had a reasonable expectation of success implementing the combination of Kaplan and Bryant. LG-1003, ¶265. Both Kaplan and Bryant use conventional components and programming, and this combination would have been straightforward and yielded predictable results. *See* LG-1003, ¶¶265-266 (“A POSITA would have recognized that this combination was one of familiar elements, performing their typical functions, and according to known methods.”). For instance, both use standard hardware, including Windows-based programming. *See* LG-1004, [0037]-[0038]; LG-1005, [0037]-[0040]. Additionally:

Given that Kaplan already included metadata, such as Favorites, adding additional metadata fields such as those taught by Bryant would have been a straight forward application of known programming techniques. A POSITA would have known how to modify any data structures and user interfaces to include additional metadata because modifying data structures and user interfaces was well within their skill, and they had already created those data structures and user interfaces to create the system of Kaplan in the first place.

Thus, adding the metadata of Bryant to Kaplan would have been no more than the use of a known technique to improve similar a device in the same way.

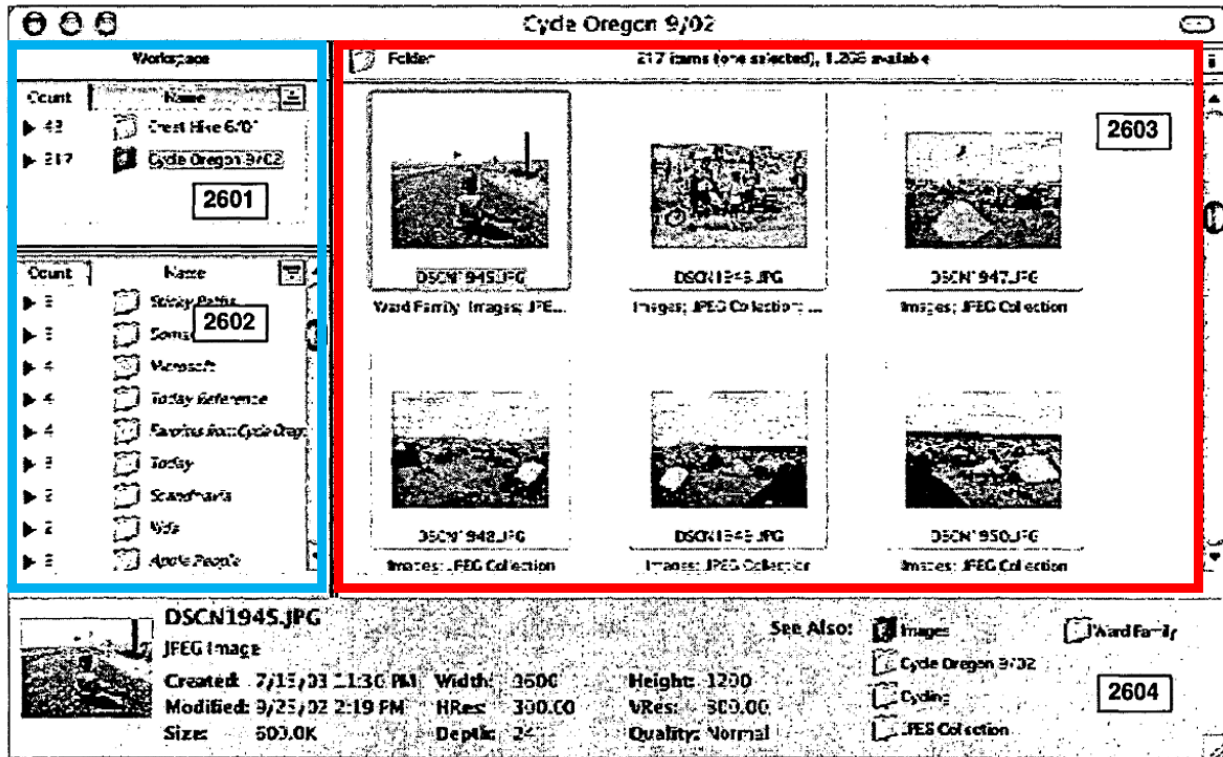
LG-1003, ¶266; §III.C.1.

D. [GROUND 5] – Horn Renders Claims 1-16 Obvious

1. Horn (LG-1021)

Horn is directed to “the management of data objects including dynamic and automatic organization, linking, finding, cross-referencing, viewing and retrieval of multiple objects.” LG-1021, Abstract. The architecture “is unique in storing only one instance of each object while linking the object to multiple collections and domains by unique metadata links for the grouping into and retrieval from any of the collections.” *Id.* While many examples in Horn discuss image files, Horn explains that the objects in the metadata filing system (MFS) can include “all types of text and image information,” including “multimedia,” “illustrations, images, movies, and photographs.” LG-1021, [0103].

Referencing Figure 26 (below), Horn shows an example “Workspace view” of its MFS, which shows various information in separate panes. LG-1021, [0016], [0153]-[0158]. Included in the “Workspace view” are “the original folders from which the images were examined (the working set)” 2601 and “a list of all collections defined by MFS and the user” (2602)—collectively circled blue, and “a content pane,” circled red, “which dynamically displays the contents of whatever item is selected in the first two views (2603).” LG-1021, [0154]-[0156], FIG. 26.



LG-1021, FIG. 26 (annotated)

Users “view images from any of the source folders, and by dragging their icon representations to either the collection window or the icon representation in the Workspace, add those images to the collection,” which “does not move the images, nor modify them in any way.” LG-1021, [0165]. Rather, “it simply updates the links in the catalog indicating that they belong to the collection.” *Id.* Additionally, “items may be removed from a collection by choosing the Remove command, which removes the items from the collection but does not otherwise delete the item from the source (e.g. the file system) or any other collections.” *Id.*, [0167].

2. Claim 1

[1.pre]

To the extent the preamble is limiting, Horn discloses or renders obvious [1.pre]. LG-1021, Abstract, [0016], [0038]-[0041], [0045] (“inventive MFS-configured system provides an organizational structure and methodology for information management”), [0046], [0047], [0101], [0141], [0144], FIGS. 1, 26, claims 11 (“[m]ethod of management of informational objects”), 12; LG-1003, ¶267. Specifically, Horn discloses a “computer data processing system including a central processing unit configured with a novel integrated computer control software system for the management of data objects including dynamic and automatic organization, linking, finding, cross-referencing, viewing and retrieval of multiple objects regardless of nature or source.” LG-1021, Abstract. Horn describes a “Metadata Filing System, abbreviated herein MFS” that is an “inventive integrated software system for the management of informational objects on a computer system ... for recognizing, organizing, creating and viewing relationships between such objects which comprises one or more software applications that provide both a user-interface and an underlying component architecture for the management and display of the user’s information.” *Id.*, [0016]. Horn explains that the “computer(s) of the invention can be configured in a system architecture, for example,

as one or more client or server computer(s), database computer(s), routers, interfaces and peripheral input and output devices, that together implement the system and network(s) to which a client computer system may be connected.” *Id.*, [0041]. Thus, a POSITA would have understood that Horn discloses an apparatus (e.g., computer) that processes information (e.g., informational objects). LG-1003, ¶267.

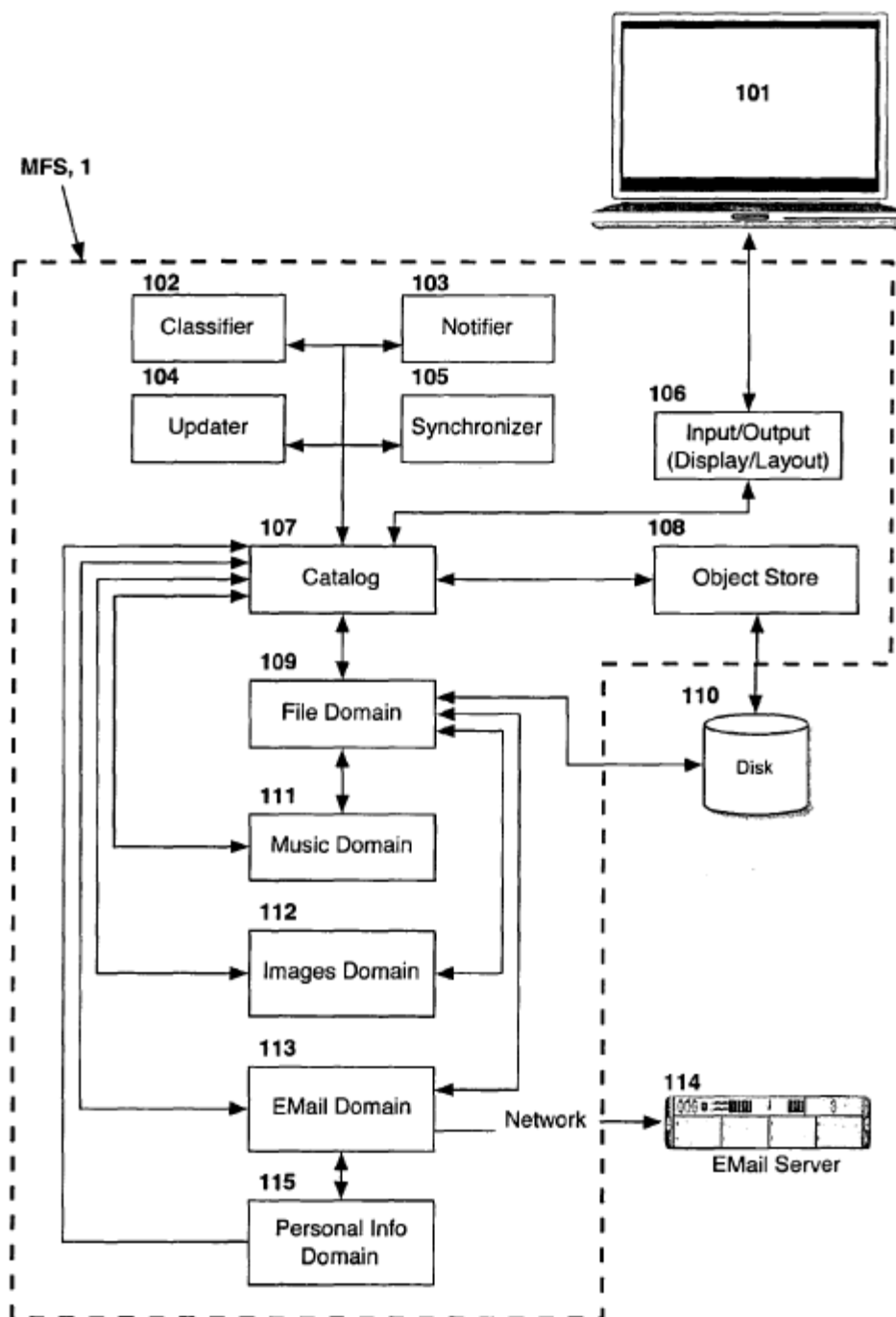


Figure 1

LG-1021, FIG. 1

[1.a]

Horn discloses or renders obvious a recording unit that records a plurality of video information (e.g., movies) on a recording medium (e.g., memory unit, such as a hard drive 110). LG-1021, Abstract (“storing only one instance of each object”), [0003] (“storage of information of a variety of types”), [0016], [0018] (“stored efficiently on disk”), [0019] (“storage location in memory or on disk where objects and their associated metadata properties may be very quickly retrieved”), [0020], [0028], [0029], [0038] (“metadata filing system,” “object-oriented database structure,” “object store”), [0039], [0045], [0046], [0052], [0102] (“hard drive, 110”), [0103], [0107]; LG-1003, ¶¶268-273. Horn’s “MFS maintains for each kind of object the conventional, ordinary types of properties that common operating systems support—name and modification date, and the folder in which the file is stored—as well as links and annotations in the form of corresponding metadata defined by the MFS itself.” LG-1021, [0107]. Specifically, Horn explains that its system “comprises one or more application(s) for organizing all types of text and image information.” LG-1021, [0103]; *see* LG-1003, ¶269.

Horn explains that its “MFS-enabled computer system” comprises, among other elements, “an object store data structure in which data,” including “movies,” for example, and “is stored persistently on a device such as a disk drive.” LG-1021, [0180]-[0188]; *see also id.*, [0041] (“The memory typically includes volatile

memory (e.g., RAM) and fixed and/or removable non-volatile memory (e.g., ROM, Flash, hard disk including in RAID arrays, floppy disc, mini-drive, Zip, Memory stick, PCMCIA card, tape, optical (CD-ROM, etc.), DVD, magneto-optical, and the like), to provide for storage of information”).

A POSITA would have understood that the “disk drive” or “hard disk” of Horn necessarily includes a circuitry (“recording unit”), e.g., a hard disk controller, that serves as an intermediary between the CPU and the physical storage platter of the hard drive in order for the disk drive to persistently store data. LG-1003, ¶¶271-273; LG-1005, [0180]-[0188], [0041]. Indeed, such circuitry was well known long before the Critical Date to include in hard drives to provide buffering, error correction, servo control, etc. for writing data to the hard drive. LG-1023, 1:11-46, 2:64-4:18 (“control system”), FIGS. 1-2; LG-1024, 5:50-6:4 (“embedded disk controller Printed Circuit Board (PCB)”), FIG. 2; LG-1024, Abstract, 3.

[1.b]

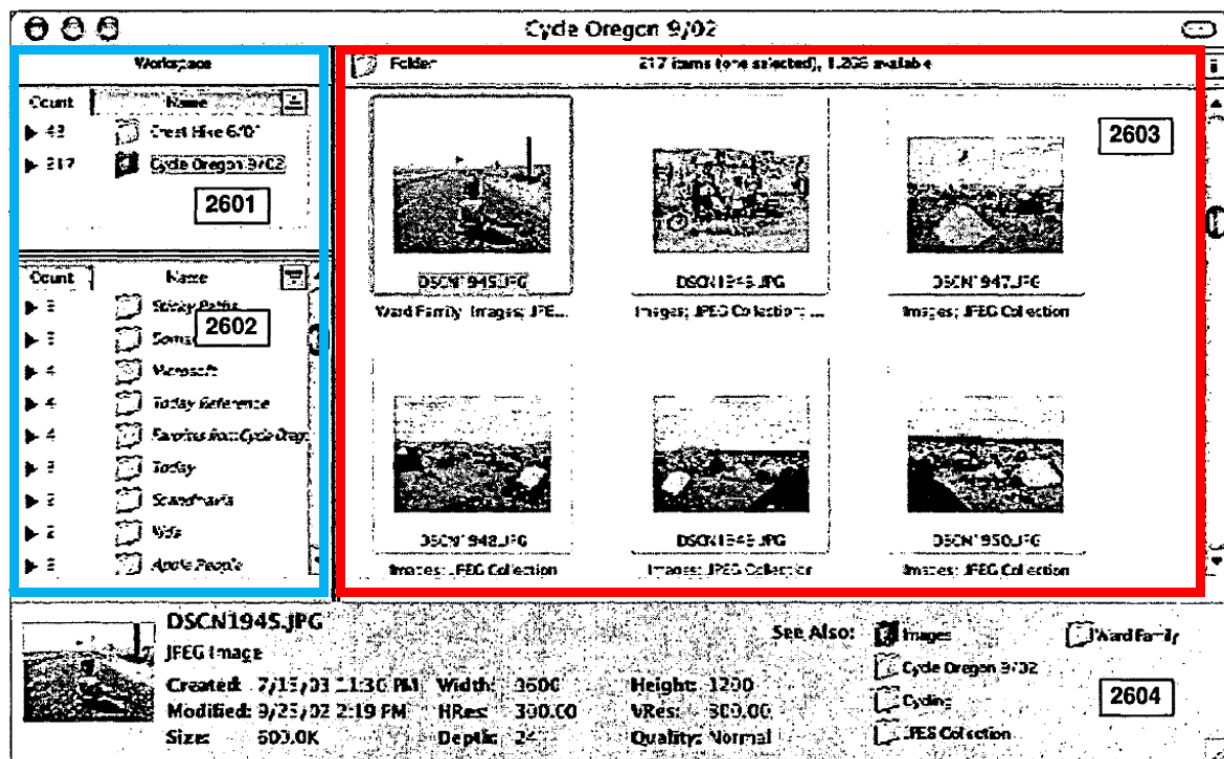
Horn discloses or renders obvious an output unit (“output display screen”) that performs the function of outputting a menu display (Workspace view user interface) for a user to select one group of video information (e.g., movies or multimedia data) among a plurality of groups of video information (circled blue in FIG. 26, e.g., “Crest Hike 6/01,” “Cycle Oregon 9/02”) by specifying a position of a character (by selecting an item/group) (e.g., selecting and determining a position of

a character) corresponding to the one group of video information. LG-1021, [0016], [0038] (“rendering of these objects to a display viewable by a user in response to user input”), [0039], [0040] (“a computer display connected to said memory means for displaying said objects, a computer-operator (user) interface device for inputting information to specify objects or properties of objects”), [0050], [0103] (“multimedia,” “movies”) [0121], [0122], [0123], [0153]-[0157], [0159], [0165], [0166], [0197], [0198], [0203], [0204]-[0211], [0294], [0295], [0299]-[0303], [0304], FIGS. 1 (101), 5, 7A-C, 11A, 12A-B, 14, 26, 30-31, claim 1; LG-1003, ¶¶274-276; *see also* LG-1001, 5:67-6:8; *see also* discussion of [1.e]-[1.f].

Specifically, referencing Figure 1, Horn teaches “a computer system comprising a computer 101 with an output display screen.” LG-1021, [0102]. Figure 26 (below) “shows the workspace view” of the MFS where “the original folders from which the images were examined” and “a content pane, which dynamically displays the contents of whatever item is selected” are shown on the display. LG-1021, [0085], [0153]-[0157], FIG. 26.

In FIG. 26, for example, a user has selected “Cycle Oregon 9/02” by specifying a position of a character corresponding to the one group of information (by selecting “Cycle Oregon 9/02”), which could be movies. LG-1021, [0103], [0153]-[0158], FIG. 26. Horn explains that a “content pane ... dynamically displays the contents of whatever item is selected in the first two views (2603).” LG-

1021, [0156]. The “plurality of groups of video information” in Horn includes, for example, the folders shown at 2601 and/or the collections shown at 2602 in the areas circled in FIG. 26 below. LG-1021, [0049] (“Users can select predetermined collections provided in a basic menu, such as Family, Friends, Work, To Do, Activities, and Vacation when running the MFS program for the first time, and can create and set up user-defined collections as well.”), [0153]-[0156], FIG. 26; LG-1003, ¶276.



LG-1021, FIG. 26

[1.c]

Horn discloses or renders obvious [1.c]. LG-1021, Abstract, [0038] (“rendering of these objects to a display viewable by a user in response to user input”),

[0050], [0110], [0112], [0114] (“objects may also be viewed directly in their own windows”), [0121]-[0122], [0153]-[0157], [0159]-[0161], [0163], [0165]-[0166], [0205], [0211], [0294]-[0295], [0299]-[0301], [0304], FIGS. 5, 7A-C, 11A, 12A-B, 14, 26-27, 30-31, claim 1; LG-1003, ¶¶277-282. Horn teaches that its system provides “management of data objects including ... viewing and retrieval of multiple objects regardless of nature or source.” LG-1021, Abstract. Referencing FIG. 14, Horn explains that “a collection of all JPEG files may be created by the user selecting (via a MFS-provided popup menus, and/or a type-in query line) all objects in the system that have names that end in .jpg or .jpeg, or have a file type of JPEG,” and “[t]he objects are immediately retrieved and displayed in the collection window.” LG-1021, [0121], FIG. 14.

Referencing FIG. 26, Horn explains that a “content pane ... dynamically displays the contents of whatever item is selected in the first two views,” and “in the case of an individual item, the item itself is shown in detail (such as the full image or contact information).” LG-1021, [0156], FIG. 26. A POSITA would have understood that if the individual item were a “movie,” which Horn teaches (LG-1021, [0103]), then the system would reproduce the movie (e.g., by playing the movie) from memory (e.g., hard drive 110). *Id.*; LG-1003, ¶279; *see also* LG-1021, [0160], [0336].

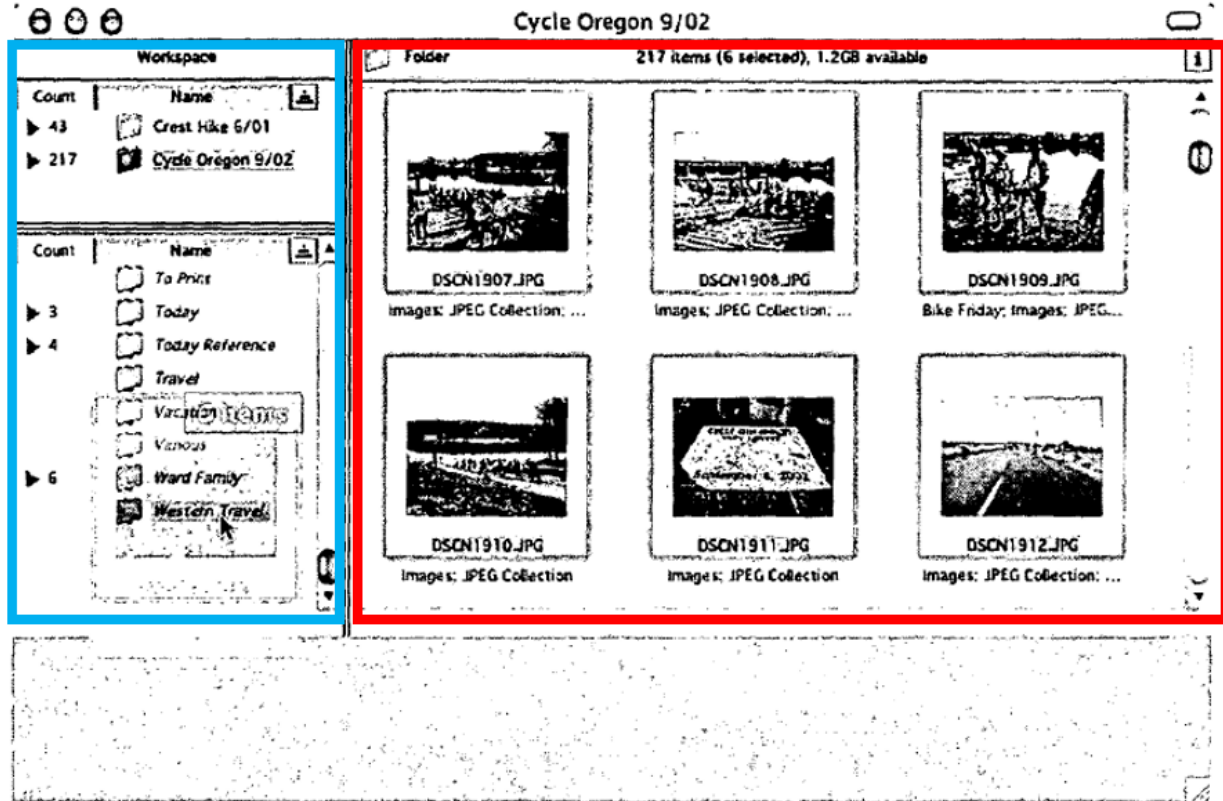
A POSITA would have understood that the “hard drive 110” of Horn necessarily includes a circuitry (“reproducing unit”), e.g., a hard disk controller, that serves as an intermediary between physical storage platter of the hard drive and the CPU in order to retrieve data from memory to “dynamically display[] the contents of whatever item is selected.” LG-1003, ¶¶280-282; LG-1021, [0156]. Indeed, such circuitry was well known long before the Critical Date to include in hard drives to provide buffering, error correction, servo control, etc. for reading data from the hard drive. LG-1023, 1:11-46, 2:64-4:18 (“control system”), FIGS. 1-2; LG-1024, 5:50-6:4 (“embedded disk controller Printed Circuit Board”), FIG. 2; LG-1025, Abstract, 3.

[1.d]

Horn discloses or renders obvious a controller (“central processing unit”). LG-1021, [0039], [0043]-[0046], [0049], [0101]; LG-1003, ¶¶283-284. Horn explains that its “MFS computer data processing system” includes “at least one central processing unit configured with client operating system and applications software” to perform various functions and processes. LG-1021, [0039]; *see also id.*, [0101] (“CPU to provide(s) the functionalities described above”).

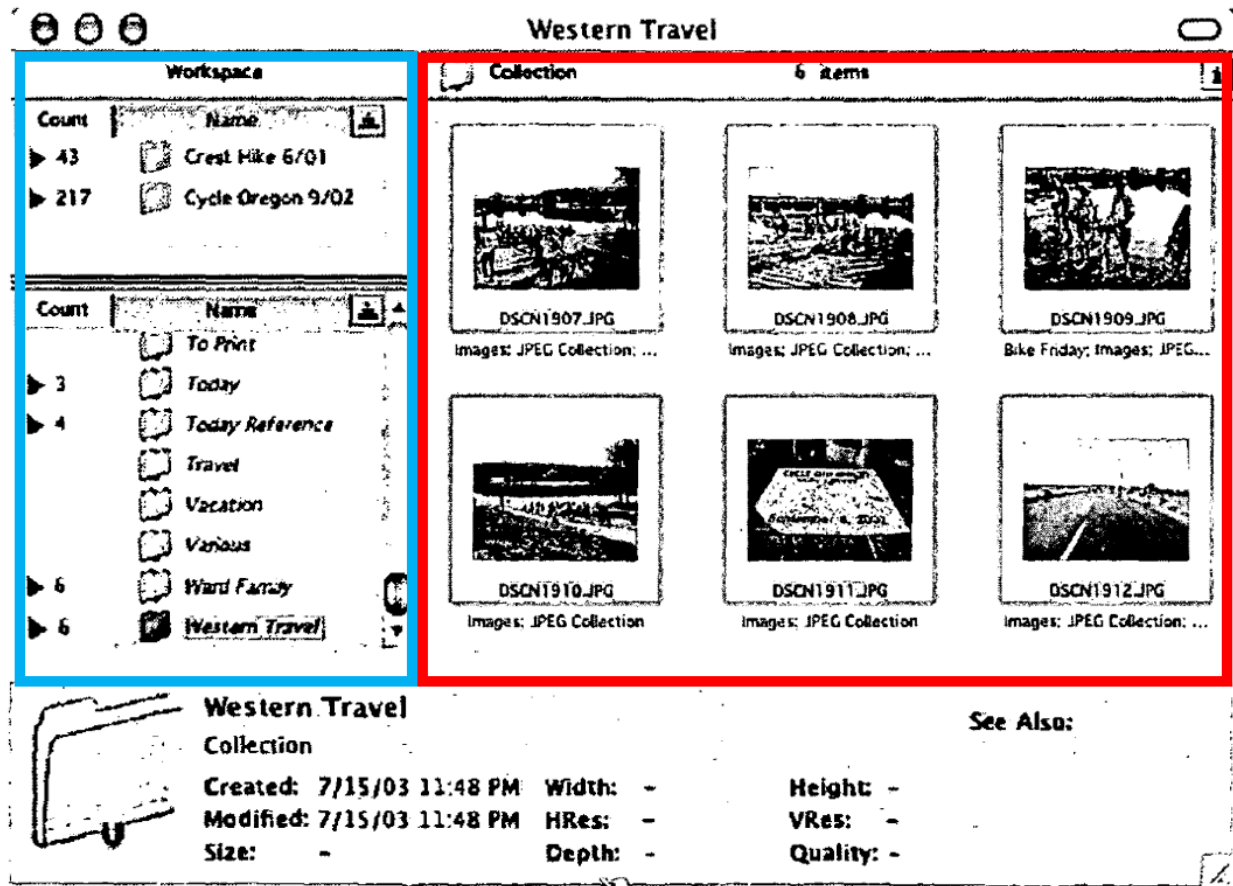
[1.e]

Horn discloses or renders obvious that, when a first group of information (e.g., “Western Travel”), including video information, is selected in the menu display by specifying a position of a character (e.g., selecting and determining a position of a character) corresponding to the first group of video information (e.g., the user selected “Western Travel” within the area circled blue in FIG. 30), the controller controls the output unit to display a first group of thumbnails corresponding to the first group (circled red below in FIG. 30). LG-1021, [0152] (“windows display the images in a variety of ways, including well-known icon and list views showing icons representing the type of the file (such as a Photoshop JPEG file) or a miniature ‘slide’ view (thumbnail) of the image itself”), [0153]-[0158], FIGS. 26, 30; LG-1003, ¶¶285-286; *see also* LG-1001, 5:67-6:8; *see also* discussion of [1.f]. Horn explains that the “content pane” (circled red in FIG. 30 below) “dynamically displays the contents of whatever item is selected in the first two views (2603).” LG-1021, [0156], FIGS. 26, 30. Thus, when the first group, “Western Travel” is selected, the thumbnails corresponding to the first group are displayed. *Id.*; LG-1003, ¶¶285-286.



LG-1021, FIG. 30 (annotated) (excerpted)

The “Western Travel” collection is not selected in Figure 30, so the area circled red shows the thumbnails in the selected “Cycle Oregon 9/02” folder instead. LG-1021, [0165]; LG-1003, ¶286 n.4. However, a POSITA would have understood that, after a user manually added objects from the source folder, as illustrated in Figure 30 of Horn, those objects would then be displayed when the “Western Travel” collection was selected by the user because those objects now “belong to the [“Western Travel”] collection.” *Id.*, LG-1021, [0162]-[0165], FIGS. 29-30. A modified image based on Figures 29 and 30 of Horn is provided below to illustrate this scenario. *Id.*

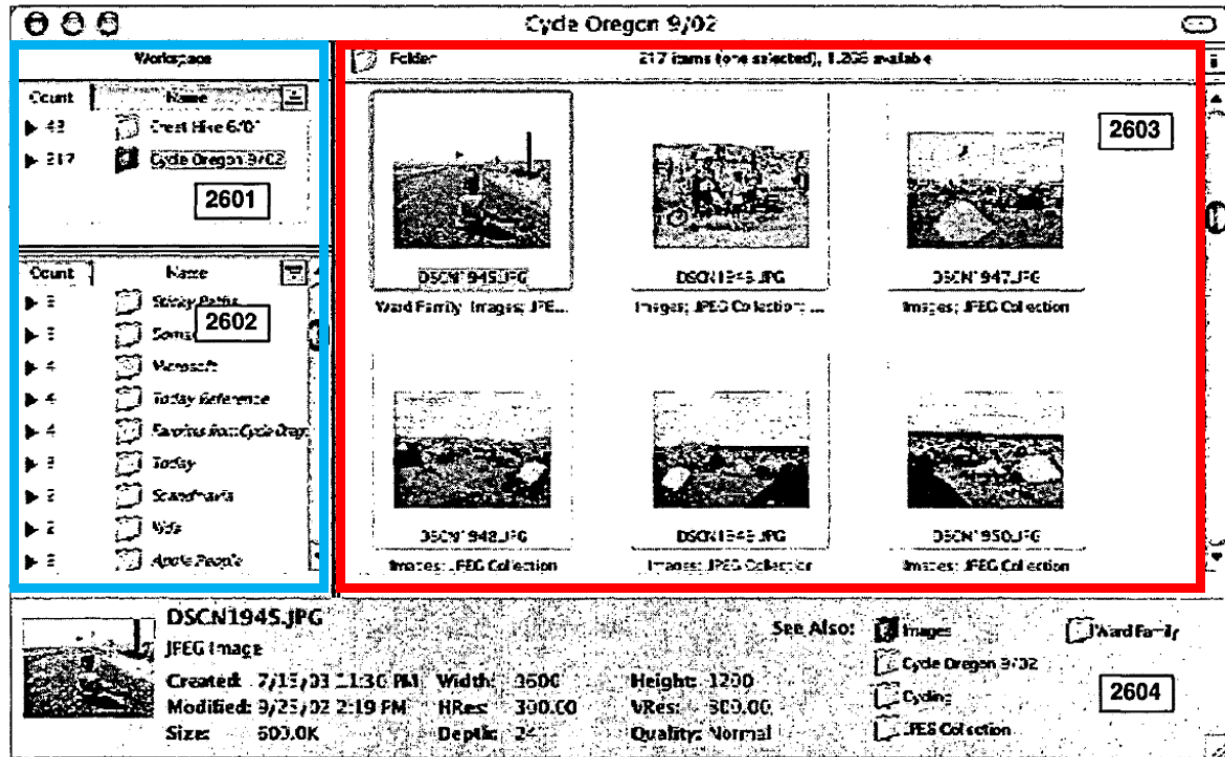


Modified image based on LG-1021, FIGS. 29-30; LG-1003, ¶286

[1.f]

Horn discloses or renders obvious that, when a second group of information (e.g., “Cycle Oregon 9/02”), including video information, is selected in the menu display by specifying a position of a character (e.g., selecting and determining a position of a character) corresponding to the second group of video information (e.g., the user selected the “Cycle Oregon 9/02” folder within area 2601 of FIG. 26), the controller controls the output unit to display a second group of thumbnails corresponding to the second group (circled red in FIG. 26). LG-1021, [0152]

(“windows display the images in a variety of ways, including well-known icon and list views showing icons representing the type of the file (such as a Photoshop JPEG file) or a miniature ‘slide’ view (thumbnail) of the image itself”), [0153]-[0155], [0156] (“the contents of the folder or collection is shown in an icon or list view”), [0157]-[0158], FIG. 26; LG-1003, ¶¶287-288; *see also* LG-1001, 5:67-6:8. Horn explains that the “content pane” (circled red in FIG. 26 below) “dynamically displays the contents of whatever item is selected in the first two views (2603).” LG-1021, [0156], FIG. 26. Thus, when the second group, “Cycle Oregon 9/02” is selected (as evidenced by the box around the name of the group “Cycle Oregon 9/02” within area 2601 of FIG. 26 and the window title changing to “Cycle Oregon 9/02”), the thumbnails corresponding to the second group are displayed. *Id.*; LG-1003, ¶288.



LG-1021, FIG. 26 (annotated)

[1.g]

Horn discloses or renders obvious [1.g]. LG-1021, [0049], [0124] (“objects may be classified into several different collections at once”), [0130], [0132], [0142], [0165] (“This does not move the images, nor modify them in any way; it simply updates the links in the catalog”), [0167] (“items may be removed from a collection”), [0196], [0198]-[0199], [0230], [0233], [0244], FIG. 13, claim 10; LG-1003, ¶¶289-191. Specifically, Horn explains that “items may be removed from a collection by choosing the Remove command, which removes the items from the collection but does not otherwise delete the item from the source (e.g. the file system) or any other collections.” LG-1021, [0167]; *see id.*, [0124] (explaining that a

single object (e.g., image) can be classified into several collections at a time by modifying metadata links), [0130]. Thus, in Horn, if a video was included in both a first group and a second group and then deleted from the first group, it would continue to be included in the second group—including having its thumbnail continue to be displayed with the second group—because it is not “otherwise delete[d] ... from the source (e.g. the file system) or any other collections” (e.g., second group). *Id.*; LG-1003, ¶290.

Moreover, Horn explains that its “MFS-configured CPU control program simultaneously classifies objects into multiple containers using link metadata rather than duplication.” LG-1021, [0049]; *see id.*, [0130], [0132], [0142], [0165], [0167], [0196], [0198]-[0199], [0230], [0233], [0244], FIG. 13, claim 10. “Objects are attached to the object store to allow them to be stored persistently within the object store, and are detached from the object store when they are no longer persistent.” *Id.*, [0196]. Using this method of storage, “[a]ll storable objects maintain a reference count for memory management” and are “removed from memory when their reference counts reach one (e.g. are only referenced by the object store).” *Id.*, [0198]. Thus, a POSITA would have understood that deletion of an object from one group would bring the object’s reference count down by one but would not affect the object’s storage from memory or from other groups, nor would it remove

the object's thumbnail from being displayed when the groups with which it is associated are displayed. LG-1003, ¶291.

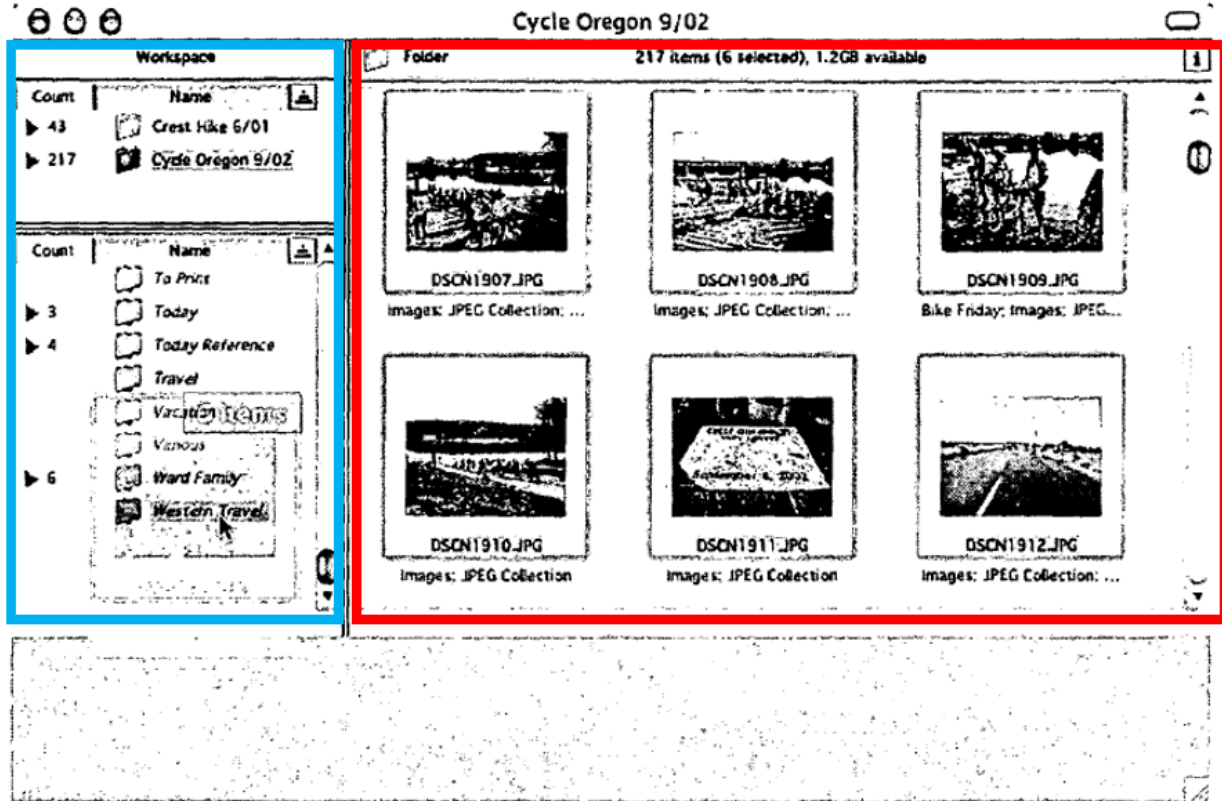
3. Claim 2

[2.a]

Horn discloses [2.a]. LG-1005, FIGS. 26, 30; LG-1003, ¶¶292-293.

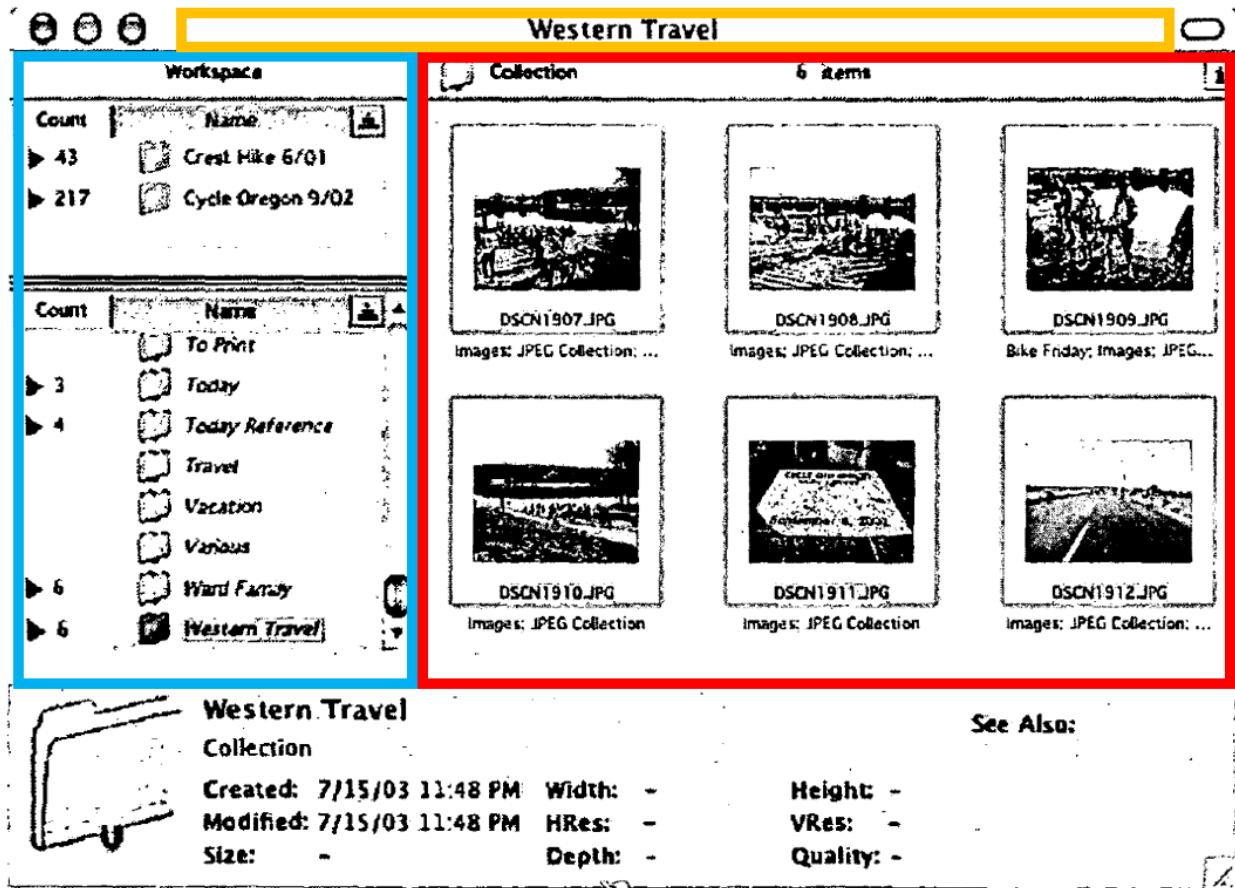
As shown in FIG. 30, below, a first character (“Western Travel” or one or more of its letters) corresponding to the first group of video information (“Western Travel” collection) is displayed in a first area (circled blue) when the first group of thumbnails is displayed (circled red). LG-1021, [0153]-[0158], FIGS. 26, 30.

Horn explains that the “content pane ... dynamically displays the contents of whatever item is selected in the first two views (2603),” where, “[i]n the case of a folder or collection, the contents of the folder or collection is shown in an icon or list view.” LG-1021, [0156].



LG-1021, FIG. 30 (annotated) (excerpted)

Modified image of Horn's FIGS. 29 and 30 similarly shows this. LG-1003, ¶293. Additionally or alternatively, the modified image shows a first character ("Western Travel" or one or more of its letters) corresponding to the first group ("Western Travel") is displayed in another first area (circled orange) when the first group of thumbnails is displayed (circled red). *See, e.g.*, LG-1021, FIG. 26; LG-1003, ¶293.



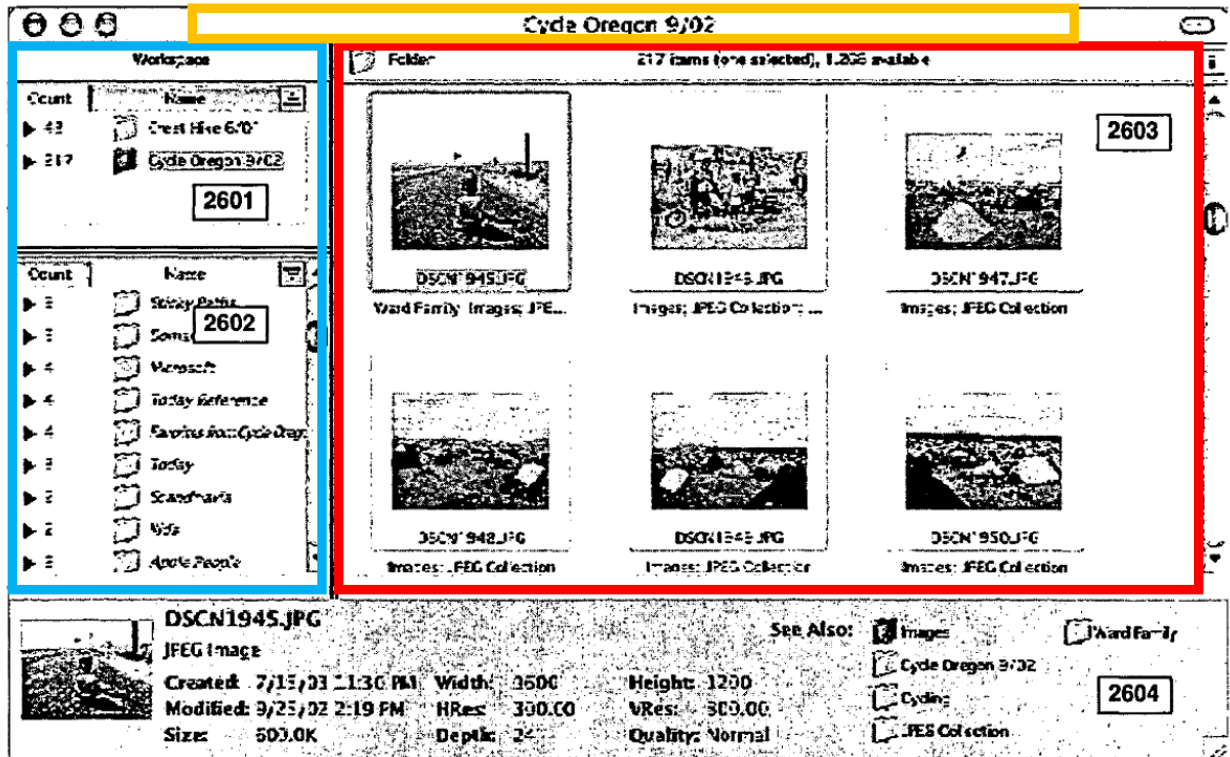
Modified image based on LG-1021, FIGS. 29-30

[2.b]

Horn discloses [2.b]. LG-1005, FIG. 26; LG-1003, ¶¶294-295; *see* [2.a].

As shown in FIG. 26, below, a second character (“Cycle Oregon 9/02” or one or more of its letters) corresponding to the second group of video information (“Cycle Oregon 9/02” folder) is displayed in a first area (circled blue) when the second group of thumbnails is displayed (circled red). LG-1021, [0153]-[0158], FIG. 26. Horn explains that the “content pane ... dynamically displays the contents of whatever item is selected in the first two views (2603),” where, “[i]n the

case of a folder or collection, the contents of the folder or collection is shown in an icon or list view.” LG-1021, [0156].



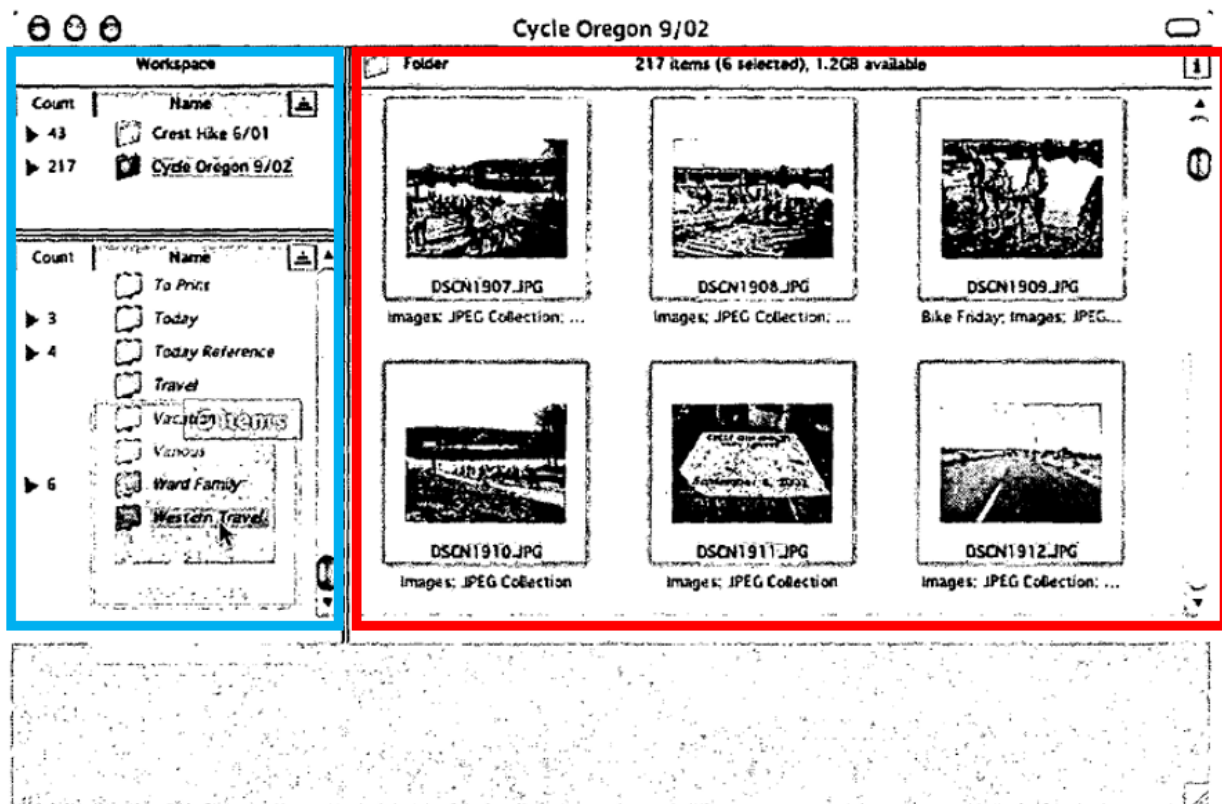
LG-1021, FIG. 26 (annotated)

Additionally or alternatively, FIG. 26 shows a second character (“Cycle Oregon 9/02” or one or more of its letters) corresponding to the second group of video information (“Cycle Oregon 9/02”) is displayed in another first area (circled or orange) when the second group of thumbnails is displayed (circled red). See LG-1021, FIG. 26; LG-1003, ¶295.

4. Claim 3

[3.a]

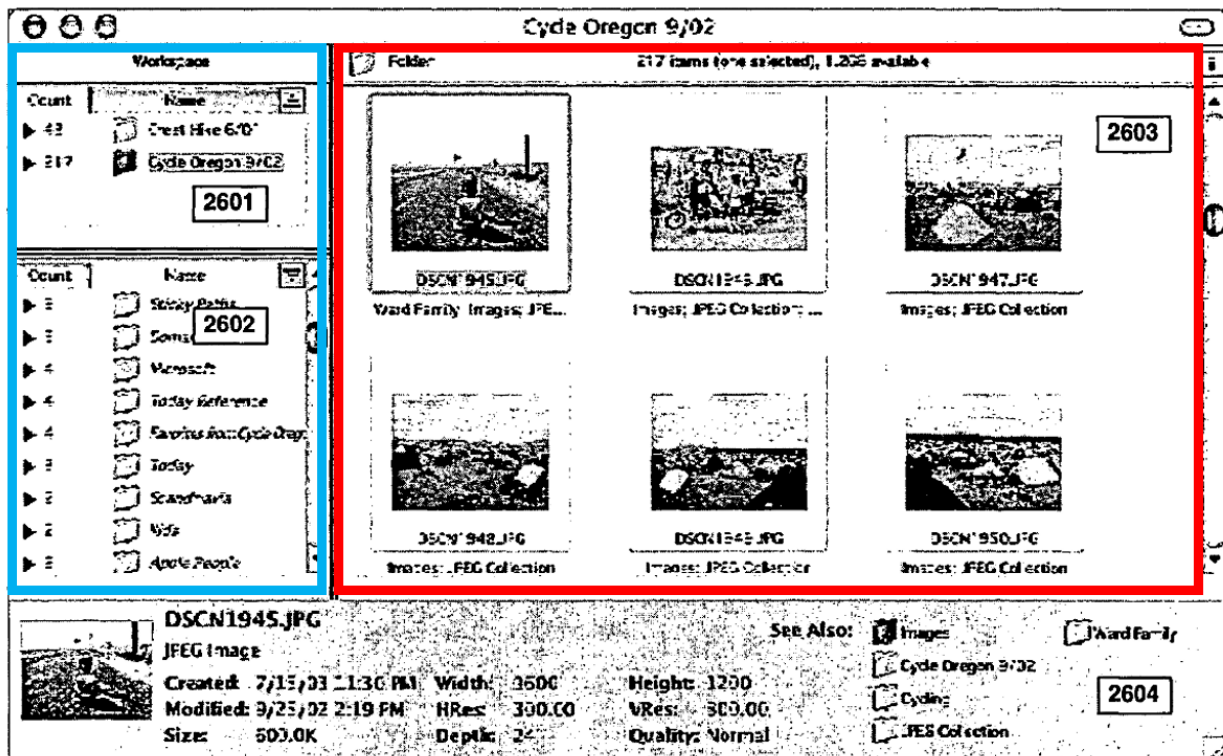
Horn discloses [3.a]. LG-1021, FIGS. 26, 30; LG-1003, ¶¶296-297; *see* [2.a]-[2.b]. As shown in FIG. 30, below, the first group of thumbnails (thumbnails in “Western Travel”) is displayed in a second area (circled red) that is different from the first area (circled blue). LG-1021, FIGS. 26, 30; LG-1003, ¶¶296-297.



LG-1021, FIG. 30 (annotated) (excerpted)

[3.b]

Horn discloses [3.b]. LG-1021, FIG. 26; LG-1003, ¶¶298-299; *see* [3.a]. As shown in FIG. 26, below, the second group of thumbnails (thumbnails in the “Cycle Oregon 9/02” folder) is displayed in a second area (circled red) that is different from the first area (circled blue). LG-1021, FIG. 26; LG-1003, ¶¶298-299.



LG-1021, FIG. 26 (annotated)

5. Claim 4

[4]

See [1.g]. Horn explains that “items may be removed from a collection by choosing the Remove command, which removes the items from the collection but

does not otherwise delete the item from the source (e.g. the file system).” LG-

1021, [0167]; LG-1003, ¶300.

6. Claim 5

[5.pre]

See [1.pre].

[5.a]

See [1.a].

[5.b]

See [1.c].

[5.c]

See [1.b].

[5.d]-[5.f]

See [1.e]-[1.g].

7. Claim 6

See [2.a]-[2.b].

8. Claim 7

See [3.a]-3[b].

9. Claim 8

See [4].

10. Claim 9

[9.pre]-[9.c]

See [1.pre]-[1.c].

[9.d]

See [1.d]-[1.e].

[9.e]

See [1.d], [1.f].

[9.f]

See [1.g].

11. Claim 10

See [2.a]-[2.b].

12. Claim 11

See [3.a]-[3.b].

13. Claim 12

See [4].

14. Claim 13

[13.pre]

See [1.pre].

[13.a]

See [1.a].

[13.b]

See [1.c].

[13.c]

See [1.b].

[13.d]

See [1.d].

[13.e]

See [1.b].

[13.f]-[13.h]

See [1.e]-[1.g].

15. Claim 14

See [2.a]-[2.b].

16. Claim 15

See [3.a]-[3.b].

17. Claim 16

See [4].

IV. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

A. Discretionary denial under §314(a) is not merited

The merits of Petitioners’ arguments are compelling, and the evidence in support is substantial. That “alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*.” LG-1026, 4-5. Moreover, the *Fintiv* factors do not favor denial.

Factor 1 is neutral; neither party has requested a stay in co-pending litigation.

Factor 2 favors institution; the Court has not yet set a trial date. The Board will likely issue its Final Written Decision around August 2026, approximately **1.5 years before** the projected trial date based on the most recent statistics on median

time-to-trial for civil actions in NDCA (January 25, 2028). LG-1027, 66.

Factor 3 favors institution; Petitioners have filed this Petition ahead of the one-year time bar, while the Litigation is still in its early stages. Beyond Patent Owner serving infringement contentions, the parties and the District Court have yet to expend significant resources. LG-1038.

Factor 4 favors institution because Patent Owner only alleges infringement with respect to the '449 patent's claims 9-12. LG-1028, 51; LG-1038. This Petition, however, challenges all claims of the '449 patent. Accordingly, many Challenged Claims will likely be unaddressed in the litigation. *See Apple, Inc. v. SEVEN Networks, LLC*, IPR2020-00156, Paper 10, 21-22 (June 15, 2020). Thus, Factor 4 favors institution.

Factor 5: The parties in the parallel NDCA litigation are the same.

Factor 6 favors institution; the merits of this Petition are compelling, as described in this Petition. Indeed, the grounds presented herein apply, in a straightforward manner, to demonstrate the obviousness of the claims. Grounds 1-4, for example, rely entirely on references and combinations that are the same or similar to grounds that the PTAB relied upon in finding similar claims in U.S. Patent No. 9,384,783 unpatentable. LG-1040, 48. Ground 5 offer similarly strong invalidity arguments.

While the Office issued no prior art rejections during prosecution, each of

Bryant, Kaplan, and Horn—none of which was not considered during prosecution—discloses all or nearly all limitations of the Challenged Claims. And, either alone or with another prior art reference, each of those references clearly renders obvious those claims. *See* §III, *supra*.

V. CONCLUSION AND FEES

The Challenged Claims are unpatentable. Petitioners authorize charge of fees to Deposit Account 06-1050.

VI. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(a)(1)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

LG Electronics Inc. and LG Electronics U.S.A., Inc. are the real parties-in-interest.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

The '449 Patent is the subject of a civil action, *Maxell, Ltd. v. LG Electronics Inc. et al.*, 5-23-cv-00152 E.D. Tex. filed December 29, 2023 (transferred) and *Maxell, Ltd. v. LG Electronics Inc. et al.*, 5-24-cv-04972 N.D. Cal. filed August 9, 2024 (pending).

Petitioners are not aware of any other disclaimers, reexamination certificates, or IPR petitions addressing the '449 Patent.

C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioners provide the following designation of counsel.

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D. Service Information

Please address all correspondence and service to the address listed above.

Petitioners consent to electronic service by email at IPR18768-0217IP6@fr.com

(referencing No. 18768-0217IP6 and cc'ing PTABInbound@fr.com).

Respectfully submitted,

Dated December 30, 2024

/Jennifer J. Huang/

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,932 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated December 30, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on December 30, 2024, a complete and entire copy of this Petition for *Inter Partes* Review and all supporting exhibits were provided by Federal Express, to the Patent Owner, by serving the correspondence address of record as follows:

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