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RESCISSION OF ANY PRIOR DISCLAIMERS AND REQUEST TO REVISIT ART

Inventor	:	William Gross et al.
App. No	:	Unknown
Filed	:	Herewith
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Examiner	:	Unknown
Art Unit	:	Unknown
Conf #	:	Unknown

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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The claims of the present application are different and possibly broader in scope than the claims pursued in the parent application(s). To the extent any prior amendments or characterizations of the scope of any claim or referenced art could be construed as a disclaimer of any subject matter supported by the present disclosure, Applicant hereby rescinds and retracts such disclaimer. Accordingly, the references previously considered in the parent application(s) may need to be re-visited.

Knobbe, Martens, Olson & Bear, LLP

Respectfully submitted,

Dated: October 6, 2014

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	X1.002C3
	Application Number	
Title of Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	X1.002C3
	Application Number	
Title of Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING	

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Application Information:

Title of the Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING		
Attorney Docket Number	X1.002C3	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	23	**Suggested Figure for Publication (if any)**	

Filing By Reference :

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For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	X1.002C3
	Application Number	
Title of Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING	

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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	11/972563	2008-01-10

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11/972563	Continuation of	10/654588	2003-09-03	7370035	2008-05-06

Prior Application Status	Abandoned		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10/654588	Claims benefit of provisional	60/408015	2002-09-03
Prior Application Status	Abandoned		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10/654588	Claims benefit of provisional	60/413013	2002-09-23
Prior Application Status	Abandoned		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10/654588	Claims benefit of provisional	60/448923	2003-02-20
Prior Application Status	Abandoned		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10/654588	Claims benefit of provisional	60/470903	2003-05-14
Prior Application Status	Abandoned		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10/654588	Claims benefit of provisional	60/478690	2003-06-13

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	X1.002C3
	Application Number	
Title of Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING	

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[j] (if applicable)

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	X1.002C3
	Application Number	
Title of Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING	

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

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Name of the Deceased or Legally Incapacitated Inventor :

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	X1.002C3
	Application Number	
Title of Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING	

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Signature	/Russell M. Jeide/			Date (YYYY-MM-DD)	2014-10-06
First Name	Russell	Last Name	Jeide	Registration Number	54198

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EFS ID:	20337162
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Kevin Kraus
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	06-OCT-2014
Filing Date:	
Time Stamp:	18:00:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		SPEC.pdf	171546 a0a5f228762a9dcc6826b6d42c46be9a6603f46c	yes	49

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	47
	Claims	48	48
	Abstract	49	49

Warnings:					
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2	Drawings-only black and white line drawings	DRAWINGS.pdf	4563619 dfb53a47bc69431fcd05438cac8795746ec560bc	no	23
Warnings:					
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3	Miscellaneous Incoming Letter	REVISIT_ART.pdf	66924 411db08a9507b50a576ae999416dcef7bd0b3962	no	1
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METHODS AND SYSTEMS FOR SEARCH INDEXING

PRIORITY CLAIM

[0001] This application is a continuation of U.S. Patent Application No. 11/972,563, filed on January 10, 2008, which is a continuation of U.S. Patent Application No. 10/654,588, filed on September 3, 2003, which claims priority under 35 U.S.C. § 119(e) to U.S. Provisional Application No. 60/408,015, filed September 3, 2002, U.S. Provisional Application No. 60/413,013, filed September 23, 2002, U.S. Provisional Application No. 60/448,923, filed February 20, 2003, U.S. Provisional Application No. 60/470,903, filed May 14, 2003, and U.S. Provisional Application No. 60/478,960, filed June 13, 2003, each of which is hereby expressly incorporated by reference in their entireties.

Related Applications

[0002] This application is related to copending application entitled APPARATUS AND METHODS FOR LOCATING DATA, Serial Number 10/654,595, Attorney Docket No. X1.001A, and copending application entitled METHODS AND SYSTEMS FOR WEB-BASED INCREMENTAL SEARCHES, Serial Number 10/654,596, Attorney Docket No. X1.003A, each of which were filed on the same date as U.S. Patent Application No. 10/654,588, entitled METHODS AND SYSTEMS FOR SEARCH INDEXING, the entirety of which are hereby incorporated by reference.

Background

Field

[0003] The present invention relates generally to data processing, and in particular to systems and methods for locating data.

Description of the Related Art

[0004] Conventional search application programs often are slow and cumbersome to use. For example, many search engines require the user to type in a search term, click on a search button, and review the results. If the user is not satisfied with the results, as might be the case if too many items or items that are not of interest are found, then the user needs to edit the search terms, click on an initiate search button, and again review the results. In addition, many search application programs only provide for limited search filtering, wherein the user is limited to filtering the search based on dates, file location, and file contents.

[0005] Another drawback of some search engines is that the actual search process takes an annoying amount of time to complete a search. Furthermore, some search engines do not include search features directed to specific types of search targets, such as email, Web pages, and files. Alternatively and inconveniently, separate tools may be needed to search for email, Web pages, and files if the user desires corresponding specific search features.

[0006] Further, with many Web-based search systems, the user types in a search phrase in a Web page search field presented via a browser on the user's computer screen, and then presses an Enter key or Search button to have the query transmitted to a remote server system that will perform the search. The server processes the query, generates a list of search results, and sends the list back to the user's browser. The user then clicks on one of the choices, whereupon a target page is displayed. The process from the time the user starts typing, until the user sees the target page, can take at least 5 seconds, and often takes 30 seconds or more.

[0007] Because of the turnaround time for typing in a search phrase to receiving search results, this conventional search procedure can demand a deliberative and tedious strategy from the user in order to search efficiently. First the user may think carefully regarding what search terms to use, the user then enters the search term, initiates the search, after several seconds receives and reviews the list of results, decides which, if any of the results seem relevant enough

to click on, click on a selected list item, wait several seconds for the corresponding Web page to be returned and displayed on the user's browser, and finally reviews the Web page.

Summary

[0008] One example embodiment of the present invention advantageously provides for incremental or reactive searching of a variety of search targets. For example, the search targets can include one or more of files, emails, email attachments, Web pages, specific databases, and/or the like. Because a search is performed incrementally, the search results are provided or narrowed substantially immediately after each character in a search string is entered by a user. Thus, the user is provided with substantially immediate feedback as the search string is being entered, and so can quickly decide on the desirability of entering additional search characters, entering a new search string, or deleting one or more search string characters.

[0009] An example search application generates one or more indexes corresponding to the search target types. An index optionally includes both content information and attribute information for potential search targets. The attribute information can be specific to the type of search target. For example, the index can include at least partially different attribute information for files as compared to emails. The indexing is optionally performed incrementally.

[0010] One embodiment is a method of performing a search comprising: receiving at least a first search string and a second search string as the first and second search strings are being entered into the same search field; and incrementally locating at least a first document that has a least a first word that begins with the first string and a second word that begins with the second string.

[0011] Yet another embodiment is a search apparatus, comprising: a first instruction configured to read at least a first search string and a second search string entered into a same first search field; and a second instruction configured to incrementally filter search results to locate at least a first document that has a least a

first word that begins with the first string and a second word that begins with the second string.

[0012] Still another embodiment is a search index system comprising: scan code that determines at least in part what files to index; index code that indexes files based at least in part on the scan code determination, wherein the index code is further configured to locate punctuation marks in at least a first search string and to treat at least a portion of the punctuation marks as string separators based at least in part on their location within the first search string.

[0013] One embodiment is a method of selectively performing a search and executing a command, the method comprising: receiving at least a first string in a search field; determining if the first string is a command; selectively initiating command execution in response to determining that the first string is a command; and selectively initiating a search if the first string is not a command.

[0014] Still another embodiment is a search apparatus, comprising: a first instruction configured to receive a first string entered into a search field; a second instruction configured to determine if the first string corresponds to a command; a third instruction configured to initiate command execution in response to determining that the first string corresponds to a command; and a fourth instruction configured to initiate a search if the first string is not a command.

Brief Description of the Drawings

[0015] Embodiments of the present invention will now be described with reference to the drawings summarized below. These drawings and the associated description are provided to illustrate example embodiments of the invention, and not to limit the scope of the invention.

[0016] Figure 1 illustrates an example computer system that can be used in accordance with one embodiment of the present invention.

[0017] Figure 2A illustrates an example index architecture.

[0018] Figure 2B illustrates an example search process using the index.

[0019] Figure 2C illustrates an example indexing process.

[0020] Figure 2D illustrates an example use of a pre-computed sort list.

[0021] Figures 3A-I illustrate example user interfaces in accordance with one embodiment of the present invention.

[0022] Figures 4A-4F illustrate example search processes.

[0023] Figure 5 illustrates an example computer system that can be used to provide a server based search system in accordance with one embodiment of the present invention.

[0024] Figure 6 illustrates an example search process using the server based search system.

[0025] Figure 7 illustrates an example process of scrolling through a search list.

[0026] Throughout the drawings, like reference numbers may be used to refer to items that are identical or functionally similar.

Detailed Description of Preferred Embodiments

[0027] Embodiments of the present invention provide systems and methods for searching, index, and presenting information. As will be described in greater detail below, in one example embodiment, a search apparatus provides multiple search fields corresponding to different search target characteristics. As a user enters in a search term into a field, the search results are refined incrementally with each entered character. Thus, the search results are shown as the user enters search characters or terms. To further refine or filter the search results, the user can enter other search terms into other fields. In one embodiment, the filtering process is performed substantially immediately upon the user entering addition search characters or terms.

[0028] Further, a user can incrementally broaden the search results by deleting or backspacing over previously entered search characters. The search results are broadened substantially immediately, in response to the user deleting or back spacing over a character, without requiring that the user click on or otherwise activate a "search" button or the like. A search, for example, can typically take 200 ms or less, though in some situations it can take longer, such as, for example, 300 ms, 400 ms, 600 ms, 1 second, or 2 seconds.

[0029] In one embodiment, a user interface includes a list area or pane, which lists the search results (optionally including headlines or summaries), and a view area or pane, which displays an item or contents of an item, such as an item selected in the list area. Advantageously, the user can customize an example search system in accordance with the user's preferences.

[0030] Throughout the following description, the term "Web site" is used to refer to a user-accessible server site that implements the basic World Wide Web standards for the coding and transmission of hypertextual documents. These standards currently include HTML (the Hypertext Markup Language) and HTTP (the Hypertext Transfer Protocol). In addition, reference is made to Java script (also referred to as JavaScript), though other types of script, programming languages, and code can be used as well. It should be understood that the term "site" is not intended to imply a single geographic location, as a Web or other network site can, for example, include multiple geographically distributed computer systems that are appropriately linked together. Furthermore, while the following description relates to an embodiment utilizing the Internet and related protocols, other networks, such as networked interactive televisions, and other protocols may be used as well.

[0031] In addition, unless otherwise indicated, the functions described herein are preferably performed by executable code and instructions running on one or more general-purpose computers. However, the present invention can also be implemented using special purpose computers, state machines, and/or hardwired electronic circuits. The example processes described herein do not necessarily have to be performed in the described sequence, and not all states have to be reached or performed.

[0032] Further, while the following description may refer to "clicking on" a link or button, or pressing a key in order to provide a command or make a selection, the commands or selections can also be made using other input techniques, such as using voice input, pen input, mousing or hovering over an input area, and/or the like.

[0033] One example search system provides for incremental searching across a plurality of attribute fields for files, emails, email attachments, the Internet, other networks, prior Internet or other network search results ("history"), favorites,

specific databases, and/or the like. In one example embodiment, the search system includes a client-based search application. Other embodiments can utilize a server-based search application.

[0034] One example search application includes tabs corresponding to an email search interface, a files search interface, a Web search interface, a favorites search interface, an email attachment interface, a Web history search interface, and/or a specific database search interface. Thus, in one example embodiment, a search application provides search specific interfaces for different types of search targets.

[0035] Optionally, all the tabs are efficiently displayed and selectable in a plurality screens. Thus, while viewing a first target search interface, a user can select a different search target interface by moving the cursor over a given tab and then clicking on the tab. In another embodiment, a list of interface links or a drop down menu can be used to select the target specific search interfaces. In addition, other methods of selecting the search target interfaces can be used as well. For ease of use, the different interfaces optionally have similar layouts with respect to the positioning of may of the interface elements, such as the list and view areas, the tabs, and main search field.

[0036] Figure 1 illustrates example hardware and software components on a physical and/or functional level that can be invoked or used when performing a search and/or an indexing operation. As depicted, one embodiment includes a search application 102 stored on and executed by a user terminal 104. As will be described in greater detail below, the search application 102, provides user interfaces for searching email, files, Web sites, cached Web pages, databases and the like. In addition, the search application 102 has a local index engine 103 that indexes email, files, cached Web pages, databases and the like, stored in a data repository or database 105. For example Web pages previously viewed in the search application's view pane or area, and optionally, stored Web pages previously viewed using other user browsers, or otherwise stored locally can be indexed. Separate indexes can be used for the email, files, cached Web pages, databases and the like, or a single index can be used for the foregoing.

[0037] The index engine 103 can further include code configured as a scan engine or module that is used to determine whether a file is to be indexed. Thus, the index engine 103 can also scan files to identify new targets, such as email, document files, Web pages, database entries, and the like, that have not yet been indexed, or targets that have been previously been indexed but have since been modified. Optionally, rather then re-index all corresponding targets each time an index operation is performed, the index engine 103 can incrementally index just the new or modified targets or documents.

[0038] The index engine 103 can utilize one or more indexing algorithms to create an index, such as a reverse or inverted index. The index includes a data structure that associates character strings with files, documents, and the like. In one example embodiment, for each word or character string found with a file or document, the index stores which fields of which documents or files contain that word or character string.

[0039] In one example embodiment, the index is constructed in blocks, which for convenience will be referred to as incremental index bulks or bulks. In this example, there is an incremental index bulk for each indexed target type, such as files, email, favorites, email attachments, stored Web pages. By way of example, a bulk can be 4 Mbytes in size, 16 Mbytes in size, or other sizes. A given bulk can be a memory mapped block of volatile memory, such as DRAM or SRAM, in which list structures for the corresponding index are built. The bulks can be stored on slower mass memory, such as a hard disk drive, and then read into faster RAM upon startup of the search application. Advantageously, having the bulk memory mapped into RAM allows for fast searches and updating, as compared with having to translate the information from a disk storage format to a different RAM format.

[0040] When the bulk fills up so that the allocated memory space for the bulk is filled or substantially filled by the index data, the bulk is stored in non-volatile mass memory, such as a magnetic drive, and is termed a fixed index. The complete index for a given target type can include several fixed indexes and the bulk. As new documents or files are added to the index, they add to the bulk, rather than directly to the fixed

indexes. Optionally, the bulk can be stored in mass, non-volatile memory, such as a hard disk drive, and read into RAM as needed.

[0041] In the example embodiment, when a predetermined number of fixed indexes, such as 5, are created the multiple fixed indexes are optionally merged into a smaller number of indexes, such as single relatively larger fixed index. Advantageously, this permits searches to be completed in relatively less time, as fewer indexes, and optionally only one index, needs to be searched. Search speed is much more closely correlated with the number of indexes that need to be searched, as compared to the size of the index, and therefore it takes less time to search one large file as compared to 5 or 10 other files that are in aggregate the same size as the one large file.

[0042] After a merge process is performed, new items are indexed and added to the corresponding bulk, and additional indexes are stored in non-volatile mass memory, as similarly described above. Generally, the first fixed index is significantly larger than the other fixed indexes, as the first fixed index is the merged composite of previous fixed indexes, while the additional fixed indexes are each one bulk in size.

[0043] In one embodiment, a fixed index can include a plurality of separate files, though in other embodiments, a single file containing the same or equivalent data can be used. For example, a “col" file stores attribute data for the target files corresponding to the index. As will be discussed below, the attributes can be used as search criteria and can be displayed to the user in column format. For example, with respect to email a user interface for searching emails can include a from (sender) attribute column, a to (addressee) attribute column, date/time sent and/or received attribute columns, a folder path attribute column, a client attribute column, a cc attribute column, a size attribute column, and a bcc attribute.

[0044] The fixed index can further include an "occur" file, which is the main inverted index data file. A "occur-offsets" file can also be generated. The occur-offsets file stores pointers into the "occur" file. The fixed index additionally includes a "words" file that comprises a list of the words that occur in the target files. Additionally there is a "deletions" file that lists indexed documents or files that have since been deleted. A “body” file can also be generated which has the document text. The body file content is

used for view pane display when the actual document or document is not available or may become unavailable when the content is needed for display in the view pane. The body file can be particularly useful for more transient files, such as emails. The example bulk includes a words file, an occur file, and an occur offsets file.

[0045] Figure 2A illustrates an example index configuration, though other index configurations, types and structures can be used in other embodiments. Each target type can be associated with its own corresponding set of fixed indexes and bulk. Advantageously, having separate sets of indexes for each target type, search and indexing can be performed faster. However, in other embodiments, the same index or index set can be used for all target types. The example index configuration illustrated in Figure 2A includes three fixed indexes 204A, 206A, 208A stored on mass storage media 202A, which can be, for example a magnetic or optical disk drive. In this example, fixed index 204A is a merged index and is larger than indexes 206A, 208A which are non-merged index. Index 208A is the final index, that is, the index with the most recent additions and/or deletions. The final index 208A includes the information from the bulk 212A. The bulk 212A includes a words file, an occur file, and an occur offsets file. Advantageously, the bulk 212A is stored in RAM 210A so that additions and deletions can be made very quickly, without requiring constant modification of the final index 208A stored on slower mass storage media 204A. Optionally, all the indexes can be read into RAM 210A to increase search speed. Upon shut-down of the search application, the bulk 212A is written back to the index 208A for storage on the non-volatile mass memory media 204A.

[0046] Figure 2B illustrates an example search lookup operation. At state 202B one or more search characters or strings are received. At state 204B the character or character strings are located in the words file. At state 206B the pointer or pointers for the character or character strings in the occur-offsets file are located. At state 208B document-occurrence information is read from the occur file using the located pointers. At state 210B the search results are presented to the user. The search results are displayed in the list pane or area, and the view area or pane displays the contents of the first item or a selected item from the list area.

[0047] Optionally, the content displayed in the view area or pane is auto-scrolled down to the first matching character or character string, which may be highlighted or otherwise emphasized. The search term can be automatically displayed with multiple preceding and succeeding lines or sentences. For example, a search for "matisse" might find a document where the first appearance of "matisse" occurs at the 100th line down. The auto-scroll process automatically scrolls down to, or otherwise displays the content beginning at a certain point relative to the first appearance of "matisse." For example, the content can be displayed in the view pane from line 90 to line 110, substantially immediately upon selecting that page in the list pane, so that the user can immediately see the matching word "matisse" in context. Optionally, the user can specify how many sentences or lines are to be displayed before and after the search term.

[0048] Optionally, the view area or pane displays the content in a collapsed format, so that several matches that are distributed throughout a viewed document can be seen at once, with one or more lines or sentences of context above and below each match displayed as well, and the remaining lines deleted or "collapsed" into ". . ." types of lines, with + symbols for expanding the collapsed section to view that section or the entire document in uncollapsed format, and with – symbols to recollapse a section as desired.

[0049] In one optional embodiment, the index stores "prefix" entries, which further enhances the speed of incremental filtering or searching. For example, in addition to bare or complete words, such as "dog," common prefixes, such as "d" or "do", are stored as well. The "d" prefix entry contains information indicating which documents or files contain a word or character string starting with "d". By preparing this information during indexing, the response for the first letter or two of a filtering or search operation is greatly enhanced as compared to a standard inverted index, which would have to locate thousands of matches at the time of receiving the user query, thereby resulting in slow filtering operations.

[0050] Optionally, a "sort" file is provided for each attribute column. The sort files are cached sort orders for the documents or files in the fixed index, when sorted by that column. In one embodiment, the sort order for each column is pre-computed

before receiving a user sort instruction, so that when the user provides a sort order, such as by clicking on a column header to sort, the sort operation is performed almost instantly, in a few seconds or a fraction of a second, rather than in minutes. Optionally, the sort files can be cached in local RAM to speed up access of the sort files. The user can optionally specify that a particular attribute is to be used as a default sort key when presenting a document list. Thus, for example, the user can specify that as a default sort for email, emails should be automatically sorted and ordered according to date/time received. In this example, the pre-computed default sort list, also referred to as a master sort list, would then be sorted according to date/time, and the master sort list would be almost instantly presented with the pre-computed sort list when the user clicks on the email tab.

[0051] Optionally, a pre-computed sort list for a plurality of documents or files, or for every document or file in a selected search tab or interface is stored in high speed local memory RAM, sorted by the current sort order. The search engine can then search through this list when additional search terms are added. Advantageously, this enables the substantially instant redisplay of a given search result list in the selected order when the search results change as the result of a letter being typed or removed from the filtering phrase. Without the master sort list the incremental filtering might appear to operate much more slowly. In another embodiment, the column information is compressed so that all or a large portion of the column information fits in RAM. The column information can then be sorted using memory-sort algorithms, rather than pre-computing the sort order. In one example embodiment, the column information is compressed using a unique-string dictionary that includes each unique value that occurs in each attribute column file. The attribute column file contains pointers to items within this unique-string dictionary, rather than the strings themselves.

[0052] In one example embodiment, the pre-computed sort list is generated and used as follows. Referring to Figure 2D, a sort process begins at state 202D, where a matching item list is retrieved or accessed from memory. At state 204D certain information in the matching item list is stored using a bit mask that optionally contains a bit for every item in a corresponding master sort list, that is for each indexed item for a

given target type. The bit indicates whether the item in the master sort list is a matching item or not, that is, whether the item is included in the matching item list. For example, each bit can be set to either a "1" to indicate the item is a match, or a "0" to indicate no match. For example, if there are 1,000,000 indexed items in the master sort list, then the bit mask would use 1,000,000/8 bytes = 125k. Advantageously, use of the bit mask often significantly reduces that time it takes to locate matches as a quick bit-check operation can be performed on a given bit mask bit position, rather than necessitating a search through all or a large portion of the master sort list.

[0053] At state 206D the bit for an item in the bit mask is read to determine whether the master sort list item corresponding to the bit is a matching item or not. If the item is a matching item, the process proceeds to state 208D at which the item is added to the sorted list results and the process proceeds to state 210D. Otherwise, the process from state 206D to state 210D. At state 210D a determination is made as to whether the end of the master sort list has been reached. If not, the process proceeds back to state 206D and examines the next bit in the bit mask corresponding to the next item in the master sort list. If the end of the master sort list has been reached, the process proceeds from state 210D to state 212D.

[0054] In one embodiment, a bit mask is generated using the index file information. For example, there can be one bit per document, indicating which documents contain each word in the search phrase. Then Boolean operations (for example, AND, OR, NOT, XOR, etc.) can be used to combine the bit masks for some or all of the fixed indexes, and for some or all the different words or character string, to get a bit mask of the matching results.

[0055] Referring back to Figure 1, the database or repository 105 may be configured as multiple files and/or databases stored on an internal or external storage device of the user terminal 104. A given index can include the item content, and the time, date, item size, or other attributes from when the index entry was created and/or last updated. The some or all of the foregoing index information can be used to determine if a file has been previously indexed or modified since it was last indexed, therefore needs to be indexed or re-indexed.

[0056] The search application 102 further includes a local search engine 107 that utilizes one or more of the indexes created by the index engine 103 to locate email, files, cached Web pages, databases and the like in response to a user query. For example, in response to a query the local search engine 107 accesses the index 105 and locates corresponding matches. The search engine 107 returns excerpts or headlines from relevant matches, and also returns links to the matches. In addition, the search application 102 optionally passes user queries to one or more remote search engines, receives the results, and displays the results to the user. In one embodiment, the search application 102 includes command line code that determines whether a user has entered a command into a search field, and if so, causes the command to be executed. While the search engine 107 and the index engine 103 are illustrated as separate entities, in one embodiment, they are combined in a single engine or module.

[0057] The search application 102 can be downloaded or accessed from a remote Web site, loaded via removable, optical, magnetic, or semiconductor memory, pre-loaded on the terminal's mass storage apparatus, or otherwise stored and/or made accessible to the terminal 104.

[0058] The terminal 104 can be a personal computer, an interactive television, a networkable programmable digital assistant, a computer networkable wireless phone, and the like, that optionally has access to the Internet via a network interface. The terminal 104 can include a display, keyboard, mouse, trackball, electronic pen, microphone (which can accept voice commands), other user interfaces, speakers, semiconductor, magnetic, and/or optical storage devices.

[0059] In addition to the search application 102, the user terminal 104 can run one or more commercially-available Web browser applications 106 such as Microsoft Internet Explorer® or Netscape Navigator®, which implement the basic World Wide Web standards such as HTTP and HTML.

[0060] The terminal 104 can also host and/or execute a commercially available e-mail application 109, such as Microsoft Outlook® which may be used to receive, send, and display emails. The e-mail application 109 and the browser 106 may be integrated with one another, and/or may be integrated with other application programs or the terminal operating system.

[0061] In the embodiment described herein, a Web site 108 hosts a remote search engine 110 executing on a computer system 111. The computer system 111 includes one or more content and index databases 112. The Web site 108 and search engine 110 are accessible to the search application 102 via the Internet 113. The Web site 108 may optionally include content that spans multiple Internet domains, and/or may be implemented using physical servers that are geographically remote from one another. In other embodiments, the Web site 108 may be in the form of an intranet site, in which case the terminal 104 may be coupled to the site by a private network. For example, Web site 108 may be in the form of an internal corporate store site for company employees.

[0062] In other embodiments, the Web site 108 may be replaced with another type of network site. For example, the various services described herein could alternatively be implemented on a hypertextual site or browsing area of an online services network such as America Online® or MSN®, in which case users may access the site using software that implements non-standard document formats and transfer protocols.

[0063] In addition, there can be several independent search engines associated with different Web sites, accessible to the terminal 104 via one or more computer networks.

[0064] As further depicted by Figure 1, the Web site 108 includes a commercially-available Web server application 114. The Web server application 114 accesses databases used to generate Web pages in response to queries from end users, including queries submitted via the search application 102. In addition, the Web server application 114 can respond to the browser's request for a page, and deliver the page to the Web browser 106 through the Internet 113.

[0065] By way of example, the search engine 110 may search server-based databases, such as databases 112, of the full text of Web pages selected from selected Web pages. By way of example, the databases 112 can be generated using a spider or the like that “crawls” the Internet searching for Web pages, which are then stored in the databases 112, and that follow the links in those Web pages to other Web pages, which are then stored in the databases. Because the databases

112, or portions thereof, may have been generated before a user submits a search query, these databases may not be fully current. When the search engine 110 performs a Web search in response to a user query, the search engine returns excerpts from relevant Web pages as stored in a corresponding database, and also returns links to the current version of the Web pages, if such exists.

[0066] In addition, a Web page may be added to the search engine databases 112 by directly entering a URL. Optionally, the URL may be submitted by a user or someone associated with the URL. Once a Web page is stored, the Web page is then indexed by the index engine 113. The indexing process may include Web page text, links, and other content. The index is stored in or in association with the search engine database 112. When a user submit a query or search terms, the search engine 110 searches the index based on the query or search terms, including Boolean terms. The search engine 110 locates matches, and links to the corresponding Web pages are transmitted to the user terminal 104 for display. While the search engine 110 and the index engine 113 are illustrated as separate entities, in one embodiment, they are combined in a single engine or module.

[0067] Optionally, certain types of Web pages and links can be excluded from being indexed. For example, optionally a Web site owner can request that the Web site pages are not to be included in the search engine database.

[0068] In addition the search application 102 includes a search application options form, via which the user can select the search application 102 to be configured in one of a docked mode, docked with auto-hide mode, and a "normal" Windows mode. If docked mode is selected, and assuming the search application 102 has been launched, a portion of the search application interface, such as a control bar, will constantly be visible at a fixed location of the user's display, such as on the top, left, right, or bottom of the user display. The control bar can include the search tabs discussed above, a main search field, a clear entry button, used to clear the main search field in response to a single click or activation, and a "go" button, used to initiate a search in those applications where the actual typing in of the search characters does not initiate the search. For example, when performing a

search over the Internet, the user may optionally need to click on the go button to initiate the search. An example control bar is illustrated in Figure 3I.

[0069] If the docked with auto-hide mode is selected, a portion of the search application interface will be at fixed location of the user's display, wherein the portion will visibly appear as a control bar when the user causes the cursor to point to the portion of the screen where the portion is docked for longer then a predetermined amount of time, such as 0.5 seconds. If the user moves the cursor off the control bar without performing a search, the control bar disappears, freeing screen space for use by other programs. If Windows mode is selected, the search application 102 operates as a conventional Windows program, wherein there is a non-docked, non-autohide window associated with the search application 102.

[0070] The option form also allows the user to set the search application 102 to start in email, files, Web, history, favorites, or database search mode.

[0071] Example search interfaces for different search targets, such as emails, files, the Web, and the like, will now be described. By way of example, the email search fields can include one or more of a content field, a from (sender) field, a to (addressee) field, date/time sent and/or received fields, a folder path field, a client field, a cc field, a size field, a bcc field, and a subject field. An example email search page or form is illustrated in Figure 3A.

[0072] By way of further example, the file search fields can include one or more of a content field, a file name field, a file type field, a date field, a file size field, a path field, an author field, a subject field, and so on. An example files search page or form is illustrated in Figure 3B.

[0073] By way of example, the history search fields can include one or more of a content field, a date/time (last viewed) field, a title field, a size field, a URL field, a format field, a category field, a domain field, a links field, a media type field, a language field, and/or a search term field. An example history search page or form is illustrated in Figure 3D. The Internet search fields can include a content field, a URL field, a title or Web site name field, a size field, a date field, a format field, a category field, a site field, a links field, and a language field, and/or a media type field. The favorites search fields can include one or more of a content field, a URL

or address field, a last refresh field, a title field, and/or the fields discussed above with respect to the Internet search fields. An example favorites search page or form is illustrated in Figure 3E.

[0074] Example email attachment search fields can include one or more of a content field, a name field, a date/time field, a from field, a size field, a MIME tag field, an extension field, and/or path field. An example email attachment search page or form is illustrated in Figure 3F.

[0075] Optionally, incremental indexing can be performed for files, emails, email attachments, Internet (or other network) search results, favorites, specific databases, and/or the like. Incremental indexing can be performed in direct response to a user command, continuously, periodically, and/or upon the occurrence of one or more specified conditions, generates and/or updates a corresponding index. For example, Web pages can be indexed as soon as they are stored or cached. Advantageously, incremental indexing can be used to provide consistently current search indexes.

[0076] For example, with respect to emails an email index can be incrementally updated upon the receipt of new emails, at a specified recurring period (for example, every 60 seconds), at one or more specific times during the day, or when the host computer system is idle. In one embodiment, the host computer system is considered idle when one or more of the following conditions are met: when central processor usage falls below a first threshold; when the host computer bus utilization falls below a second threshold, when a user interface device, such as a keyboard, has not been activated for a first period of time. In other embodiments, different criteria can be used to determine with a computer system is idle. In addition, the user can manually specify that indexing of new email shall be immediately performed, or that all email should be re-indexed.

[0077] By way of further example, with respect to files, a files index can be updated upon the creation, editing, or saving of a file, at a specified recurring period (for example, every 60 seconds), at one or more specific times during the day, or when the host computer system is idle. In addition, the user can manually specify that indexing of new files shall be immediately performed, or that all files should be

re-indexed. An example files incremental indexing options form is illustrated in Figure 3J. Advantageously, the user can optionally specify different indexing trigger conditions for different target types, such as for email and files. In one embodiment, the user can optionally specify different indexing trigger conditions for history, favorites, and attachments as well. Optionally, a server hosting a database can be configured to notify the search application of database changes, and the search application's index engine can index the changes substantially immediately after such notification.

[0078] Advantageously, an embodiment of the search application 102 can be customized by a user to meet the user's particular needs or preferences. For example, the user can select which email application or applications the email search is to be performed in conjunction with. For example, the user can select Microsoft Outlook®, Outlook Express, Netscape® Mail, Eudora® and/or other email applications. In addition, in one embodiment, the user can select one or more Internet search engines to be used in performing a search. As described above, the search engines can be executed by the host computer, or by a remote server. For example, in one embodiment the user can specify the Internet or other network searches are to be performed using one or more of Google™, Teoma™, and AltaVista® search engines.

[0079] With respect to Internet, email, file, or other searches, the user can optionally specify that only search results that are likely to be relevant are to be displayed. For example, if the user requests that only search results that are likely to be relevant are to be displayed, then only the higher ranked search results are displayed to the user. For example, only the top 20, 50, 100, 500, or 1000 search results may be displayed. Relevancy can be determine using one or more techniques, such as whether an exact match is found for the search terms, how many times the search terms are found in a document, the spacing of search terms in a document from each other, Optionally, the relevancy of each found document or file is scored, and the score for one or more of the files or documents are displayed to the user adjacent to the corresponding search results.

[0080] In addition, the user can optionally specify which local and/or network folders are to be indexed. Further, the user can optionally specify, on a global or file-by-file basis, that the file contents and all attributes are to be indexed, or only specified attributes, such as file name and/or size, are to be indexed. The user can also specify, on a global or file-by-file basis, that only certain types of files, or files with certain extensions, are to be indexed. For example, a user can specify that only .txt, .doc, .avi, .pdf., and .mpg are to be indexed.

[0081] Figure 2C illustrates an example indexing process for a given target that can be performed using the indexing/scanning module. As discussed above, the target can be a document, email, file, Web pages, or the like. Optionally, the user can specify that one or more of the following are to be included in the history index and/or search: Web pages located using the Web search interface corresponding to Web tab 310A, Web pages corresponding to the user's favorites, Web pages directly addressed using the address fields on any of the search interfaces, Web pages accessed via a separate browser, such as Microsoft Explorer.

[0082] In this example, the user has specified that indexing is to be performed when the host computer is idle. Beginning at state 202C, an indexing/scanning module determines if the host computer is idle. If the host computer is idle, the process proceeds to state 204C, where the scan process begins. At state 204C index item entries are marked, via a bit or flag associated with a given item, as unseen. As will be discussed below, the "unseen" bit is used to determine if a given item has been deleted and so is to be removed from the index. At state 206C a first item located in an appropriate directory on the mass storage device, which can be a disk drive, is located. At state 208C, because the first item was located, the corresponding index entry is now marked as seen by setting the corresponding flag or bit.

[0083] At state 210C the modification date and time, and/or creation date and time, of a given item is compared to the date and time the index was created or last updated to determine if the file needs to be indexed or re-indexed. For, example, if a file has been modified or created since the last time the index was updated, then those files are to be indexed.

[0084] Optionally, for email files and/or other file types, the indexing/scanning module generates its own "change ID" for each appropriate file. For example, for emails the change ID is generated based on email characteristics or attributes, such as subject, sender name, and/or date. By way of example, and not limitation, the change ID ("uid") can be an aggregate of two or more of the receive time, size, subject, and sender name, as well as the containing folder id, and message-store ID as follows.

[0085] uid = entryid + '|' + fullpathtocontainingfolder + '|' + folderid + '|' + storeid '|' + client.

entryid:
for the Outlook client, entryid = the MAPI entryid.
for other clients, entryid = the "message id" that can be found in the email headers,
and if that's not present, entryid is generated as follows:
entryid = receiveddata + '|' + size + '|' + subject + '|' + sendername

folderid:
for Outlook, folderid = the MAPI entryid of the containing folder
for OE (Outlook Express), use an id from its store
for other email clients, use the full path to containing folder

storeid:
for Outlook, storeid = the MAPI store id of the containing message store
for other clients, storeid is an empty string.

[0086] When performing state 210C during a scan operation, the index module examines the previously calculated change ID for each document or file, generates a new change ID for the documents or files, and compares the previous and new change IDs. If the change IDs are different for a file, then that file will be re-indexed.

[0087] At state 212C, the new and/or modified item indexed or re-indexed. At state 214C a determination is made as to whether there are additional items in the appropriate disk directories. If there are, the process proceeds from state 214C to state 206C, where the index process is repeated for the next item. Once all items have been indexed, the process proceeds to 216C. The index item entries are examined to determine if any of the entries are still designated as unseen, indicating

that the item was not found during the scan and index process. If the item is designated as unseen then it is inferred that the item has been deleted, and those unseen items are deleted from the index.

[0088] As illustrated in Figure 3A, one example search application interface includes a control bar 302A, including search mode tabs for files 304A, email 306A, email attachments 308A, the Internet World Wide Web ("Web") 310A, prior Web search results ("History") 312A, and favorites 314A. There is also an options button 316A that, if selected, provides the user with a variety of forms that allow the user to customize the search application 102 in accordance with the user's preferences and needs. In addition, there is a help button 318A, and a suggestion button 320A, which can be activated when the user wants to submit a suggestion regarding the search application 102 or improvements thereto. Advantageously, having the suggestion button 320A located on a main interface makes it more likely users will provide helpful suggestions, as compared to having such a suggestion button located on a buried menu or rarely accessed interface.

[0089] The tabbed interfaces can have a main search field 322A, wherein the user can enter a search string of one or more alphanumeric characters. The main search field is used to search for a string corresponding to one or more of the search fields associated with the search mode, and optionally other attributes. Thus, for example, with respect to the email tab 306A, the search application 102 will incrementally search for the main search field string in the email contents, from (sender) field, to (addressee) field, date/time sent or received fields, folder path field, client field, cc field, size field, and bcc field.

[0090] As illustrated in Figure 3A, the search results are displayed in a list area or pane 324A, which includes a list of the search results, including relevant attributes in column format. In the example illustrated in Figure 3A, the attributes include a from (sender) attribute column, a to (addressee) attribute column, date/time sent and/or received attribute columns, a folder path attribute column, a client attribute column, a cc attribute column, a size attribute column, a bcc attribute column, and a subject field. In this example, each of the columns has a corresponding search field 330A-348A.

[0091] In addition, a view area or pane 326A is provided that displays the content of the first item or user-selected item from the list pane or area 324A. The user can print the search results displayed in the list pane or area 324A, as well as the document, email, Web page, file, and the like, displayed in the view pane or area 324A.

[0092] Further, when the user clicks on a list pane entry, the corresponding contents are displayed in the view pane 326A. If the user double-clicks, or presses the Enter button, on the list pane entry, the search application causes the entry to launch in its native application. For example, if the user double-clicks on a list pane entry corresponding to a Word file, the file will open in Word. Similarly, if the user double-clicks on a Web page entry in the list pane 324A, the Web page will open in the user's default browser. If the user double-clicks an email entry, the email will open in the user's default email application, such as Microsoft Outlook®.

[0093] The user can also open the folder containing a file listed in the list pane by right-clicking on the file name in the list area 324A and selecting "View Folder". Similarly, the user can open the folder containing an email listed in the list area 324A by right-clicking on the email name in the list pane and selecting "Locate On Disk". The user can right-click to mark email listed in the list area 324A as read or unread by using the corresponding "mark read" or "mark unread" buttons at the top of the view area 326A. Further, the user can activate the plus and minus keys (+/-) to move from one highlighted search term to the next (or previous) in the view area 326A.

[0094] In one embodiment, the user can adjust the width of the list and view areas or panes 324A, 326A by dragging a divider bar 328A located between them to the left or right. In addition, rather than having the list and view areas 324A, 326A visually joined, the list and view areas 324A, 326A can optionally float separately from one another, and the user can separately drag the areas as desired on the user's display device. The user can move up, down, and between the list and view panes 324A, 326A using appropriate controls, such as, by of example, up,

down, left, right arrow buttons, the tab button, and/or the PgUp (page up) and PgDn (page down) buttons.

[0095] In addition, the user can adjust the column widths in the list pane or area 324A by dragging a corresponding column side. Further, the user can reorder the column placement by grabbing a corresponding column header, using, for example, the left mouse button, and then dragging the column to a new location. Optionally, the user can also delete columns. The user can cause the system to reverse a search sort order by clicking on a user selected column header.

[0096] Example searches will now be described. The searches can be performed using an index, such as that illustrated in Figure 2A, and using the search process as similarly described above with respect to Figure 2B.

[0097] By way of example, in order to perform an email search, a user can click on the email tab 306A and bring up the email search interface page, illustrated in Figure 3A. As illustrated in Figure 4A, at state 401A the search system waits for a user input. The user input can be, for example, a search character string or strings entered into the main search field 322A, a search character string or strings entered into an attribute search field, a sort command, or an inverse sort command. The search character or strings can include one or more alpha characters, numeric characters, words and/or phrases that appear in the email contents, from (addresser) field, to (addressee) field, date/time sent or received fields, folder path field, client field, cc field, size field, a bcc field, and a subject field of the email(s), that the user is searching for.

[0098] If the user has entered one or more characters or strings into the main search field 322A the process proceeds to state 402A where the search string is received. The characters or strings can be typed in one at a time by the user or a string or strings of multiple characters can be pasted in with a paste operation. Proceeding to state 404A, a search is incrementally performed using each entered character by the search application's local search engine, and the list pane or area 324A displays incrementally narrowed down search results. Thus, states 402A and 404A take place at almost the same time. For example, state 404A may take place a fraction of a second or a very few seconds after state 402A. Similarly, a user can

incrementally broaden the search results by deleting or backspacing over previously entered search characters. The search results are broadened substantially immediately in response to the user deleting or back spacing over a character, without requiring that the user click on or otherwise activate a "search" button or the like.

[0099] If the user entered one or more characters or strings into one or more corresponding column fields 330A-348A the process proceeds from state 401A to state 406A where the search characters or strings are received. For example, if the user is looking for an email that was received in April of 2003, the user can enter"2003-04" or a portion thereof into the date/time field 332A. At state 408A, as the user enters characters into a column search field, the search is further incrementally performed by the search application's local search engine, and the list pane or area 324A displays incrementally narrowed down search results. Thus, the user can enter or delete search terms in the search fields above each of the attribute data columns to incrementally limit or broaden the results based on matches in that column for the search term entered. The search is performed using the email index, including bulk and fixed indexes.

[0100] The user can optionally select a highlight process, wherein search terms will be highlighted in the list pane or area search results and/or in the view pane or area content display. The highlighting can be in the form of a different coloring, the use of different fonts, blinking text, and/or the like.

[0101] At state 410A, by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. For example, the user can click on the Size header to sort the results based on size. The sort can have been pre-computed as similarly described above so that the sort can be immediately displayed. At state 412 the search results are accordingly sorted. In one embodiment, the default sort orders displays the smallest size email first and the largest size email last.

[0102] At state 414A, clicking on the column header a second time reverses the sort order displayed to the user. For example, if the user believes that

the email being searched for is large in size, the user can click on the Size column header so that the larger files are displayed at the top of the column.

[0103] Figures 3G-H illustrate the email search interface during two different stages of an incremental search. The main search field 322A has the character string "2003-0" entered, the from field 330A has the character string "KU" entered, and folder field 334A has the character string "IN" entered, and the to field 338A has the character string "KM" entered with the NOT argument (-) preceding it. The search engine has narrowed the emails listed in list pane or area 324A to the twelve that have the character string "2003-0" in any of the emails' attributes or content, have "KU" in the from field, are located in a folder having the character string "IN" in the folder name, and that does not have the character string "KM" in the to field. The character strings are identically entered in Figure 3H, except the character string ("2003-07") entered in the main search field 322A now has one additional search character (a "7"). Substantially immediately after the "7" was entered, the search application incrementally narrowed the number of emails listed in the list pane 324A from the twelve illustrated in Figure 3G to the four emails listed in Figure 3H.

[0104] By way of further example, in order to perform a file search, a user can click on the file tab 304A and bring up the files search interface page, illustrated in Figure 3B. As illustrated in Figure 4B at state 401B the search system waits for a user input. The user input can be, for example, a search character string or strings entered into the main search field 322A, a search character string or strings entered into an attribute search field, a sort command, or an inverse sort command. If the user entered search characters or strings into the main file search field 306B, the entry is received at state 402B. For example, the entry can include one or more of alpha characters, numeric characters, words and/or phrases that appear in the file contents, the file name, the file type, the file modification date field, the file size, or the file path. At state 404B, as the user enters characters into the main search field the search is incrementally performed by the search application's local search engine, and the list pane or area 308B displays incrementally narrowed down search results.

[0105] If the user has entered one or more characters or strings into one or more corresponding column attribute fields the process proceeds from state 401B to state 406B where the search characters or strings are received. For example, the user can provide a relevant string of characters in a corresponding column attributes field, such as a file name field 312B, a file type field 314B, a date field 316B, a file size field 318B, and a path field 320B. By way of example, if the user is looking for a document located in a "Documents" file on the user's computer "C" drive, the user can enter "C: Documents" or a portion thereof in the path field 320B. At state 408B, as the user enters characters into a column search field, the search is further incrementally performed by the search application's search engine, and the list pane or area 308B displays incrementally narrowed down search results. The search is performed using the file index, including corresponding bulk and fixed indexes.

[0106] At states 410B, 412B by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. For example, the user can click on the Size header to sort the results based on size. In one embodiment, the default sort order displays the smallest size file first, and the largest size file last. At states 414B, 416B clicking on the column header a second time reverses the sort order displayed to the user. As discussed above, the search terms can optionally be highlighted in either or both the list pane or area 308B and the view pane or area 310B.

[0107] When searching the Internet and/or Web sites, a user can click on the Web site tab and bring up the Web search interface page, illustrated in Figure 3C. As illustrated in Figure 4C, at state 402C, the user enter a search query into a main search field 304C, including alpha characters, numeric characters, words and/or phrases that the user wants to search for in the Web site contents, the Web site name, and/or the Web site URL. At state 404C, the user initiates the search, such as by activating the "Go" button or pressing the Enter button and the initiation command is received by the search application.

[0108] At state 406C, the query is transmitted over a network, such as the Internet, to one or more search engines, such as Google™, Teoma™, and AltaVista®, which perform searches in parallel based at least in part on the user

entry. At state 408C, the search results from the one or more search engines are returned to the search application, and the search results are displayed in the list area or pane 306C and the Web page contents of a selected or highest ranked search result is displayed in the view pane or area 308C. Optionally, some or all of the Web pages corresponding to the search results are pre-cached on the user's terminal 104 or on other storage local to the user. For example, the Web pages of the first twenty (or other predetermined quantity) listed search results can be pre-cached. In one embodiment, the maximum number of pre-cached Web pages corresponding to the search results is set to be equal to the number of search results that can be displayed in the list pane.

[0109] At state 410C the search system waits for a user input. The user input can be, for example, a search character string entered into the main search field, a search character string entered into an attribute search field, a sort command, or an inverse sort command. If the user entered search characters or strings into the main file search field, the entry is received at state 412C. At state 414C, as the user enters characters into the main search field the search is incrementally performed by the search application's local search engine, and the list pane or area 308B displays incrementally narrowed down search results.

[0110] At state 416C, the user can narrow the search results displayed by entering a relevant string of characters in a corresponding column attributes field. The illustrated example includes a "results" column field 310C that can be used to search for all indexed attributes and/or content. Other embodiments can include additional or different columns and fields, such as a URL column and field, a title or Web site name column and field, a size column and field, a date column and field, a format column and fields, a category column and field, a site column and field, a links column and field, and a language column and field, a media type column and field corresponding to the type of media used on the page, and/or the like.

[0111] The format field and column are used to search for and categorize pages according to the page or document type and/or extension. For example, the format can be a Word document (.doc), an Acrobat document (.pdf), or a PowerPoint document (.ppt). The site field and column are used to search for and categorize

pages according to a Web sites top-level domain name (for example, www.zzzzzzz.com).

[0112] The category field and column are used to search for and categorize pages according to their genre or type, which can have descriptive labels such as "hubs", "personal home page", "commercial", and/or the like. The search system can examine certain Web page and site characteristics during the crawling of the Internet or thereafter, and based at least in part on those characteristics, identify the Web page as belonging to one or more categories. If the categorization is performed before a user requests a search, a user search request, including a category term, can be performed much faster than if the categorization was performed at the time of, or in response to the user search request.

[0113] For example, the category “hubs” or “directory” can correspond to Web pages that have many different links to other Web pages. In addition to the quantity of links, the quality of links can also be taken into account by the search system in categorizing a Web page as a hub or directory. The quality of the links can be scored based on a variety of parameters, including the number of different domains the links link to, how many links are alive or broken (a broken link is a hyperlink that does not work), and/or other parameters. Thus, for example, in one embodiment, the higher the number of different domains the links link to and/or the greater the number or percentage of alive links, the higher the quality score. If the score exceeds a predetermined threshold, the search system will categorize the page as a hub page.

[0114] With respect to the “personal home page” category, by way of example, the search system can look for certain key words or phrases, such a “family,” “children,” and/or “personal home page.” In addition, the search system can determine how many pictures or JPEG files are on the page, and the level of sophistication of the HTML or other formatting code used to create the page. Thus, for example, based on the number of key words, the number of pictures, and/or the sophistication of the HTML code, a determination is made as to whether a page is likely to be a personal home page. In one embodiment, the greater the quantity of personal-oriented key words and pictures, and the lower the code sophistication (for

example, the absence or low level of script files, in line IFRAMES, custom tags), the greater the likelihood that the page is a personal web page. A score can be assigned by the search system based on such properties, and if the score exceeds a predetermined threshold, the search system will categorize the page as a personal home page.

[0115] With respect to the "commercial" or business category, by way of example, the search system can look for certain key words or phrases, such a "price," "quantity," "stock," "ship," "corporation," and/or "shopping cart." In addition, the search system can determine the level of sophistication of the HTML or other formatting code used to create the page. For example, the greater the use of script files, in line IFRAMES, custom tags, and the like, the greater the probable sophistication of the code. By way of example, based on the number of key words and/or the sophistication of the HTML code, a determination is made as to whether a page is likely to be a commercial or business page. In one embodiment, the greater the quantity of business-oriented key words, and the greater the code sophistication, the greater the likelihood that the page is a commercial or business web page. A score can be assigned by the search system based on such properties, and if the score exceeds a predetermined threshold, the search system will categorize the page as a commercial or business web page.

[0116] With respect to the links category, by way of example, the search system can rank pages based on the number of links and/or the quality of links that contain the search characters or strings. For example, if the user was interested in searching for information on Idealab, the user can enter the term Idealab in the links field, the greater the number of links a page has to the Idealab.com domain, the higher the search ranking. By way of example, the quality of the link can be based on how many links are alive or not broken and/or the quality of links on the linked pages.

[0117] At state 418C, as the user enters characters or strings into one or more column search fields, the search results displayed to the user are incrementally limited to those that contain the characters or strings entered by the user. In one embodiment, this narrowing process does not need to access remote

search engines, as the search result information and Web pages are already cached locally. At state 420C, by clicking on an appropriate column header, the user can command the system to sort the search results at state 422C based on a selected column. At state 424C, clicking on the column header a second time reverses the sort order displayed to the user at state 426C.

[0118] The user can optionally print the information contained in the list pane or area 306C, as well as the Web pages displayed in the view pane or field 308C. In addition, the user can enter a Web address directly in the Address Field in the address field 312C, and then press the keyboard Enter button or the displayed Go button 312C to go to that page. As described below with respect to the favorites function, the user can cause the search application to add the address or URL to the user's favorites list by activating the plus (+) button 320C. Advantageously, the user can navigate through the found Web pages using the Forward and Backward control buttons 314C, 316C, and can refresh a Web page using a Refresh button 318C. The Backward control is configured to navigate to a previously viewed favorites Web page and the Forward control is configured to navigate a next favorites Web page.

[0119] To search the results or history of prior Internet and/or Web searches, a user can click on the History tab 312A and bring up the history search interface page, illustrated in Figure 3D. The history process copies Web sites visited by the user, and indexes content and attributes for substantially instant searching of those historical Web pages. When the History interface is presented to the user, stored Web pages previously viewed in the search application's view pane or area 308D, and optionally, stored Web pages previously viewed using other user browsers, are listed in the history list pane or area 306D. Optionally, based on a user-selected option, the view pane or area 308D either shows page corresponding to a select item as the user saw it when on the date/time it was added to the history or the most recent version of the page in Internet Explorer's cache. These pages can be displayed in the view pane or area 308D even when the user is offline.

[0120] As illustrated in Figure 4D, at state 401D the search system waits for a user input. The user input can be, for example, a search character string

entered into the main search field, a search character string entered into an attribute search field, a sort command, or an inverse sort command.

[0121] At state 402D, alpha characters, numeric characters, words and/or phrases, such as those that may appear in the Web page contents, the Web site name or title, the Web page URL, the Web page size, the page category, the page domain, the page language, the links on the page, the data/time the Web page was last viewed, the search terms entered when the Web page was originally located by the search application, the name of the browser or other tool used to originally locate the Web page, and/or the media type used on the page that are entered by the user into the main search field 304D are received.

[0122] At state 404D, as the user enters characters into the main search field 304D the search of the listed items is incrementally performed by the search application's search engine, and the list pane or area 306D displays incrementally narrowed down search results. The view pane or area 308D displays the selected page. The user can optionally specify whether the view pane or area 308D will display the stored Web page, as the user saw it when the Web page was added to the history, or the most recent version of the page stored in a local cache, such as Microsoft's Internet Explorer's cache. Because, in one embodiment, the Web pages are cached, the previously viewed Web pages can be displayed in the view pane or area 308 even when the user's terminal is offline.

[0123] The user can also provide a relevant string or strings of characters in a corresponding column field to specify certain search result attributes, such as a content field, a date/time (last viewed) field 310D, a URL field, 312D, a title field 314D, a size field 316D, a media type field (not shown), a search term field 318D, and/or the browser originally used field (not shown), a Web page size field, a page category field, a page domain field, a page language field, and a links field, which are received at state 406D. At state 408D, as the user enters characters or strings into a column search field, the search is further incrementally performed by the search application's search engine, and the list pane or area 306D displays incrementally narrowed down search results. At states 410D, 412D, by clicking on an appropriate column header, the user can command the system to sort the search

results based on a selected column. At states 414D, 416D clicking on the column header a second time reverses the sort order displayed to the user.

[0124] Optionally, the size of the history index can be limited based on size or date, which can be specified by the user. In one embodiment, the history functionality can integrated with the Web search tab, so that a user can search his/her history directly from the Web tab in addition to live Web searches. Optionally, the user can also enter a URL or address into the address field 320D to browse to a new URL and have that page added to the history. As described below with respect to the favorites function, the user can cause the search application to add the address or URL to the user's favorites list by activating the plus (+) button 322D.

[0125] With reference to Figure 3E, the favorites function is used to select and display Web pages that the user often refers to and so wants to access quickly. The user can select an add favorites button, such as the plus (+) symbol in the history or Web interfaces, as illustrated in Figures 3C and 3D, above a Web page to cause the search application to add it to the user's favorites. In addition, the user can enter the desired address or URL of a Web page into address field 316E, and click the plus (+) button 318E to add the address to the user's favorites list, or click the minus (-) button 320E to remove the address displayed in the address field 316E from the user's favorites list. The Web pages included in the user's favorites are cached, attribute and content indexed, and once indexed, instantly searchable.

[0126] To search the cached favorites Web pages, a user can click on the favorites tab 314A and bring up the favorites search interface page, illustrated in Figure 3E. In response to the user selecting the favorites search mode, user favorites are listed in the favorites list pane or area 306E. The view pane or area 308E either shows that page as the user saw it when on the date/time it was added to the favorites or the most recent version of the page in Internet Explorer's cache. These pages can be displayed in the view pane or area 308D even when the user is offline.

[0127] As illustrated in Figure 4E, at state 401E the search system waits for a user input. If the user provides an entry into a main search field 304E, such as

alpha characters, numeric characters, words and/or phrases that the user thinks may appear in the favorites Web page contents, the Web site name or title, and/or the Web page URL, the entries are received at state 402E. At state 404E, as the user enters characters into the main search field 304E the search is incrementally performed by the search application's search engine, and the list pane or area 306E displays incrementally narrowed down search results. The view pane or area 308E displays the selected page. The user can optionally specify whether the view pane or area 308E will display the stored Web page, as the user saw it when the Web page was added to the favorites, or the most recent version of the page stored in a local cache, such as Microsoft's Internet Explorer's cache. Because, in one embodiment, the Web pages are cached, the previously viewed Web pages can be displayed in the view pane or area 308 even when the user's terminal is offline.

[0128] The user can also provide a relevant string of characters in a corresponding column field, to specify certain search result attributes, such as a content field, a date/time (last viewed) field 310E, a URL field, 312E, a title field 314E, a size field 316E, a media type field (not shown), a search term field 318E, and/or the browser originally used field (not shown), a page category field, a page domain field, a page language field, and a links field, which are received at state 406E. At state 408E, as the user enters characters into a column search field, the search is further incrementally performed by the search application's search engine, and the list pane or area 306E displays incrementally narrowed down search results. At states 410E, 412E, by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. At states 414E, 416E clicking on the column header a second time reverses the sort order displayed to the user.

[0129] With reference to Figure 3F, the attachment function is used to locate email attachments. To search for email attachments a user can click on the attachments tab 308A and bring up the attachments search interface page which lists attachments in the attachments list pane or area 306F. As illustrated in Figure 4F, at state 401F the search system waits for a user input. The user can enter into a main search field 304F, alpha characters, numeric characters, words and/or phrases

that the user thinks may appear in the desired attachment contents, name, date/time created, date/time received, from (sender) field, size, MIME tag, extension, and/or path, which are received at state 402F.

[0130] At state 404F, as the user enters characters into the main search field 304F the search is incrementally performed by the search application's search engine, and the list pane or area 306F displays incrementally narrowed down search results. The view pane or area 308F displays the selected page.

[0131] The user can also provide a relevant string of characters in a corresponding column field to specify certain search result attributes, such as a content field (now shown), a name field 310F, a date/time field 312F, a from (sender) field 314F, a size field 316F, a MIME tag field 318F, an extension field 320F, and/or a path field 322F which are received at state 406F. At state 412F, as the user enters characters into a column search field, the search is further incrementally performed by the search application's local search engine, and the list pane or area 306F displays incrementally narrowed down search results.

[0132] At states 410F, 412F, by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. At states 414F, 416F clicking on the column header a second time reverses the sort order displayed to the user.

[0133] In one embodiment, a search interface page includes a selection menu that specifies which of email, attachments, files, the Web, favorites, and/or history (previously accessed and stored Web pages) targets, are to be searched. In accordance with the user selection one or more of the email, attachments, files, the Web, favorites, and/or history, or corresponding indexes will be searched. In this embodiment, the column attribute search fields optionally will correspond to the selected search targets. Thus, for example, if the user selects both email and files as search targets, the column attribute fields can include one or more of a from (sender) field, a to (addressee) field, date/time sent and/or received fields, a email folder path field, a client field, a cc field, a size field, and a bcc field, wherein the foregoing fields are appropriate for email searches, and one or more of a file name

field, a file type field, a date last modified or created field, a file size field, and a file path field.

[0134] The search application 102 optionally ignores punctuation of a first set of punctuation when indexing and performing a search, such as an email or files search, and includes punctuation of a second set of punctuation in indexing and search operations. For example, the first set of punctuation can include hyphens, commas and/or semicolons. The second set of punctuation includes punctuation marks that are more likely to be useful when performing a search, such as the period or dot (.), commonly used in file extensions, and the "at" sign (@), which is commonly used in email addresses. Optionally, the user can specify which punctuation marks are to be included when indexing and performing searches, and which punctuation marks are to be ignored.

[0135] In one embodiment, when using a string of one or more characters as a search string on which to perform a search, such as an email or file content search, the search string is treated as a prefix. That is, the search string should match the initial characters and/or words in a potential matching string for the file or email to be displayed in the list pane or area. For example, if the search string is "act", the search application 102 will list a file containing the word "actual", but will not list a file if the only appearance of "act" is "fact."

[0136] The user can enter multiple separate search words or strings and each one will optionally be treated as a prefix. For example, searching "Joh Do" can be used to locate the strings "John Doe". Thus, one embodiment of the present invention provides multiword separate prefix searching. The searching can be performed incrementally. For example, if the user enter "Jo D" documents with the strings ("Jon" and "David"), ("Joe" and "Daniel"), ("John" and "Doe") will be located. If user then adds an "h" to "Jo" so that the search strings are now "Joh D" then the list of search results will be substantially immediately narrowed to present only documents having at least one string beginning with "Joh" and one string beginning with "D", such as a document containing ("John" and "Doe"). Further, the user can enter one or more additional search strings into one or more other search fields, such as one or more column search fields and the search system will incrementally

search for documents that have strings that correspondingly begin with the search strings or that are exact matches for the search strings.

[0137] Optionally, when certain standard characters are present in a given attribute, such as the standard "www." in a URL, the search application treats the character following the standard characters as the first character. Thus, for example, when searching for the string "loc" by entering it in the URL field 310E in Figure 3D, the URL "www.loc.gov.com" would be identified as a match. Optionally, the user can specify that the search application 102 should look for the search string no matter where it appears in a file or in email content.

[0138] In one embodiment, the main search field and/or attribute fields discussed above can act as a command line interface, in addition to acting as search fields. Thus, before executing or applying a search operation on one or more search strings, a determination is made as to whether the first search string corresponds to a command or is included in a list of command words. If the first word or string does correspond to a command word then a corresponding command file is read, and the corresponding command is executed. If there is more than one word or string entered into a search field, if the first word or string corresponds to a command word, then the subsequent words or strings are optionally treated as command arguments or terms, if appropriate. In addition, command files can call other command files by including the called command file name and relevant arguments. The list of command word can grow or shrink as the user adds or deletes commands. The present invention is not limited to receiving commands into a search filed. In other embodiments, other data entry fields can be used to enter commands as well as data.

[0139] By way of example, the command words can include email (corresponding to a command to create an email using the following term to determine who the addressee is), shop (corresponding to a command for finding the lowest online price for the product named in the following term), book (corresponding to a command for finding a book at a named Web site), movies (corresponding to a command for finding a listing of show times at a named Web site), web (corresponding to a command for launching a browser, and if there is a URL

following the “web” then the browser is launched to that URL), convert (corresponding to a command used to convert from one set of units or currency to another), msword (corresponding to a command to launch msword, and if there is a following term, open or create a document with a name corresponding to the term), programname (corresponding to a command to launch the program having the name programname), semail (corresponding to a command to search the email index using the following string(s)), sfiles (corresponding to a command to search the files index using the following string(s)), and so on with respect to the other search targets.

[0140] The command names can correspond to command files, which for example, can have the extension “.do,” though other extensions can be used as well. The command files can optionally be programmed, created and/or edited by an end user, thereby providing for significant customizing by users and without requiring sophisticated programming skills. Further, the user can add additional commands as desired. In addition, the command names can be names selected by the user that are easy for the user to remember, as opposed to arbitrary names, or difficult to remember names. The instructions included in the command files can be instructions unique to the search application, instructions corresponding to other applications, and/or instructions that correspond to operating system instructions. Thus, a search field can also be used as a DOS, UNIX, LINUX, or other operating system command line. The command file can also include a URL.

[0141] For example, if the user types "president bush" in the files search mode main search field, then the search application searches for a file that includes the terms “president” and “bush.” But if the user types "email samantha jones" the search application compares the first string, “email”, with the command list, recognizes that email is on the command list and that email is a command, retrieves an "email.do" command file that specifies how the command is to be processed, accordingly processes the term “samantha jones”, and generates a blank email to samantha jones by looking up the email address for samantha jones in the user’s email application.

[0142] By way of another example, if the user types in “semail samantha jones” the search application compares the first string, “semail”, with the command list, recognizes that semail is on the command list and that semail is a command, processes the rest of the line as an "semail" command, in this case a search within the user's indexed email for the strings “samantha” and “jones”.

[0143] Optionally, some of the commands can be built into the search application, and do not utilize a separate command file. For example, the semail, sfiles, and/or web commands can be built in and not use a separate command file.

[0144] Optionally, the results of the command are displayed using the list area and/or the view area. For example, with respect to the "semail" command, the list and view areas are employed as similarly described above with respect to Figure 3A.

[0145] At times, the arguments following a user-entered command may result in ambiguity in one of the arguments that are to be processed. For example, with respect to the convert command, where there is ambiguity, the user can be presented with several options from which the user can select. By way of example, if the user types "convert 5 miles" then the list area can be used to display user selectable choices, such as "meters", "feet", and “kilometers". If the user selects one of the choices, the search application will display the results in the view area. Thus, if the user selects “kilometers” the convert command with convert 5 miles into corresponding kilometers, and displays the results in the view area.

[0146] In another example, a command can be used to quickly retrieve information from a specific URL via the search application. For example, the book command file can include the following:

web http://search.barnesandnoble.com/booksearch/results.asp?WRD=$1

[0147] By way of further example, the movies command file can include the following:

web http://movies.yahoo.com/showtimes/showtimes.html?z=$1

[0148] The parameter “$1” in the above examples is filled in by the following string entered by the user. For example if the user typed in the entry

"movies lord" the movies command would launch a browser, access the yahoo movie show time site, submit the string "lord", and the show times for movies that include the string "lord", such as "Lord of the Rings" would be displayed to the user. If the string(s) following the command word are not HTML compliant, such as containing a space, HTML-escaping is performed, and the string(s) that are in violation will optionally be converted into an HTML compliant string, such a by replacing the space with a +sign. Thus, "lord rings" is optionally converted into "lord+rings."

[0149] Advantageously, in certain embodiments, indexing of multiple forms of a word is performed, and where punctuation marks are in a word or character string, the word and character string can be selectively broken into multiple words or strings which can reduce index size and facilitate searching. For example, when indexing, a set of punctuation is optionally declared non-word symbols and are treated as spaces to separate words. For example, this set can include: < ([{ ". The foregoing example set members are selected because the included symbols are often used as open-parentheses and thus, a following character string can often be considered to be a new word. In addition, the double-quote is rarely used as a word joiner. Some characters, such as the < characters, are treated as a non-word symbol because they appear very frequently in HTML code used to used to generate Web pages. By excluding such characters, strings such as word are advantageously not treated as a word.

[0150] Optionally, punctuation not included in the set of excluded punctuation discussed above will be treated as the same as punctuation in the set only if the punctuation is within N characters of the start of the word. For example, N can be set at 2 or at another value. Optionally, punctuation not included in the set of excluded punctuation will be treated as a space if the punctuation is after P characters of the start of the word. For example, P can be set at 3, or 5, or at another value. By way of further example, if N=2 and M=3, xy.com would be indexed as one word because the period is not within 2 characters of the start of the string and is not more than 3 characters after the string. In another example, if N=2

and M=3, nbc.org is treated as two words, nbc and org because the period is more than 3 positions away from the start of the string.

[0151] The values of M and P are selected so that the portion of a word or character string before the punctuation is long enough, such that even if the string is treated as two separate words or strings each string will be sufficiently unique or identifiable for searching purposes. However, if the punctuation occurs too near the beginning of a word or string, treating the prefix as a separate word or string may not provide enough characters for a user to recognize the word or string. For example, if "a.m." were broken into two one word strings, "a" and "m", the search results would not be as useful or may not be useful at all.

[0152] Optionally, the index process indexes the individual words separated by punctuation, so that for xy.com, xy and com are separately indexed.

[0153] By way of further examples, if N = 2 and P = 5, then for johndoe@zxcv.ca, all the punctuation marks are treated as spaces and the following strings are separately indexed: johndoe, zxvc, ca. Similarly, the string me@mnbvcxza.net is treated as a word or a single string. For the string 1,234,467, 1,234 is treated as a word or single character string, and 467 is treated as a word or character string.

[0154] Further, a user can exclude files, emails, and the like that contain a specified string from appearing in search results displayed to the user. For example, in one embodiment, the user can exclude files or email containing a particular string by putting a minus sign at the beginning of the character string when entering it into the main search field or other relevant column field. If a user wants to search for a file that does not contain a first string as a prefix or exact match, and does contain a second string as a prefix or exact match, the user can put a minus sign in front of the string to be excluded, then follow that string by one or more spaces, and then the character string to be included. For example, if the user searches for an email that does not contain, as a prefix or exact match, the string “Fred” (or "Frederick", "Frederica", or other string or word with "Fred") and does include the string “Sol” (or “Solly”, Sole, or Solomon”), the user would enter “-Fred Sol”.

[0155] Thus, as described above, certain embodiments of the present invention provide advantageously provide for incremental searching for a variety of search targets. For example, the search targets can include one or more of files, emails, email attachments, Web pages, specific databases, and/or the like. Because a search is performed incrementally, the search results are provided or narrowed substantially immediately after each character is a search string is entered by a user. Thus, the user is provided with substantially immediate feedback as the search string is being entered, and so can quickly decide on the desirability of entering additional search characters, or of entering a new search string.

[0156] In addition, the user can specify that an exact word match is to be performed. In one example embodiment, if a selected punctuation symbol, such as =, follows a word or character string directly, and is followed by a space, as in "mark= ", then the word is searched as an exact match. In addition, optionally, if a selected punctuation symbol, which can be a !, @, #, $, %, ^, &, *,), ;, :, ‘, “, ?, >, and/or other punctuation symbol, follows a word or character string directly, and is followed by a space, as in "mark$ " or "mark. " or "mark- ", then optionally the word is searched as an exact match including the punctuation. So "mark- " will not match "market” or “mark. However, "mark-" will match "mark-down.”

[0157] In another embodiment, the search system described above is server-based, and the user can access the search functionally using a thin client. Thus, for example, the user does not need to download to or otherwise store the search application on the user’s terminal. Instead, the user can access over a network a remote search system and engine using a browser. The remote search system can be used to incrementally search content original to a Web site or database associated with the remote search system, and/or to search data that resides or originally resided on another Web site or network site. Nonetheless, even though the search engine is remotely located, once initial search results are transmitted to the thin client, the used can quickly scroll down and view the content corresponding to the items in the search results as if the search application was hosted by the thin client.

[0158] Figure 5 illustrates an example computer system that can be used to provide a server based incremental search system. As depicted, one embodiment includes a browser 504 stored on and executed by a user terminal 502. While in the illustrated embodiment the terminal 502 is a thin client, it can optionally include a local index engine, local search engine, and email application similar or identical to those discussed above with reference to terminal 104 illustrated in Figure 1. In the example embodiment, the browser 504 can interpret HTML tags, handle IFRAMES, and execute JavaScript. The terminal 502 is coupled to a remote site 508 via a network 506, which can be, by way of example, the Internet. The terminal 502 can be coupled to the Internet using a network interface circuit and port.

[0159] The remote site 508 includes a computer server 515 that executes and hosts a search engine 510, an index engine 513, and a Web server 514. The computer server 515 includes one or more content and index databases 512 and JavaScript, which will be discussed in greater detail below. The search and index engines 510, 513 can be the same as or similar to the search engine 107, index engine 103, search engine 110, and index engine 103 discussed above, and can provide the same or similar functionality. The Web site 108 and search engine 110 are accessible to the search application 102 via the Internet 113. The remote site 508 can be coupled to the Internet using a network interface circuit and port. The Web site 108 may optionally include content that spans multiple Internet domains, and/or may be implemented using physical servers that are geographically remote from one another. In other embodiments, the Web site 108 may be in the form of an intranet site, in which case the terminal 502 may be coupled to the site by a private network. For example, Web site 508 may be in the form of an internal corporate store site for company employees.

[0160] By way of example, the search engine 510 may search local server-based databases of the full text of Web pages selected from selected Web pages. The databases can optionally be generated using a spider or the like that search for Web pages on other Web sites, such as Web sites 518, 520, which are then stored in the databases, and that follow the links in those Web pages to other Web pages, which are then stored in the databases. Because the Web page

databases, or portions thereof, may have been generated before a user submits a search query, these databases may not be fully current. When the search engine 510 performs a Web search in response to a user query, the search engine returns excerpts from relevant Web pages as stored in a corresponding database, and also returns links to the current version of the Web pages, if such exists.

[0161] By way of further example, as similarly discussed above with reference to Figure 1, the server system can create indexes such as those illustrated in Figure 2A using the process illustrated in Figure 2C, can create prefix indexes, and can pre-compute sort lists.

[0162] Figure 6 illustrates an example search process using the server based search system. At state 602, the user accesses via the browser 504 the server based system 508 over the Internet 506. At state 504, the server system 508 transmits HTML, and/or other formatting code, text, and JavaScript to the browser 504. JavaScript is a client-side scripting language that runs inside an Internet browser or Web client. JavaScript can be embedded in Web pages or in other HTML documents. JavaScript can be used to enhance Web page dynamics and interactivity, and can be used to perform calculations, check forms, generate new HTML pages using variable information, open and close windows and frames, and the like. When the browser loads a page that includes JavaScript code, the browser's interpreter reads and executes the JavaScript code.

[0163] At state 606 the HTML code is rendered by the browser 504, the JavaScript is executed, and the browser 504 displays the search interface as similarly discussed above with reference to Figures 3A-I. Thus, for example, the search interface can include a list pane or area and a view pane or area, and well as the search area, including a main search field and column attribute fields. As similarly discussed above, the user can select a particular target search interface by clicking on an appropriate tab or link. For example, a given target search interface can include a plurality of search fields, including a main search field and a plurality of search fields. Thus, as similarly discussed above, an Internet search interface can include one or more of a content field, a URL field, a title or Web site name field, a

size field, a date field, a format field, a category field, a site field, a links field, and a language field, and a media type field.

[0164] At state 608, the browser, via the executed JavaScript, monitors user inputs or deletions from the interface fields. For example, the user can enter into the main search field and/or into one or more attribute search fields one or more alpha characters, numeric characters, words and/or phrases that the user thinks may appear in the target content or attributes. In addition, the browser monitors and detects whether the user is paging up or down, or is scrolling off the page. Optionally, the browser continuously monitors and detects user inputs, deletions, scrolling, and/or paging up or down (collectively and individually also referred to as "user changes") during states 610-622, and if such is detected, the process proceeds or returns to state 610. At state 610 the browser transmits the user changes to the server system 508.

[0165] At state 612 the server system 508 incrementally searches for Web pages, documents, or other files in accordance with the search character, characters, string, or strings received by the server system 508. Thus, with each additional character entered by the user and detected at state 608, the search engine 510 will further refine the search. Similarly, with each deletion of a search string character, the search engine 510 will reduce the amount of search filtering to broaden the search. For example, when the user types "fast", four separate searches are optionally sent to the server, one for "f", one for "fa", one for "fas", and one for "fast". Each time, the server finds all documents containing words starting with that sequence of letters, and returns a list of the top matches. At state 614 the server system 508 transmits a list of search results to the browser 504.

[0166] In one embodiment, the JavaScript optionally instructs the server system 508 how many results to return, so that only as many results as are needed to fill the list pane are transmitted. Advantageously, this reduces the load on the server system 508, increases the speed of presentation, and yet provides to the user the illusion that the list goes on further. In such an embodiment, when the user presses the PgDn button, clicks a More button, or scrolls down the list, an additional request is sent to the server for the next pagefull of results.

[0167] Optionally, to determine how long the transmitted search result list should be, the server system 508 autodetects the number of lines the browser 504 can display at a time. Optionally, the user can instruct the server system 508 on how long the list should be.

[0168] At state 616 the browser 504 displays the list in the list pane or area. At state 618, the browser 504 automatically selects the first item in the search result list to be displayed in the content pane or area. At state 620 to accelerate the presentation of content in the view pane for a selected item in the list pane, the pages or documents corresponding to the search result entries in the list pane are preloaded as soon as the list is received from the server system 508. The JavaScript loads IFRAMEs for each of the Web pages corresponding to the list entries. An inline floating frame or IFRAME is a construct which embeds a document into an HTML document so that embedded data can be displayed inside a subwindow of the browser's window. The IFRAME tag creates a floating frame at its location in the HTML file. The SRC attribute, which sets or retrieves a URL to be loaded, specifies the content to be displayed within the frame.

[0169] Thus, the Web page content loaded onto user's computer 502, while keeping hidden the display of the Web page content. Then, to present the content or Web page corresponding to a selected search list entry, the JavaScript renders the corresponding IFRAME visible in the view pane.

[0170] Figure 7 illustrates an example process of scrolling through a search list loaded via a browser as described above with reference to Figures 5 and 6. At state 702, the JavaScript detects when the user is scrolling up and down the list displayed in the browser 504. At state 704, the browser selects the corresponding search list item for display in the view pane. At state 706 the browser 504 displays the selected search result content that had already been stored in an IFRAME in the view pane. Advantageously, because the content for each item in the list has already been preloaded, the scrolling and content display takes place substantially instantaneously and the Internet does not have to be accessed.

[0171] Thus, as described above, certain embodiments of the present invention provide an efficient user interface, and advantageously provides for

incremental searching for a variety of search targets using client-based or server-based search applications. Because search can be performed incrementally, the user is provided with substantially immediate feedback as the search string is being entered, and so can quickly decide on the desirability of entering additional search characters. Advantageously, the user interface provides target specific attribute search fields, thereby enabling a user to efficiently locate the desired email, files, attachments, Web pages, and the like. In addition, in certain embodiments, incremental indexing is performed, thereby providing consistently current search indexes. Advantageously, in certain embodiments indexing of multiple forms of a word is performed, and where punctuation marks are in a word or character string, the word and character string can be selectively broken into multiple words or strings which can reduce index size and facilitate searching.

[0172] It should be understood that certain variations and modifications of this invention would suggest themselves to one of ordinary skill in the art. The scope of the present invention is not to be limited by the illustrations or the foregoing.

WHAT IS CLAIMED IS:

1. A computerized method of selectively executing a command, the method comprising:

providing a user interface comprising a first field;

receiving at least a first string from a user-controlled input device in the first field;

determining if the first string comprises a command;

selectively executing a command process in response to determining that the first string comprises a command; and

selectively initiating an incremental search of a plurality of documents in response to determining that the first string does not comprise a command, wherein the incremental search updates a list of documents selected from the plurality of documents that each comprise the first string, wherein the list is updated as each character of the first string is received from the user-controlled input device.

METHODS AND SYSTEMS FOR SEARCH INDEXING

Abstract of the Disclosure

The present invention provides for quick and efficient searching. One embodiment includes a first instruction configured to read at least a first search string and a second search string entered into a same first search field, and a second instruction configured to incrementally filter search results to locate at least a first document that has a least a first word that begins with the first string and a second word that begins with the second string.

19030273
100214

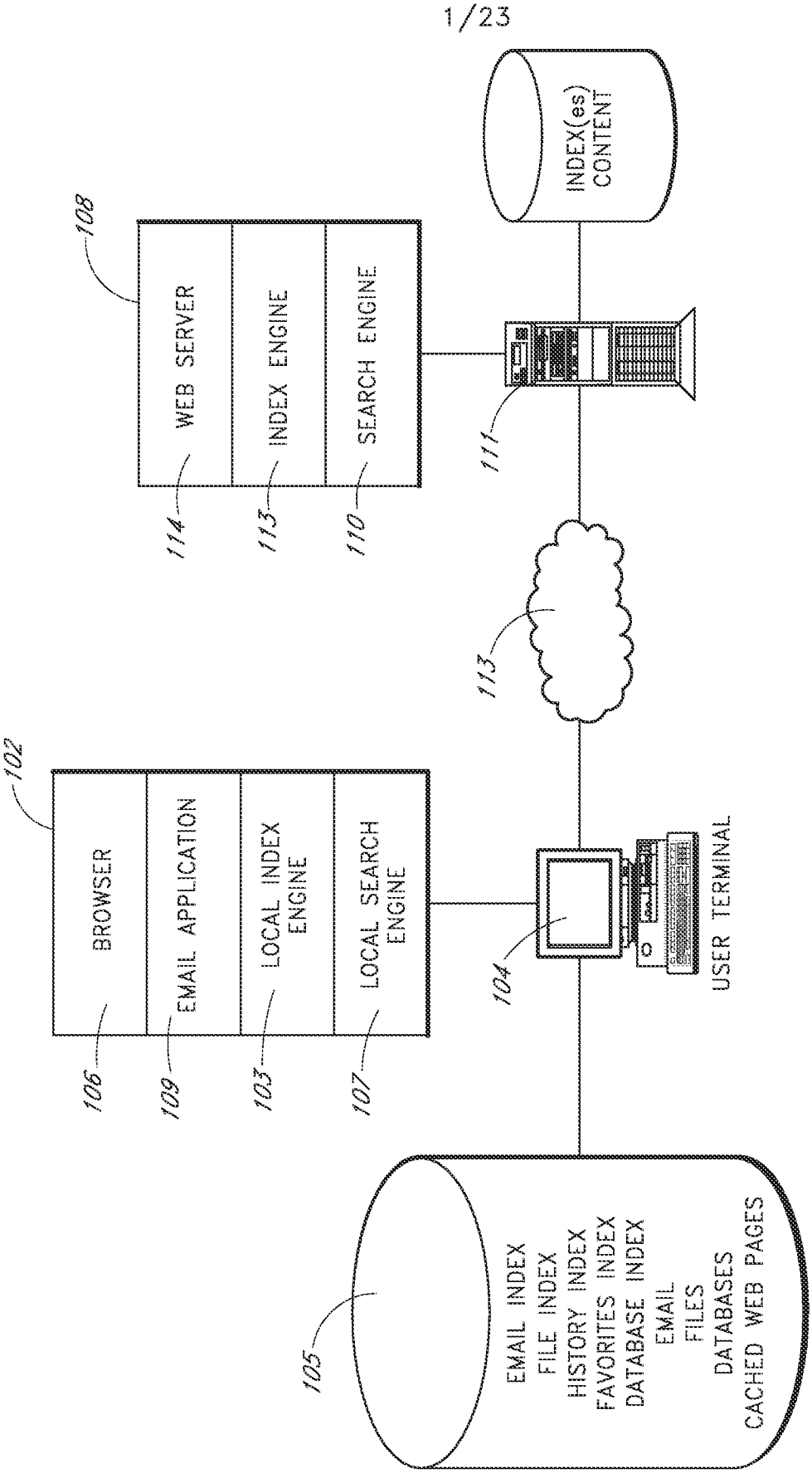

INDEX(es) CONTENT
108
WEB SERVER
INDEX ENGINE
SEARCH ENGINE
114
113
110
111
113
102
BROWSER
EMAIL APPLICATION
LOCAL INDEX ENGINE
LOCAL SEARCH ENGINE
106
109
103
107
104
USER TERMINAL
105
EMAIL INDEX
FILE INDEX
HISTORY INDEX
FAVORITES INDEX
DATABASE INDEX
EMAIL
FILES
DATABASES
CACHED WEB PAGES

FIG. 1

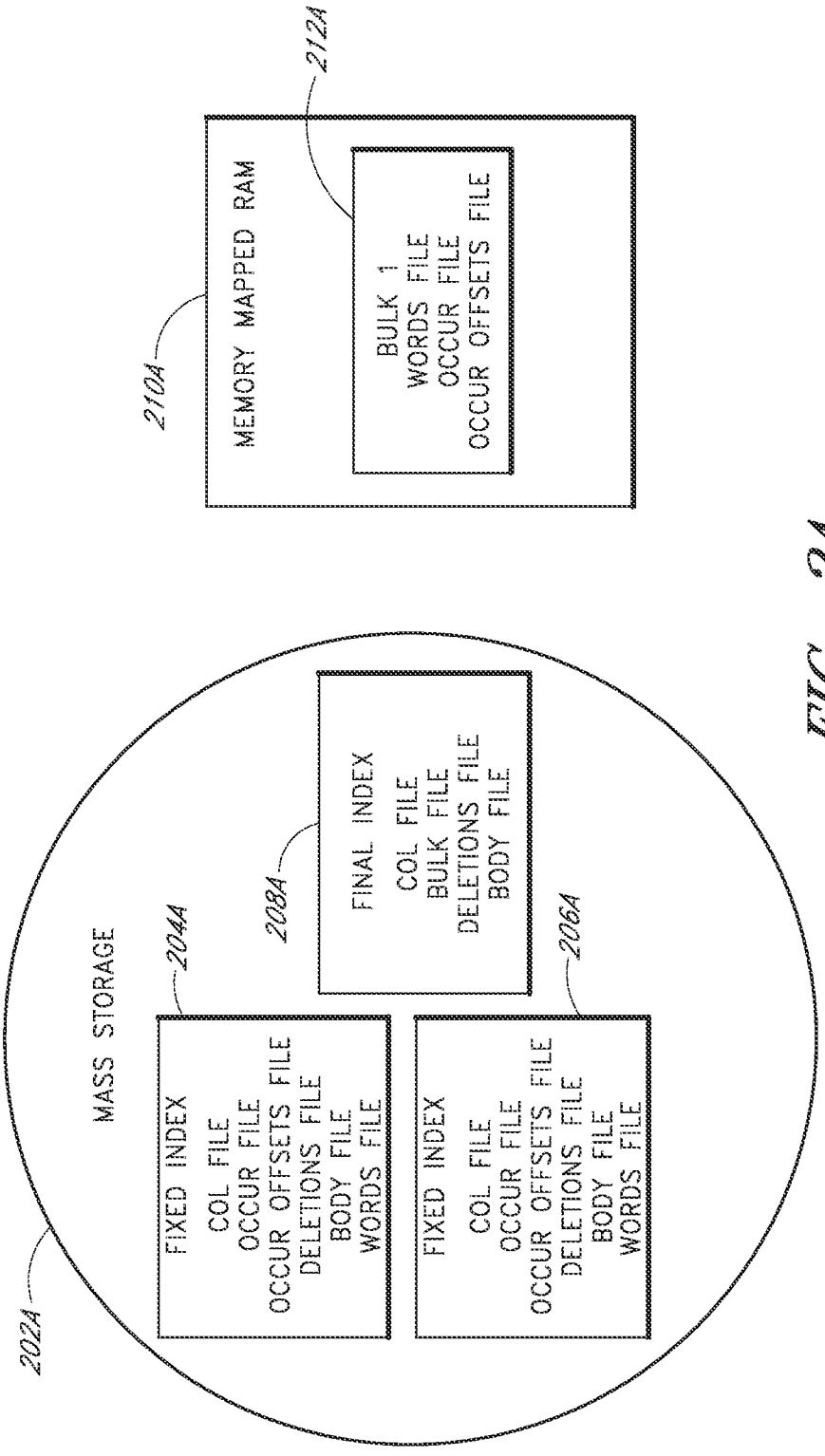

MEMORY MAPPED RAM
BULK 1
WORDS FILE
OCCUR FILE
OCCUR OFFSETS FILE
MASS STORAGE
FIXED INDEX
COL FILE
OCCUR FILE
OCCUR OFFSETS FILE
DELETIONS FILE
BODY FILE
WORDS FILE
FINAL INDEX
COL FILE
BULK FILE
DELETIONS FILE
BODY FILE
FIXED INDEX
COL FILE
OCCUR FILE
OCCUR OFFSETS FILE
DELETIONS FILE
BODY FILE
WORDS FILE
210A
212A
202A
204A
208A
206A

FIG. 2A

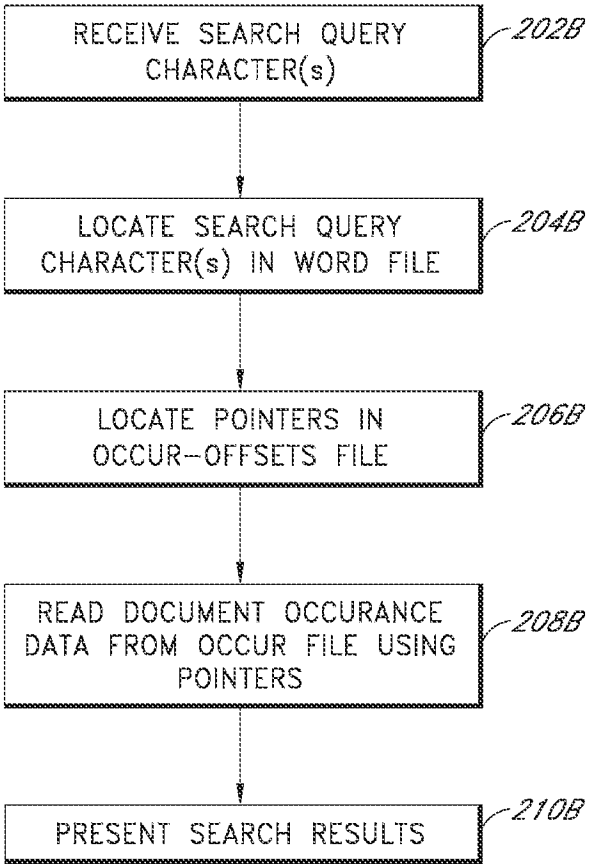

RECEIVE SEARCH QUERY CHARACTER(s)
202B
LOCATE SEARCH QUERY CHARACTER(s) IN WORD FILE
204B
LOCATE POINTERS IN OCCUR-OFFSETS FILE
206B
READ DOCUMENT OCCURANCE DATA FROM OCCUR FILE USING POINTERS
208B
PRESENT SEARCH RESULTS
210B

FIG. 2B

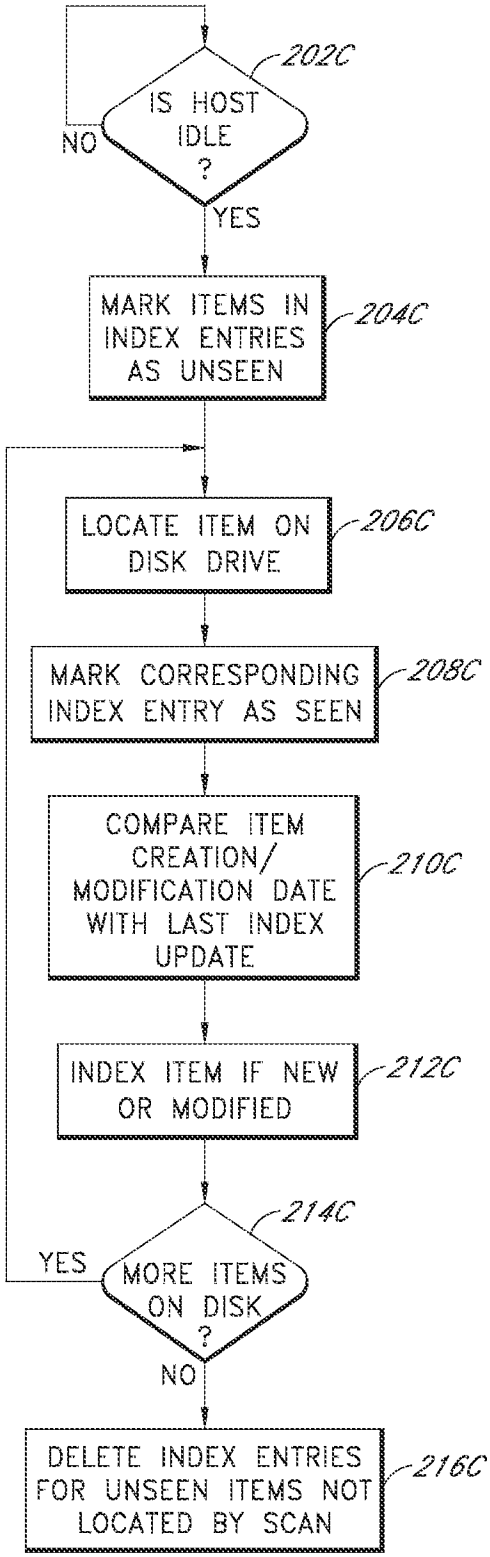

202C
IS HOST IDLE ?
NO
YES
MARK ITEMS IN INDEX ENTRIES AS UNSEEN
204C
LOCATE ITEM ON DISK DRIVE
206C
MARK CORRESPONDING INDEX ENTRY AS SEEN
208C
COMPARE ITEM CREATION/ MODIFICATION DATE WITH LAST INDEX UPDATE
210C
INDEX ITEM IF NEW OR MODIFIED
212C
214C
YES
MORE ITEMS ON DISK ?
NO
DELETE INDEX ENTRIES FOR UNSEEN ITEMS NOT LOCATED BY SCAN
216C

FIG. 2C

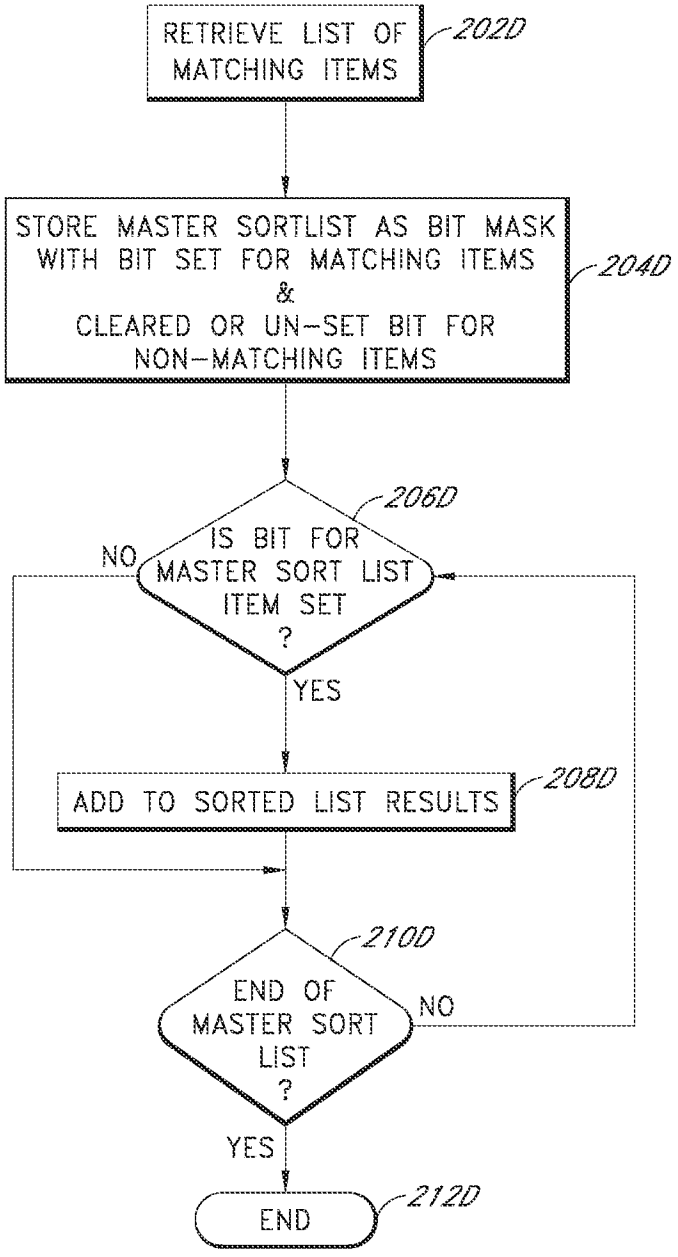

RETRIEVE LIST OF MATCHING ITEMS
202D
STORE MASTER SORTLIST AS BIT MASK WITH BIT SET FOR MATCHING ITEMS & CLEARED OR UN-SET BIT FOR NON-MATCHING ITEMS
204D
206D
IS BIT FOR MASTER SORT LIST ITEM SET ?
NO
YES
ADD TO SORTED LIST RESULTS
208D
210D
END OF MASTER SORT LIST ?
NO
YES
END
212D

FIG. 2D

302A
3164
320A
318A
3484
3264
312A
3444
3464
308A
342A
340A
3144
336A
322A
306A
3044
310A
332A
334A
330A
324A
328A

FIG. 3A

3128
3148
3168
3068
3188
3208
3044
3108
3088
United States Patent
4,716,527
Graziotti
December 29, 1987
BUS converter
A device for making a 16-bit data bus microprocessor compatible with peripherals coupled to the 8-bit

FIG. 3B

310C
304C
320C
310A
312C
312C
314C
316C
318C
308C
306C
Knobbe Martens Olson & Bear LLP
Intellectual Property Law
Please click on any of the following for an online version of the
Attorneys
Firm
Sample Patents
Publications
Links
Search
Intellectual Property Attorneys
Knobbe, Martens, Olson & Bear, LLP is one of the largest
intellectual property law firms in the U.S.
Intellectual Property Services
Knobbe, Martens, Olson & Bear, LLP is one of the largest
California Region Intellectual property law firms in the United
Jobs in Irvine California - Knobbe, Martens, Olson & Bear LLP
Knobbe, Martens, Olson & Bear, LLP was founded in 1962. It is
one of the largest intellectual property law firms in the United
Louis J. Knobbe
Louis J. Knobbe Adjunct Professor of Law Louis Knobbe is
founding partner of the intellectual property firm of Knobbe,
Adjunct & Visiting Faculty
J. Knobbe Adjunct Professor of Law Louis Knobbe is founding
partner of the intellectual property firm of Knobbe, Martens, Olson &
Knobbe, Martens, Olson & Bear, LLP
Knobbe, Martens, Olson & Bear, LLP Address: 501 W. Broadway,
suite 1400 San Diego, CA ... over 80 attorneys, is one of the largest
PRESS RELEASE | FOR Work) The Largest Intellectual Property ...
... A record number eight partners were named to Knobbe Martens
Olson and Bear LLP is... Read More February 7, 2003 The Largest
Section of Intellectual Property Law Committee
Committee Activity ABA Section of Intellectual Property Law It has
often been said that committee... ISSUES Division Chair Don
Section of Intellectual Property Law Committees
AMERICAN BAR ASSOCIATION SECTION OF INTELLECTUAL
Drafting Representations and Warranties in Contracts Involving
Basic Steps in Leveraging Intellectual Property for Capital.

FIG. 3C

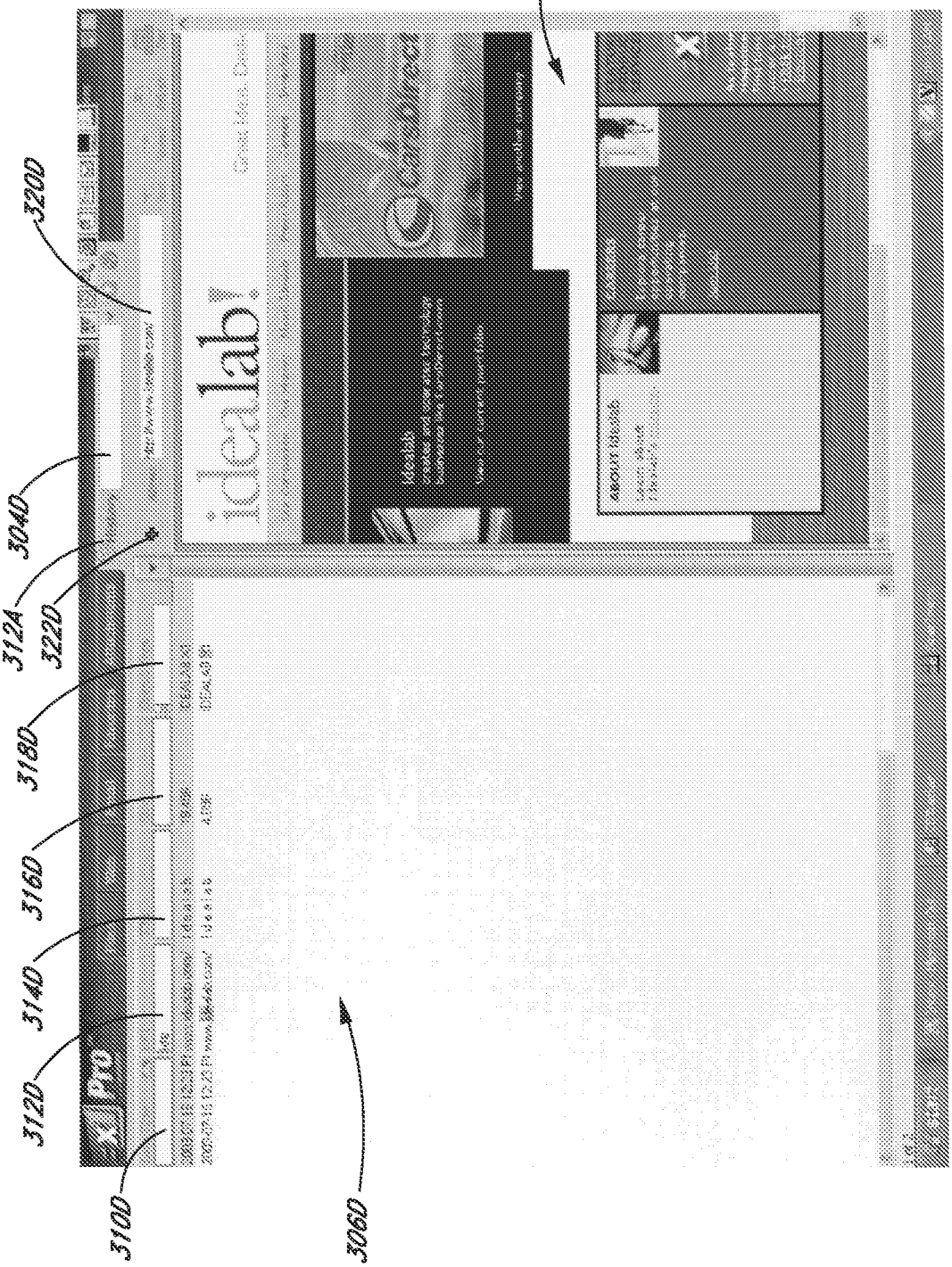

3200
3040
312A
3220
3180
3160
3140
3120
3100
3060
3080
idealab!

FIG. 3D

310E
312E
314E
316E
318E
320E
304E
314A
306E
308E
The Library of Congress

FIG. 3E

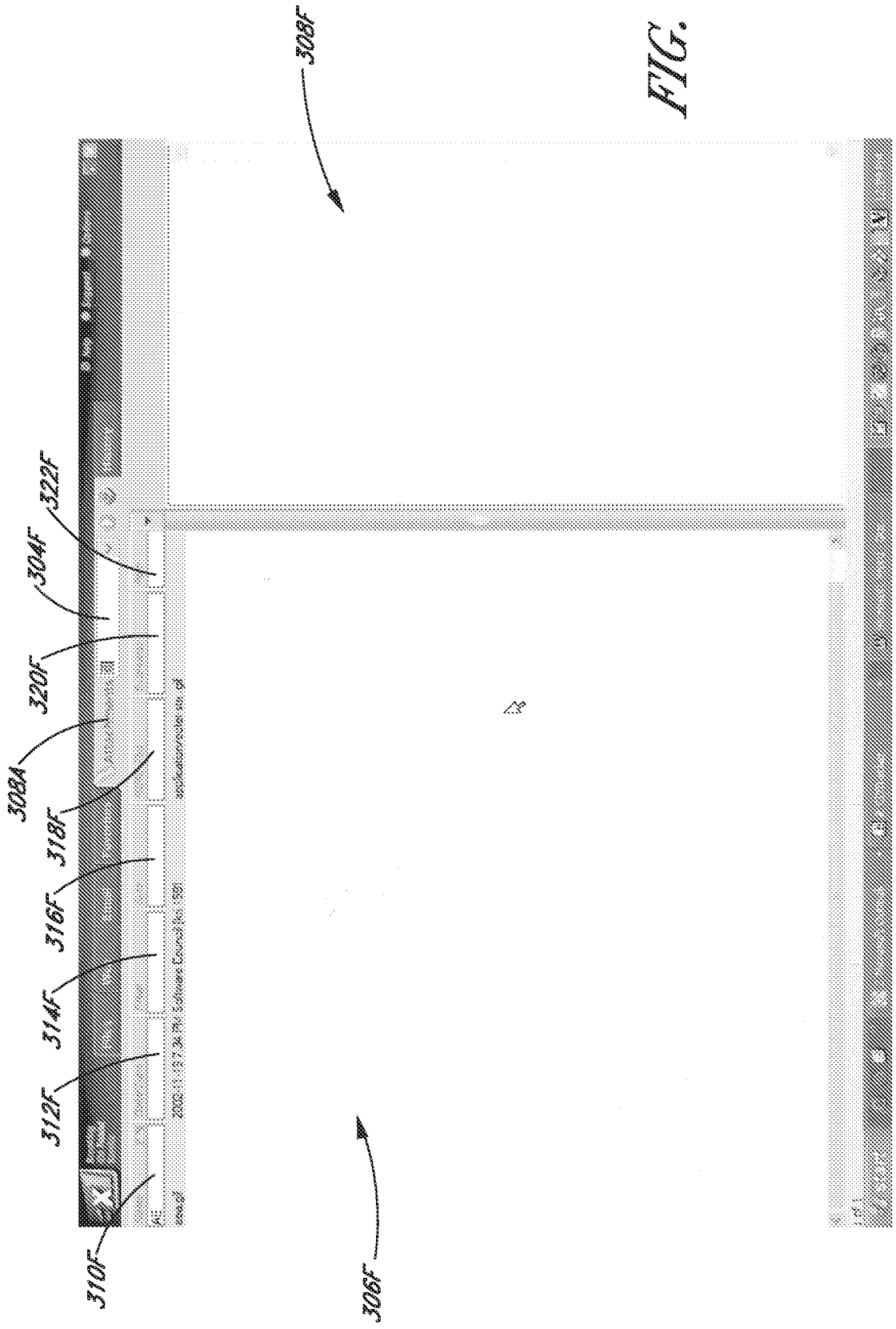


FIG. 3F

FIG. 3G

FIG. 3H



FIG. 31

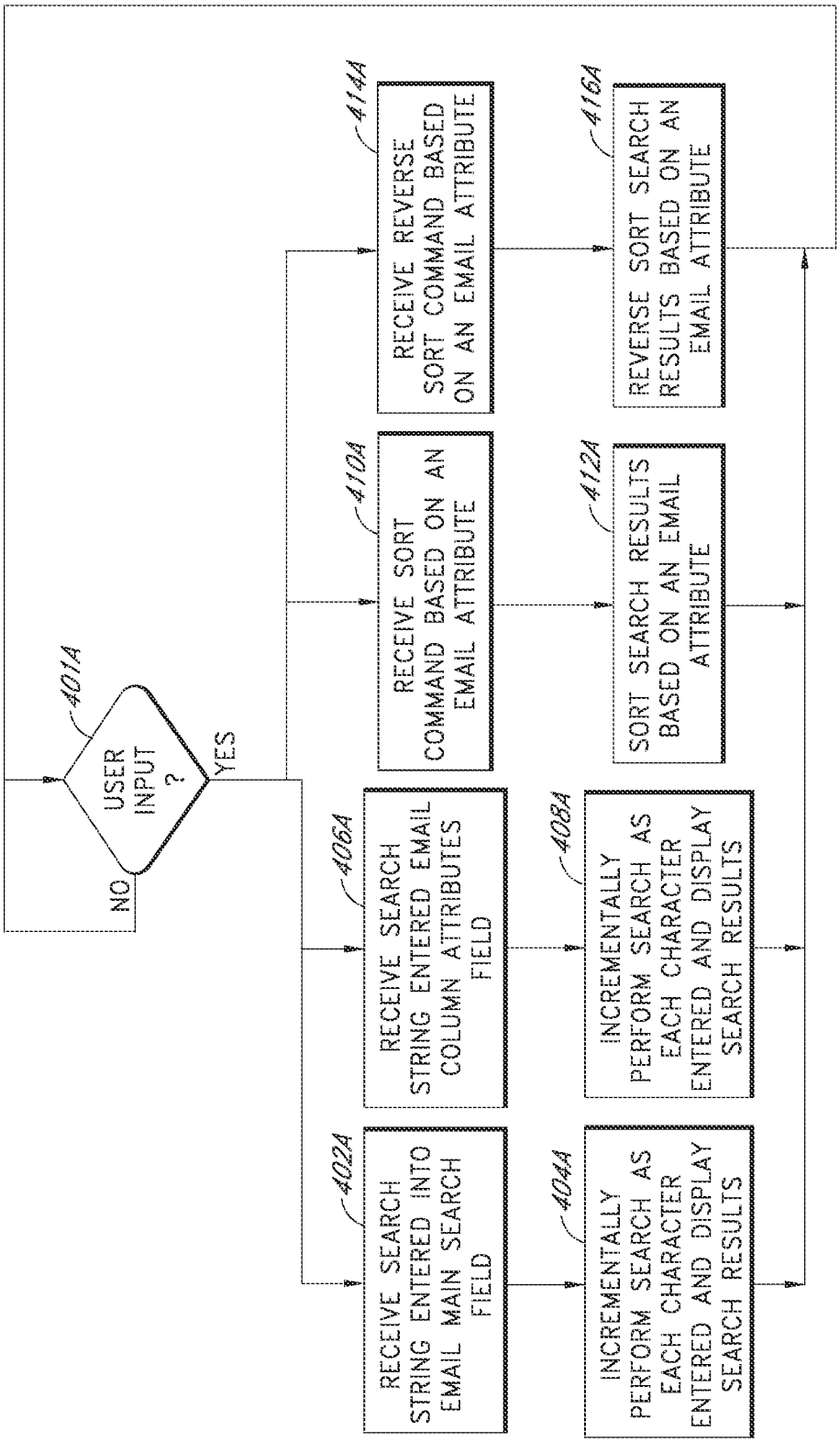

401A
USER INPUT ?
NO
YES
402A
RECEIVE SEARCH STRING ENTERED INTO EMAIL MAIN SEARCH FIELD
404A
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
406A
RECEIVE SEARCH STRING ENTERED EMAIL COLUMN ATTRIBUTES FIELD
408A
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
410A
RECEIVE SORT COMMAND BASED ON AN EMAIL ATTRIBUTE
412A
SORT SEARCH RESULTS BASED ON AN EMAIL ATTRIBUTE
414A
RECEIVE REVERSE SORT COMMAND BASED ON AN EMAIL ATTRIBUTE
416A
REVERSE SORT SEARCH RESULTS BASED ON AN EMAIL ATTRIBUTE

FIG. 4A

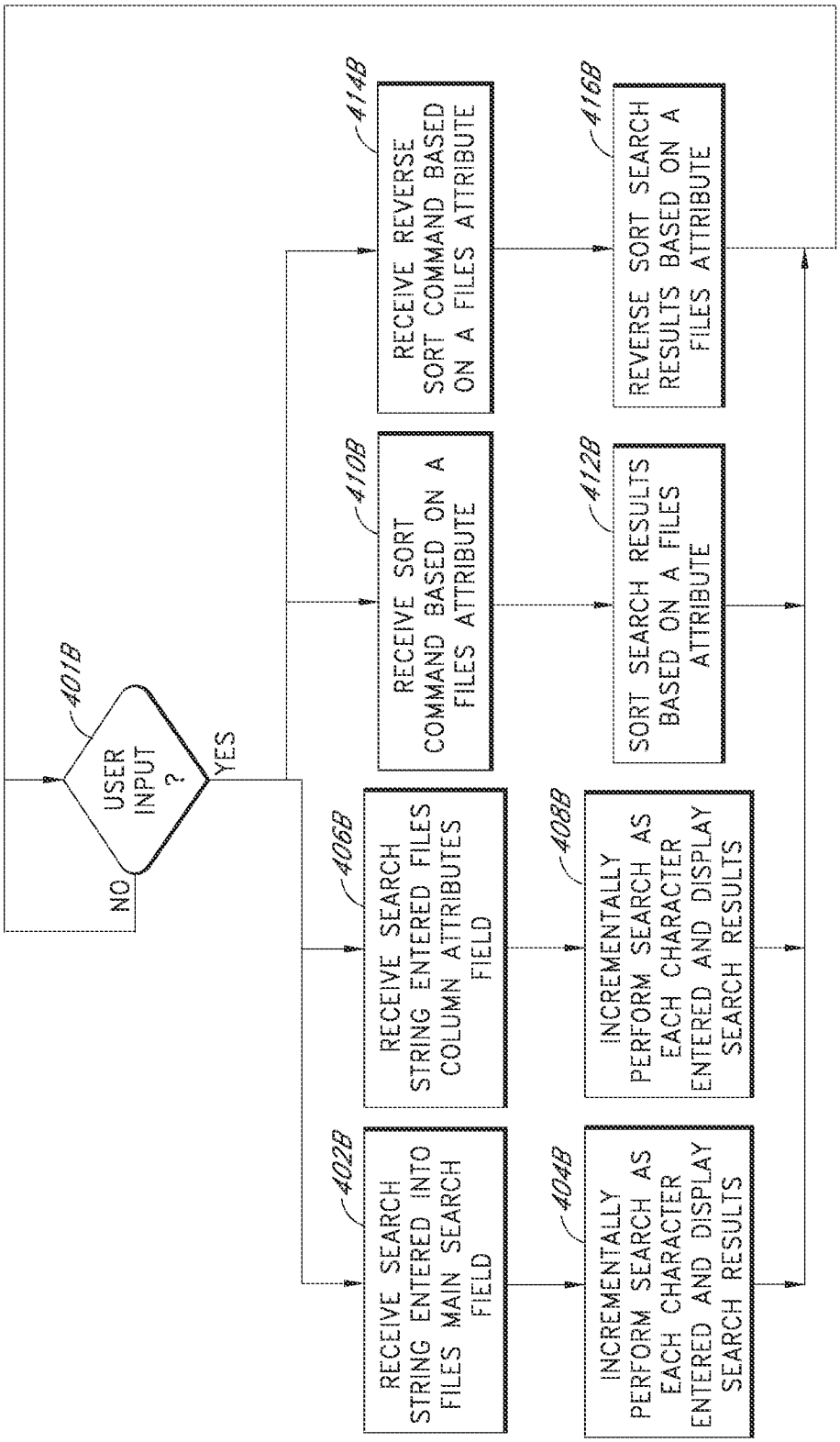

401B
USER INPUT ?
NO
YES
402B
RECEIVE SEARCH STRING ENTERED INTO FILES MAIN SEARCH FIELD
404B
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
406B
RECEIVE SEARCH STRING ENTERED FILES COLUMN ATTRIBUTES FIELD
408B
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
410B
RECEIVE SORT COMMAND BASED ON A FILES ATTRIBUTE
412B
SORT SEARCH RESULTS BASED ON A FILES ATTRIBUTE
414B
RECEIVE REVERSE SORT COMMAND BASED ON A FILES ATTRIBUTE
416B
REVERSE SORT SEARCH RESULTS BASED ON A FILES ATTRIBUTE

FIG. 4B

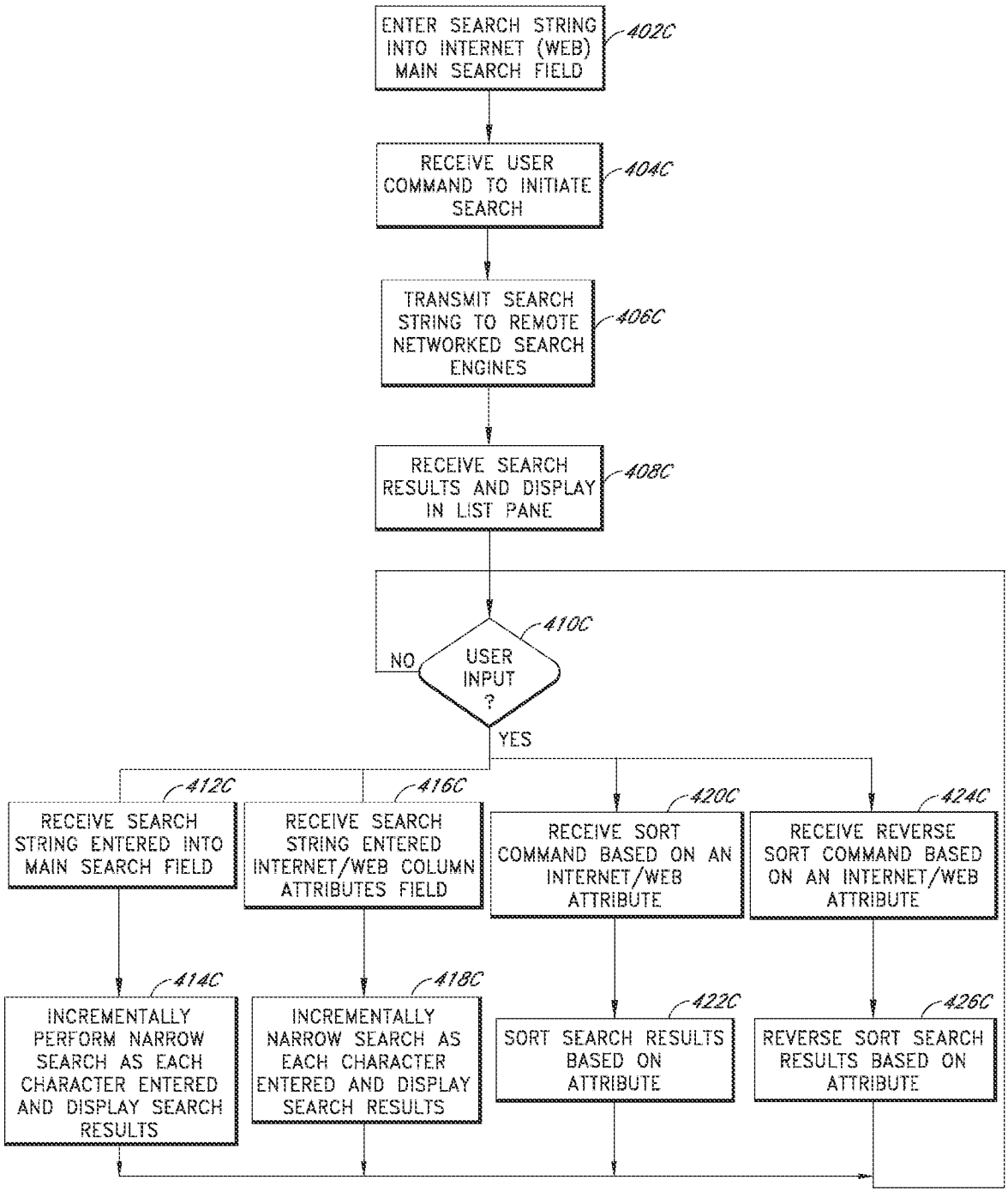

ENTER SEARCH STRING INTO INTERNET (WEB) MAIN SEARCH FIELD
402C
RECEIVE USER COMMAND TO INITIATE SEARCH
404C
TRANSMIT SEARCH STRING TO REMOTE NETWORKED SEARCH ENGINES
406C
RECEIVE SEARCH RESULTS AND DISPLAY IN LIST PANE
408C
410C
USER INPUT ?
NO
YES
412C
RECEIVE SEARCH STRING ENTERED INTO MAIN SEARCH FIELD
416C
RECEIVE SEARCH STRING ENTERED INTERNET/WEB COLUMN ATTRIBUTES FIELD
420C
RECEIVE SORT COMMAND BASED ON AN INTERNET/WEB ATTRIBUTE
424C
RECEIVE REVERSE SORT COMMAND BASED ON AN INTERNET/WEB ATTRIBUTE
414C
INCREMENTALLY PERFORM NARROW SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
418C
INCREMENTALLY NARROW SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
422C
SORT SEARCH RESULTS BASED ON ATTRIBUTE
426C
REVERSE SORT SEARCH RESULTS BASED ON ATTRIBUTE

FIG. 4C

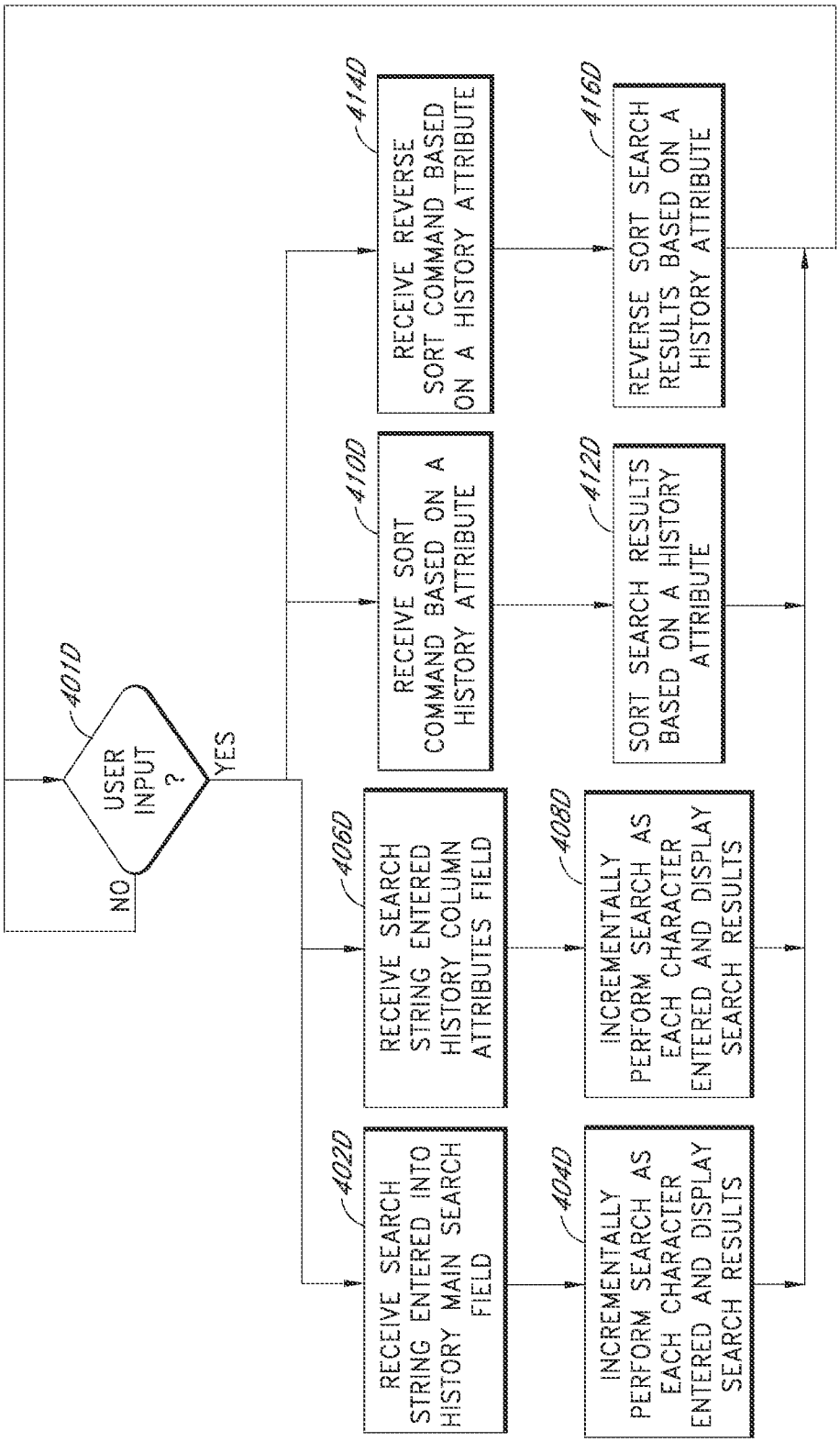

401D
USER INPUT ?
NO
YES
402D
RECEIVE SEARCH STRING ENTERED INTO HISTORY MAIN SEARCH FIELD
404D
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
406D
RECEIVE SEARCH STRING ENTERED HISTORY COLUMN ATTRIBUTES FIELD
408D
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
410D
RECEIVE SORT COMMAND BASED ON A HISTORY ATTRIBUTE
412D
SORT SEARCH RESULTS BASED ON A HISTORY ATTRIBUTE
414D
RECEIVE REVERSE SORT COMMAND BASED ON A HISTORY ATTRIBUTE
416D
REVERSE SORT SEARCH RESULTS BASED ON A HISTORY ATTRIBUTE

FIG. 4D

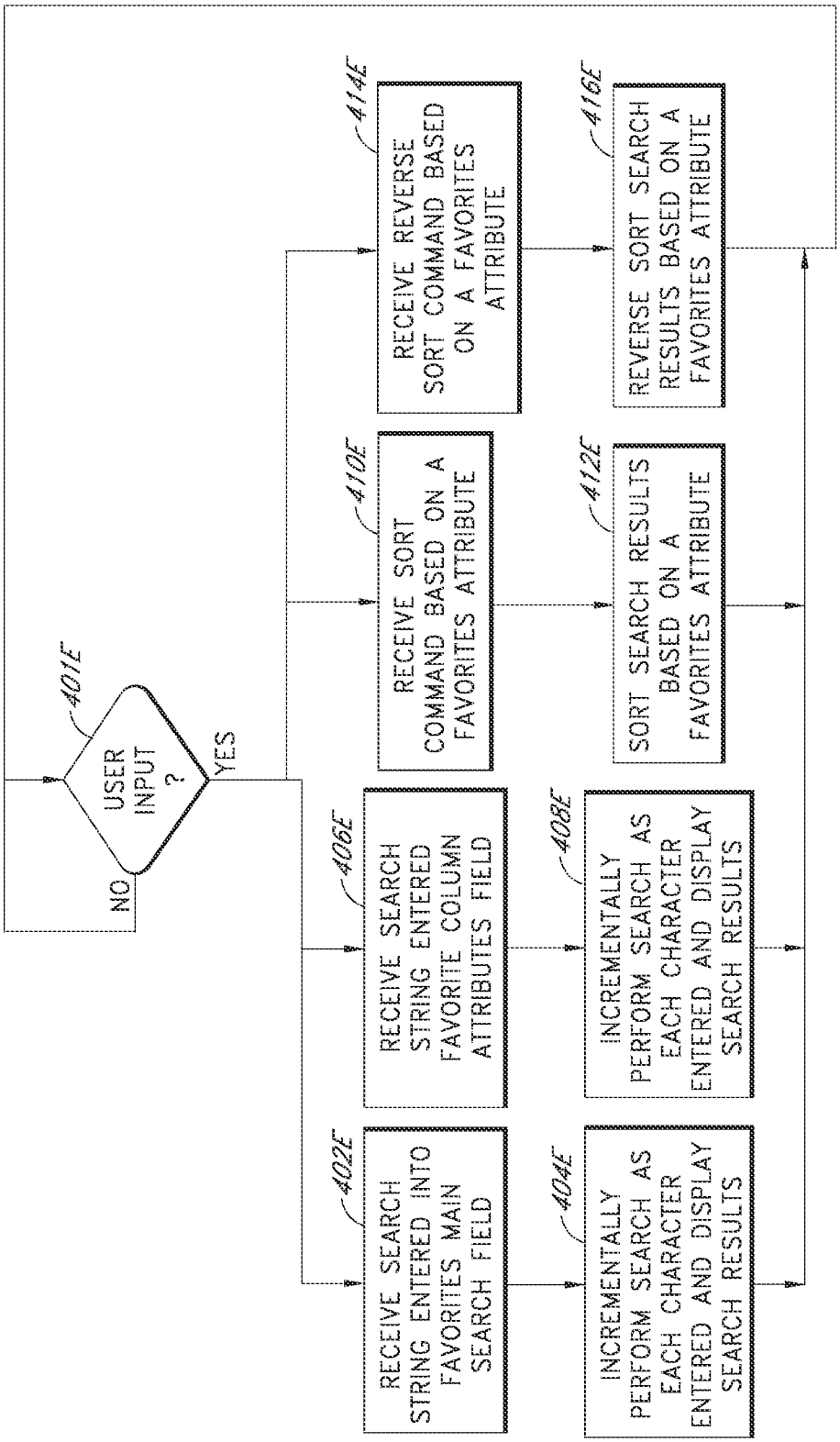

401E
USER INPUT ?
NO
YES
402E
RECEIVE SEARCH STRING ENTERED INTO FAVORITES MAIN SEARCH FIELD
404E
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
406E
RECEIVE SEARCH STRING ENTERED FAVORITE COLUMN ATTRIBUTES FIELD
408E
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
410E
RECEIVE SORT COMMAND BASED ON A FAVORITES ATTRIBUTE
412E
SORT SEARCH RESULTS BASED ON A FAVORITES ATTRIBUTE
414E
RECEIVE REVERSE SORT COMMAND BASED ON A FAVORITES ATTRIBUTE
416E
REVERSE SORT SEARCH RESULTS BASED ON A FAVORITES ATTRIBUTE

FIG. 4E

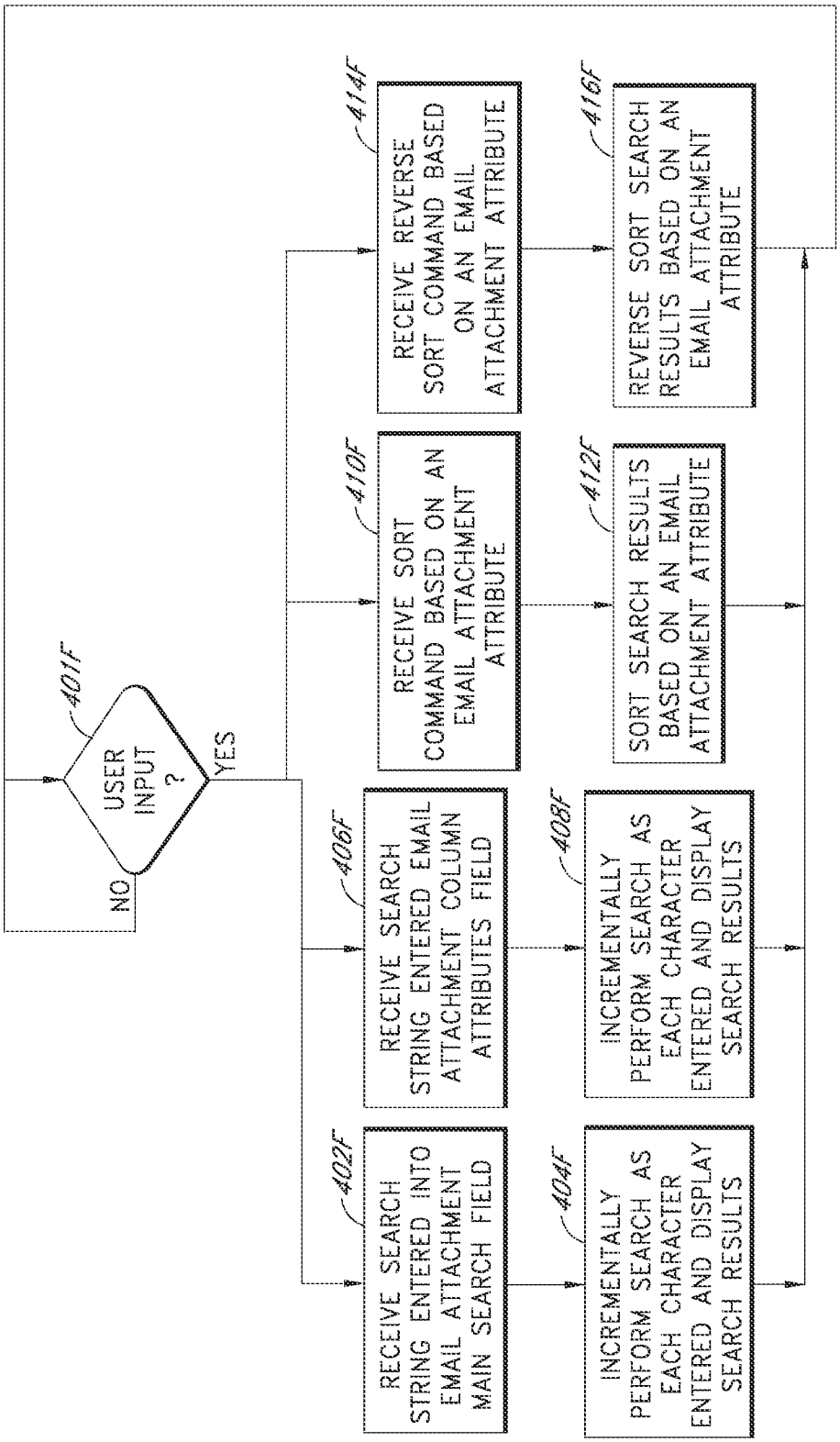

401F
USER INPUT ?
NO
YES
402F
RECEIVE SEARCH STRING ENTERED INTO EMAIL ATTACHMENT MAIN SEARCH FIELD
404F
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
406F
RECEIVE SEARCH STRING ENTERED EMAIL ATTACHMENT COLUMN ATTRIBUTES FIELD
408F
INCREMENTALLY PERFORM SEARCH AS EACH CHARACTER ENTERED AND DISPLAY SEARCH RESULTS
410F
RECEIVE SORT COMMAND BASED ON AN EMAIL ATTACHMENT ATTRIBUTE
412F
SORT SEARCH RESULTS BASED ON AN EMAIL ATTACHMENT ATTRIBUTE
414F
RECEIVE REVERSE SORT COMMAND BASED ON AN EMAIL ATTACHMENT ATTRIBUTE
416F
REVERSE SORT SEARCH RESULTS BASED ON AN EMAIL ATTACHMENT ATTRIBUTE

FIG. 4F

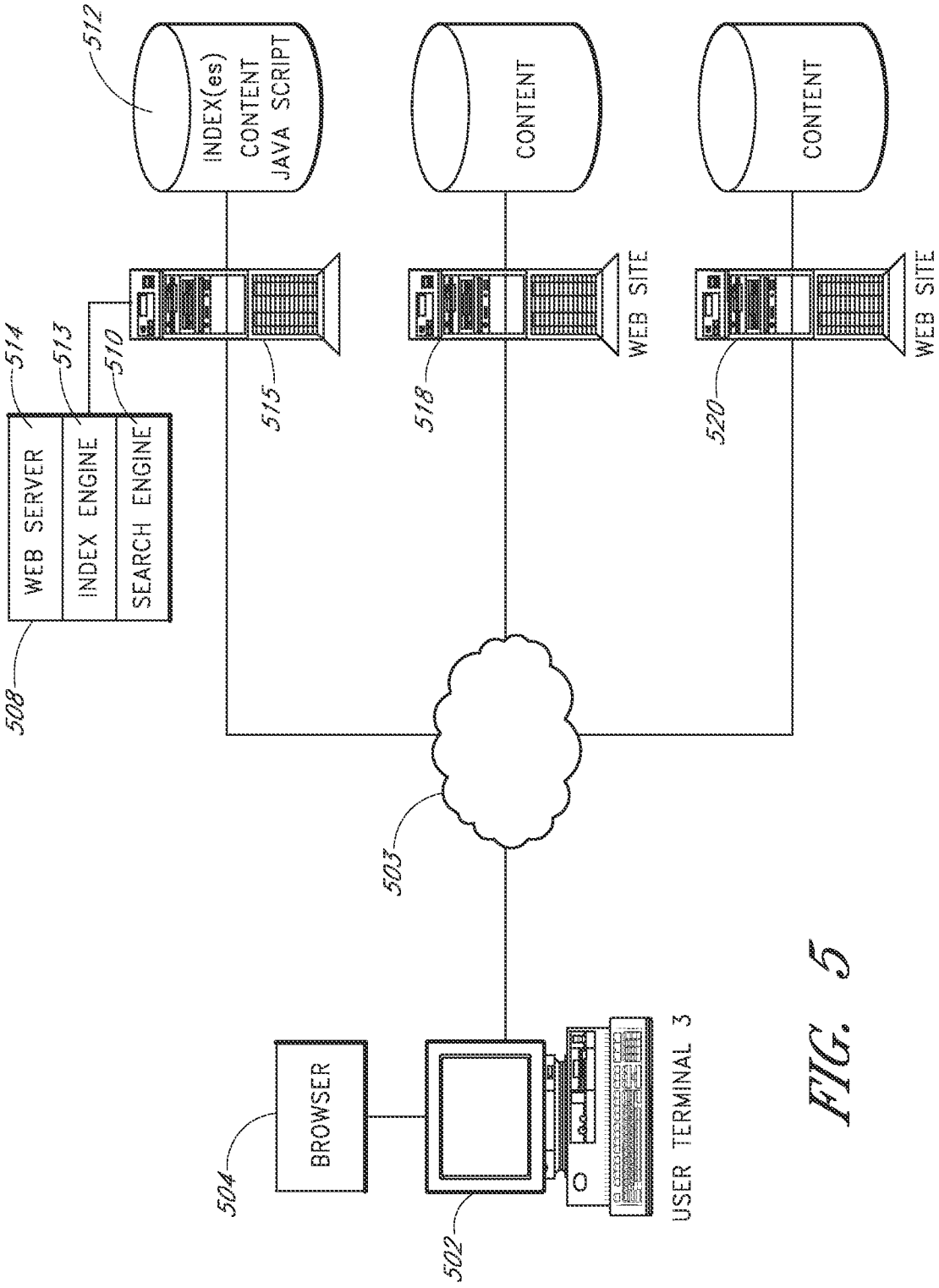

512
INDEX(es)
CONTENT
JAVA SCRIPT
CONTENT
CONTENT
WEB SITE
WEB SITE
514
513
510
WEB SERVER
INDEX ENGINE
SEARCH ENGINE
508
515
518
520
503
BROWSER
504
502
USER TERMINAL 3

FIG. 5

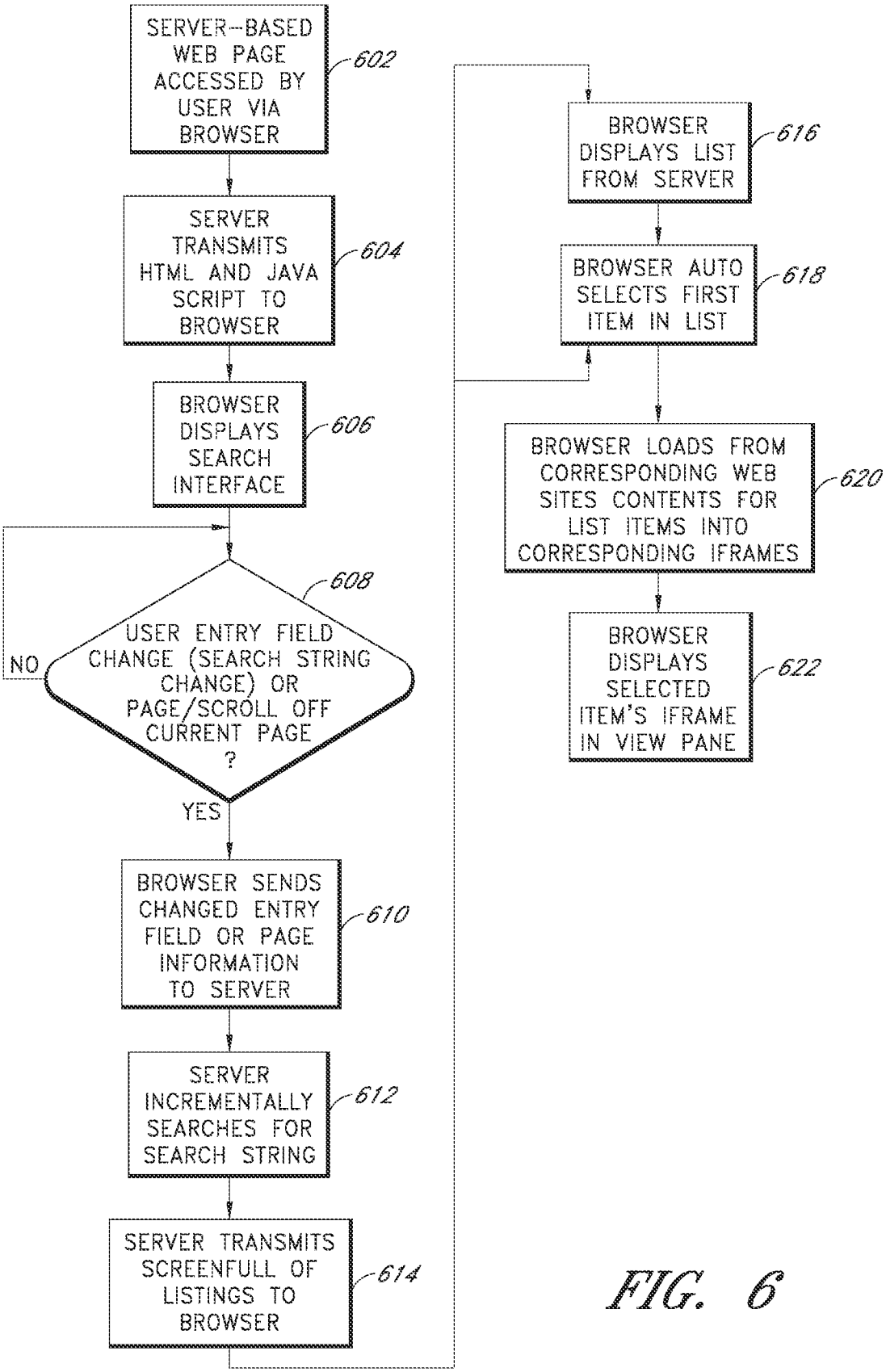

SERVER-BASED WEB PAGE ACCESSED BY USER VIA BROWSER
602
SERVER TRANSMITS HTML AND JAVA SCRIPT TO BROWSER
604
BROWSER DISPLAYS SEARCH INTERFACE
606
608
USER ENTRY FIELD CHANGE (SEARCH STRING CHANGE) OR PAGE/SCROLL OFF CURRENT PAGE ?
NO
YES
BROWSER SENDS CHANGED ENTRY FIELD OR PAGE INFORMATION TO SERVER
610
SERVER INCREMENTALLY SEARCHES FOR SEARCH STRING
612
SERVER TRANSMITS SCREENFULL OF LISTINGS TO BROWSER
614
BROWSER DISPLAYS LIST FROM SERVER
616
BROWSER AUTO SELECTS FIRST ITEM IN LIST
618
BROWSER LOADS FROM CORRESPONDING WEB SITES CONTENTS FOR LIST ITEMS INTO CORRESPONDING IFRAMES
620
BROWSER DISPLAYS SELECTED ITEM'S IFRAME IN VIEW PANE
622

FIG. 6

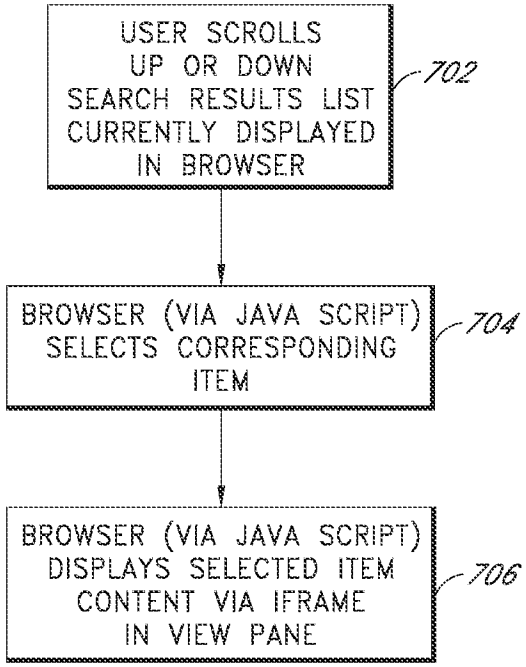

USER SCROLLS UP OR DOWN SEARCH RESULTS LIST CURRENTLY DISPLAYED IN BROWSER
702
BROWSER (VIA JAVA SCRIPT) SELECTS CORRESPONDING ITEM
704
BROWSER (VIA JAVA SCRIPT) DISPLAYS SELECTED ITEM CONTENT VIA IFRAME IN VIEW PANE
706

FIG. 7

SCORE Placeholder Sheet for IFW Content

Application Number: 14507519 Document Date: 10/06/2014

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

- Drawings – Other than Black and White Line Drawings

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

To access the documents in the SCORE database, refer to instructions below.

At the time of document entry (noted above):

- Examiners may access SCORE content via the eDAN interface.
- Other USPTO employees can bookmark the current SCORE URL (http://Score.uspto.gov/ScoreAccessWeb/).
- External customers may access SCORE content via the Public and Private PAIR interfaces.

Form Revision Date: September 30, 2013

APPLICATION DATA SHEET

Application Information

Application Number:	14/507519
Filing Date:	October 6, 2014
Title:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Attorney Docket Number:	X1.002C3

Correspondence Information

Correspondence Customer Number:	20995
Phone Number:	(949) 760-0404
Fax Number:	(949) 760-9502
E-Mail Address:	efiling@knobbe.com

Representative Information

Representative Customer Number: 20995

Domestic Priority Information

Application:	Continuity Type:	Parent Application:	Parent Filing Date:
Application Number 10/654588	Claims benefit of provisional	~~60/478690~~ 60/478960	2003-06-13

Dated: October 7, 2014

By: /Russell M. Jeide/
Russell M. Jeide
Registration No. 54,198
Attorney of Record
Customer No. 20995
(949) 760-0404

19059736
100714

Electronic Acknowledgement Receipt

EFS ID:	20350003
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Kealani Aguon
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	07-OCT-2014
Filing Date:	
Time Stamp:	15:34:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	CORRADS.pdf	55493 6faec5f7cde1369d0d708cf6eacc2a8f419d52e0	no	1

Warnings:	
Information:	

This is not an USPTO supplied ADS fillable form	
Total Files Size (in bytes):	55493

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/507,519	10/06/2014	William Gross	X1.002C3

CONFIRMATION NO. 9661

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

FORMALITIES LETTER



Date Mailed: 10/17/2014

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be submitted with markings and be accompanied by a clean version (without markings) as set forth in 37 CFR 1.125(c) and a statement that the substitute specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, and/or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - The line spacing on the specification, claims, and/or abstract is not 1½ or double spaced (see 37 CFR 1.52(b)).

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **280** basic filing fee.
- $ **140** surcharge.
- $ **600** search fee.
- $ **720** examination fee.
- $(**0**) previous unapplied payment amount.
- $ **1740** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  William Gross
  Steven Lee Colwell

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tle/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/507,519

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE($)	FEE($)		RATE($)	FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	1 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/507,519	10/06/2014	2658	0.00	X1.002C3	1	1

CONFIRMATION NO. 9661

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

FILING RECEIPT

OC000000071356603

Date Mailed: 10/17/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

William Gross, Pasadena, CA;
Steven Lee Colwell, Santa Barbara, CA;

Applicant(s)

William Gross, Pasadena, CA;
Steven Lee Colwell, Santa Barbara, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 11/972,563 01/10/2008 PAT 8856093
which is a CON of 10/654,588 09/03/2003 PAT 7370035
which claims benefit of 60/408,015 09/03/2002
and claims benefit of 60/413,013 09/23/2002
and claims benefit of 60/448,923 02/20/2003
and claims benefit of 60/470,903 05/14/2003
and claims benefit of 60/478,960 06/13/2003

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 10/14/2014
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/507,519**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

Title

METHODS AND SYSTEMS FOR SEARCH INDEXING

Preliminary Class

704

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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RESPONSE TO FORMALITIES NOTICE

Inventor	:	William T. Gross
App. No.	:	14/507519
Filed	:	October 6, 2014
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Art Unit	:	2658
Conf No.	:	9661

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The above-captioned application was filed lacking at least one item that would advance application to examination. Enclosed in compliance with 37 CFR 1.53(f) are the following.

(X) A Preliminary Amendment in 5 pages.

(X) A Substitute Specification in 49 pages, updating spacing to 1.5 throughout.

(X) Fees will be paid via EFS Web. Any extension of time will be requested by payment of the appropriate extension fee.

The Commissioner is hereby authorized to charge any additional fees which may be required, now or in the future, or credit any overpayment, to Account No. 11-1410.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	William T. Gross
App. No.	:	14/507519
Filed	:	October 6, 2014
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Examiner	:	Unassigned
Art Unit	:	2658
Conf. No.	:	9661

PRELIMINARY AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 5 of this paper.

AMENDMENTS TO THE CLAIMS

1. **(Canceled)**

2. **(New)** A method of performing a search comprising:

receiving a first partial search string in a first search field;

receiving a second partial search string in the first search field;

wherein the first and second partial search strings are separated by a string separator character in the first search field;

incrementally searching a set of documents in order to identify search results, wherein the incrementally searching comprises:

searching for a first one or more documents each including at least one string that corresponds to the first partial search string;

searching for a second one or more documents each including at least one string that corresponds to the second partial search string; and

updating the search results as each successive character of the first partial search string and the second partial search string is received respectively in the first search field by identifying one or more documents included in both the first one or more documents and the second one or more documents, wherein the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents.

3. **(New)** The method of claim 2, wherein the first partial search string comprises characters corresponding to at least a portion of a first string being searched for and the second search string comprises characters corresponding to at least a portion of a second string being searched for.

4. **(New)** The method of claim 2, further comprising:

displaying in a user interface an indication of the identified one or more documents included in both the first one or more documents and the second one or more documents.

5. **(New)** The method of claim 4, further comprising displaying via the user interface a portion of a selected identified document.

6. **(New)** The method of claim 5, further comprising highlighting a plurality of occurrences of the first and second partial search strings in the selected document while not highlighting portions of text between occurrences of the first and second partial search strings in the selected document.

7. **(New)** The method of claim 2, wherein the string separator character is selected from the group comprising a space, “<”, “(”, “[”, “{”, “””, “!”, “@”, “#”, “$”, “%”, “^”, “&”, “*”, “)”, “;”, “:”, “’”, “?”, “>”, “,”, “=”, and “+”.

8. **(New)** The method of claim 2, wherein the documents comprise emails, text documents, contact information, appointment information, task information, music files, system files, photographs, and/or images.

9. **(New)** The method of claim 2, wherein at least some of the documents comprise at least the following email fields in which one or more of the first and second partial search strings may be located: to, from, cc, bcc, subject, folder name, date, size, attachments or body.

10. **(New)** The method of claim 2, wherein at least some of the documents comprise at least the following file fields in which one or more of the first and second partial search strings may be located: name, path, size, item type, date modified, date created, or content.

11. **(New)** The method of claim 2, wherein at least some of the documents comprise at least the following contacts fields in which one or more of the first and second partial search strings may be located: name, email address, phone number, company, job title, or content.

12. **(New)** The method of claim 2, wherein at least some of the documents comprise at least the following calendar fields in which one or more of the first and second partial search strings may be located: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content.

13. **(New)** The method of claim 2, wherein the search field corresponds to a single field of the documents and the incremental searching is performed only on content of the single field of the documents.

14. **(New)** The method of claim 13, wherein the single field of the documents comprises one of: to, from, cc, bcc, subject, folder name, date, size, attachments, or body fields of email documents.

15. **(New)** The method of claim 13, wherein the single field of the documents comprises one of: name, path, size, item type, date modified, date created, or content fields of file documents.

16. **(New)** The method of claim 13, wherein the single field of the documents comprises one of: name, email address, phone number, company, job title, or content fields of contacts documents.

17. **(New)** The method of claim 13, wherein the single field of the documents comprises one of: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content fields of calendar documents.

18. **(New)** The method of claim 2, wherein the first partial search string applies to the entirety of each document and the incremental searching of the second partial search string is performed only on content of a single field of the document.

19. **(New)** The method of claim 18, wherein the single field of the documents comprises one of: to, from, cc, bcc, subject, folder name, date, size, attachments, or body fields of email documents.

20. **(New)** The method of claim 18, wherein the single field of the documents comprises one of: name, path, size, item type, date modified, date created, or content fields of file documents.

21. **(New)** The method of claim 18, wherein the single field of the documents comprises one of: name, email address, phone number, company, job title, or content fields of contacts documents.

22. **(New)** The method of claim 18, wherein the single field of the documents comprises one of: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content fields of calendar documents.

23. **(New)** The method of claim 2, where modifiers can be applied to either or both of the first partial search string and second partial search string to include one or more operators from the group comprising AND, OR, NOT, NEAR, date ranges, and size ranges.

REMARKS

Applicant respectfully requests entry of the above claim amendments prior to examination on the merits. As a result of the amendments listed above, Claim 1 has been canceled and new Claims 2-23 have been added. These new claims are fully supported by the application as filed and, thus, no new matter has been added. Consideration of Claims 2-23 is respectfully requested.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: December 17, 2014

By: /Russell M. Jeide/
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19559107

METHODS AND SYSTEMS FOR SEARCH INDEXING

PRIORITY CLAIM

[0001] This application is a continuation of U.S. Patent Application No. 11/972,563, filed on January 10, 2008, which is a continuation of U.S. Patent Application No. 10/654,588, filed on September 3, 2003, which claims priority under 35 U.S.C. § 119(e) to U.S. Provisional Application No. 60/408,015, filed September 3, 2002, U.S. Provisional Application No. 60/413,013, filed September 23, 2002, U.S. Provisional Application No. 60/448,923, filed February 20, 2003, U.S. Provisional Application No. 60/470,903, filed May 14, 2003, and U.S. Provisional Application No. 60/478,960, filed June 13, 2003, each of which is hereby expressly incorporated by reference in their entireties.

Related Applications

[0002] This application is related to copending application entitled APPARATUS AND METHODS FOR LOCATING DATA, Serial Number 10/654,595, Attorney Docket No. X1.001A, and copending application entitled METHODS AND SYSTEMS FOR WEB-BASED INCREMENTAL SEARCHES, Serial Number 10/654,596, Attorney Docket No. X1.003A, each of which were filed on the same date as U.S. Patent Application No. 10/654,588, entitled METHODS AND SYSTEMS FOR SEARCH INDEXING, the entirety of which are hereby incorporated by reference.

Background

Field

[0003] The present invention relates generally to data processing, and in particular to systems and methods for locating data.

Description of the Related Art

[0004] Conventional search application programs often are slow and cumbersome to use. For example, many search engines require the user to type in a search term, click on a search button, and review the results. If the user is not satisfied with the results, as might be the case if too many items or items that are not of interest are found, then the user needs to edit the search terms, click on an initiate search button, and again review the results. In addition, many search application programs only provide for limited search filtering, wherein the user is limited to filtering the search based on dates, file location, and file contents.

[0005] Another drawback of some search engines is that the actual search process takes an annoying amount of time to complete a search. Furthermore, some search engines do not include search features directed to specific types of search targets, such as email, Web pages, and files. Alternatively and inconveniently, separate tools may be needed to search for email, Web pages, and files if the user desires corresponding specific search features.

[0006] Further, with many Web-based search systems, the user types in a search phrase in a Web page search field presented via a browser on the user's computer screen, and then presses an Enter key or Search button to have the query transmitted to a remote server system that will perform the search. The server processes the query, generates a list of search results, and sends the list back to the user's browser. The user then clicks on one of the choices, whereupon a target page is displayed. The process from the time the user starts typing, until the user sees the target page, can take at least 5 seconds, and often takes 30 seconds or more.

[0007] Because of the turnaround time for typing in a search phrase to receiving search results, this conventional search procedure can demand a deliberative and tedious strategy from the user in order to search efficiently. First the user may think carefully regarding what search terms to use, the user then enters the search term, initiates the search, after several seconds receives and reviews the list of results, decides which, if any of the results seem relevant enough

to click on, click on a selected list item, wait several seconds for the corresponding Web page to be returned and displayed on the user's browser, and finally reviews the Web page.

Summary

[0008] One example embodiment of the present invention advantageously provides for incremental or reactive searching of a variety of search targets. For example, the search targets can include one or more of files, emails, email attachments, Web pages, specific databases, and/or the like. Because a search is performed incrementally, the search results are provided or narrowed substantially immediately after each character in a search string is entered by a user. Thus, the user is provided with substantially immediate feedback as the search string is being entered, and so can quickly decide on the desirability of entering additional search characters, entering a new search string, or deleting one or more search string characters.

[0009] An example search application generates one or more indexes corresponding to the search target types. An index optionally includes both content information and attribute information for potential search targets. The attribute information can be specific to the type of search target. For example, the index can include at least partially different attribute information for files as compared to emails. The indexing is optionally performed incrementally.

[0010] One embodiment is a method of performing a search comprising: receiving at least a first search string and a second search string as the first and second search strings are being entered into the same search field; and incrementally locating at least a first document that has a least a first word that begins with the first string and a second word that begins with the second string.

[0011] Yet another embodiment is a search apparatus, comprising: a first instruction configured to read at least a first search string and a second search string entered into a same first search field; and a second instruction configured to incrementally filter search results to locate at least a first document that has a least a

first word that begins with the first string and a second word that begins with the second string.

[0012] Still another embodiment is a search index system comprising: scan code that determines at least in part what files to index; index code that indexes files based at least in part on the scan code determination, wherein the index code is further configured to locate punctuation marks in at least a first search string and to treat at least a portion of the punctuation marks as string separators based at least in part on their location within the first search string.

[0013] One embodiment is a method of selectively performing a search and executing a command, the method comprising: receiving at least a first string in a search field; determining if the first string is a command; selectively initiating command execution in response to determining that the first string is a command; and selectively initiating a search if the first string is not a command.

[0014] Still another embodiment is a search apparatus, comprising: a first instruction configured to receive a first string entered into a search field; a second instruction configured to determine if the first string corresponds to a command; a third instruction configured to initiate command execution in response to determining that the first string corresponds to a command; and a fourth instruction configured to initiate a search if the first string is not a command.

Brief Description of the Drawings

[0015] Embodiments of the present invention will now be described with reference to the drawings summarized below. These drawings and the associated description are provided to illustrate example embodiments of the invention, and not to limit the scope of the invention.

[0016] Figure 1 illustrates an example computer system that can be used in accordance with one embodiment of the present invention.

[0017] Figure 2A illustrates an example index architecture.

[0018] Figure 2B illustrates an example search process using the index.

[0019] Figure 2C illustrates an example indexing process.

[0020] Figure 2D illustrates an example use of a pre-computed sort list.

[0021] Figures 3A-I illustrate example user interfaces in accordance with one embodiment of the present invention.

[0022] Figures 4A-4F illustrate example search processes.

[0023] Figure 5 illustrates an example computer system that can be used to provide a server based search system in accordance with one embodiment of the present invention.

[0024] Figure 6 illustrates an example search process using the server based search system.

[0025] Figure 7 illustrates an example process of scrolling through a search list.

[0026] Throughout the drawings, like reference numbers may be used to refer to items that are identical or functionally similar.

Detailed Description of Preferred Embodiments

[0027] Embodiments of the present invention provide systems and methods for searching, index, and presenting information. As will be described in greater detail below, in one example embodiment, a search apparatus provides multiple search fields corresponding to different search target characteristics. As a user enters in a search term into a field, the search results are refined incrementally with each entered character. Thus, the search results are shown as the user enters search characters or terms. To further refine or filter the search results, the user can enter other search terms into other fields. In one embodiment, the filtering process is performed substantially immediately upon the user entering addition search characters or terms.

[0028] Further, a user can incrementally broaden the search results by deleting or backspacing over previously entered search characters. The search results are broadened substantially immediately, in response to the user deleting or back spacing over a character, without requiring that the user click on or otherwise activate a "search" button or the like. A search, for example, can typically take 200 ms or less, though in some situations it can take longer, such as, for example, 300 ms, 400 ms, 600 ms, 1 second, or 2 seconds.

[0029] In one embodiment, a user interface includes a list area or pane, which lists the search results (optionally including headlines or summaries), and a view area or pane, which displays an item or contents of an item, such as an item selected in the list area. Advantageously, the user can customize an example search system in accordance with the user's preferences.

[0030] Throughout the following description, the term "Web site" is used to refer to a user-accessible server site that implements the basic World Wide Web standards for the coding and transmission of hypertextual documents. These standards currently include HTML (the Hypertext Markup Language) and HTTP (the Hypertext Transfer Protocol). In addition, reference is made to Java script (also referred to as JavaScript), though other types of script, programming languages, and code can be used as well. It should be understood that the term "site" is not intended to imply a single geographic location, as a Web or other network site can, for example, include multiple geographically distributed computer systems that are appropriately linked together. Furthermore, while the following description relates to an embodiment utilizing the Internet and related protocols, other networks, such as networked interactive televisions, and other protocols may be used as well.

[0031] In addition, unless otherwise indicated, the functions described herein are preferably performed by executable code and instructions running on one or more general-purpose computers. However, the present invention can also be implemented using special purpose computers, state machines, and/or hardwired electronic circuits. The example processes described herein do not necessarily have to be performed in the described sequence, and not all states have to be reached or performed.

[0032] Further, while the following description may refer to "clicking on" a link or button, or pressing a key in order to provide a command or make a selection, the commands or selections can also be made using other input techniques, such as using voice input, pen input, mousing or hovering over an input area, and/or the like.

[0033] One example search system provides for incremental searching across a plurality of attribute fields for files, emails, email attachments, the Internet, other networks, prior Internet or other network search results ("history"), favorites,

specific databases, and/or the like. In one example embodiment, the search system includes a client-based search application. Other embodiments can utilize a server-based search application.

[0034] One example search application includes tabs corresponding to an email search interface, a files search interface, a Web search interface, a favorites search interface, an email attachment interface, a Web history search interface, and/or a specific database search interface. Thus, in one example embodiment, a search application provides search specific interfaces for different types of search targets.

[0035] Optionally, all the tabs are efficiently displayed and selectable in a plurality screens. Thus, while viewing a first target search interface, a user can select a different search target interface by moving the cursor over a given tab and then clicking on the tab. In another embodiment, a list of interface links or a drop down menu can be used to select the target specific search interfaces. In addition, other methods of selecting the search target interfaces can be used as well. For ease of use, the different interfaces optionally have similar layouts with respect to the positioning of may of the interface elements, such as the list and view areas, the tabs, and main search field.

[0036] Figure 1 illustrates example hardware and software components on a physical and/or functional level that can be invoked or used when performing a search and/or an indexing operation. As depicted, one embodiment includes a search application 102 stored on and executed by a user terminal 104. As will be described in greater detail below, the search application 102, provides user interfaces for searching email, files, Web sites, cached Web pages, databases and the like. In addition, the search application 102 has a local index engine 103 that indexes email, files, cached Web pages, databases and the like, stored in a data repository or database 105. For example Web pages previously viewed in the search application's view pane or area, and optionally, stored Web pages previously viewed using other user browsers, or otherwise stored locally can be indexed. Separate indexes can be used for the email, files, cached Web pages, databases and the like, or a single index can be used for the foregoing.

[0037] The index engine 103 can further include code configured as a scan engine or module that is used to determine whether a file is to be indexed. Thus, the index engine 103 can also scan files to identify new targets, such as email, document files, Web pages, database entries, and the like, that have not yet been indexed, or targets that have been previously been indexed but have since been modified. Optionally, rather then re-index all corresponding targets each time an index operation is performed, the index engine 103 can incrementally index just the new or modified targets or documents.

[0038] The index engine 103 can utilize one or more indexing algorithms to create an index, such as a reverse or inverted index. The index includes a data structure that associates character strings with files, documents, and the like. In one example embodiment, for each word or character string found with a file or document, the index stores which fields of which documents or files contain that word or character string.

[0039] In one example embodiment, the index is constructed in blocks, which for convenience will be referred to as incremental index bulks or bulks. In this example, there is an incremental index bulk for each indexed target type, such as files, email, favorites, email attachments, stored Web pages. By way of example, a bulk can be 4 Mbytes in size, 16 Mbytes in size, or other sizes. A given bulk can be a memory mapped block of volatile memory, such as DRAM or SRAM, in which list structures for the corresponding index are built. The bulks can be stored on slower mass memory, such as a hard disk drive, and then read into faster RAM upon startup of the search application. Advantageously, having the bulk memory mapped into RAM allows for fast searches and updating, as compared with having to translate the information from a disk storage format to a different RAM format.

[0040] When the bulk fills up so that the allocated memory space for the bulk is filled or substantially filled by the index data, the bulk is stored in non-volatile mass memory, such as a magnetic drive, and is termed a fixed index. The complete index for a given target type can include several fixed indexes and the bulk. As new documents or files are added to the index, they add to the bulk, rather than directly to the fixed

indexes. Optionally, the bulk can be stored in mass, non-volatile memory, such as a hard disk drive, and read into RAM as needed.

[0041] In the example embodiment, when a predetermined number of fixed indexes, such as 5, are created the multiple fixed indexes are optionally merged into a smaller number of indexes, such as single relatively larger fixed index. Advantageously, this permits searches to be completed in relatively less time, as fewer indexes, and optionally only one index, needs to be searched. Search speed is much more closely correlated with the number of indexes that need to be searched, as compared to the size of the index, and therefore it takes less time to search one large file as compared to 5 or 10 other files that are in aggregate the same size as the one large file.

[0042] After a merge process is performed, new items are indexed and added to the corresponding bulk, and additional indexes are stored in non-volatile mass memory, as similarly described above. Generally, the first fixed index is significantly larger than the other fixed indexes, as the first fixed index is the merged composite of previous fixed indexes, while the additional fixed indexes are each one bulk in size.

[0043] In one embodiment, a fixed index can include a plurality of separate files, though in other embodiments, a single file containing the same or equivalent data can be used. For example, a “col" file stores attribute data for the target files corresponding to the index. As will be discussed below, the attributes can be used as search criteria and can be displayed to the user in column format. For example, with respect to email a user interface for searching emails can include a from (sender) attribute column, a to (addressee) attribute column, date/time sent and/or received attribute columns, a folder path attribute column, a client attribute column, a cc attribute column, a size attribute column, and a bcc attribute.

[0044] The fixed index can further include an "occur" file, which is the main inverted index data file. A "occur-offsets" file can also be generated. The occur-offsets file stores pointers into the "occur" file. The fixed index additionally includes a "words" file that comprises a list of the words that occur in the target files. Additionally there is a "deletions" file that lists indexed documents or files that have since been deleted. A “body” file can also be generated which has the document text. The body file content is

used for view pane display when the actual document or document is not available or may become unavailable when the content is needed for display in the view pane. The body file can be particularly useful for more transient files, such as emails. The example bulk includes a words file, an occur file, and an occur offsets file.

[0045] Figure 2A illustrates an example index configuration, though other index configurations, types and structures can be used in other embodiments. Each target type can be associated with its own corresponding set of fixed indexes and bulk. Advantageously, having separate sets of indexes for each target type, search and indexing can be performed faster. However, in other embodiments, the same index or index set can be used for all target types. The example index configuration illustrated in Figure 2A includes three fixed indexes 204A, 206A, 208A stored on mass storage media 202A, which can be, for example a magnetic or optical disk drive. In this example, fixed index 204A is a merged index and is larger than indexes 206A, 208A which are non-merged index. Index 208A is the final index, that is, the index with the most recent additions and/or deletions. The final index 208A includes the information from the bulk 212A. The bulk 212A includes a words file, an occur file, and an occur offsets file. Advantageously, the bulk 212A is stored in RAM 210A so that additions and deletions can be made very quickly, without requiring constant modification of the final index 208A stored on slower mass storage media 204A. Optionally, all the indexes can be read into RAM 210A to increase search speed. Upon shut-down of the search application, the bulk 212A is written back to the index 208A for storage on the non-volatile mass memory media 204A.

[0046] Figure 2B illustrates an example search lookup operation. At state 202B one or more search characters or strings are received. At state 204B the character or character strings are located in the words file. At state 206B the pointer or pointers for the character or character strings in the occur-offsets file are located. At state 208B document-occurrence information is read from the occur file using the located pointers. At state 210B the search results are presented to the user. The search results are displayed in the list pane or area, and the view area or pane displays the contents of the first item or a selected item from the list area.

[0047] Optionally, the content displayed in the view area or pane is auto-scrolled down to the first matching character or character string, which may be highlighted or otherwise emphasized. The search term can be automatically displayed with multiple preceding and succeeding lines or sentences. For example, a search for "matisse" might find a document where the first appearance of "matisse" occurs at the 100th line down. The auto-scroll process automatically scrolls down to, or otherwise displays the content beginning at a certain point relative to the first appearance of "matisse." For example, the content can be displayed in the view pane from line 90 to line 110, substantially immediately upon selecting that page in the list pane, so that the user can immediately see the matching word "matisse" in context. Optionally, the user can specify how many sentences or lines are to be displayed before and after the search term.

[0048] Optionally, the view area or pane displays the content in a collapsed format, so that several matches that are distributed throughout a viewed document can be seen at once, with one or more lines or sentences of context above and below each match displayed as well, and the remaining lines deleted or "collapsed" into ". . ." types of lines, with + symbols for expanding the collapsed section to view that section or the entire document in uncollapsed format, and with – symbols to recollapse a section as desired.

[0049] In one optional embodiment, the index stores "prefix" entries, which further enhances the speed of incremental filtering or searching. For example, in addition to bare or complete words, such as "dog," common prefixes, such as "d" or "do", are stored as well. The "d" prefix entry contains information indicating which documents or files contain a word or character string starting with "d". By preparing this information during indexing, the response for the first letter or two of a filtering or search operation is greatly enhanced as compared to a standard inverted index, which would have to locate thousands of matches at the time of receiving the user query, thereby resulting in slow filtering operations.

[0050] Optionally, a "sort" file is provided for each attribute column. The sort files are cached sort orders for the documents or files in the fixed index, when sorted by that column. In one embodiment, the sort order for each column is pre-computed

before receiving a user sort instruction, so that when the user provides a sort order, such as by clicking on a column header to sort, the sort operation is performed almost instantly, in a few seconds or a fraction of a second, rather than in minutes. Optionally, the sort files can be cached in local RAM to speed up access of the sort files. The user can optionally specify that a particular attribute is to be used as a default sort key when presenting a document list. Thus, for example, the user can specify that as a default sort for email, emails should be automatically sorted and ordered according to date/time received. In this example, the pre-computed default sort list, also referred to as a master sort list, would then be sorted according to date/time, and the master sort list would be almost instantly presented with the pre-computed sort list when the user clicks on the email tab.

[0051] Optionally, a pre-computed sort list for a plurality of documents or files, or for every document or file in a selected search tab or interface is stored in high speed local memory RAM, sorted by the current sort order. The search engine can then search through this list when additional search terms are added. Advantageously, this enables the substantially instant redisplay of a given search result list in the selected order when the search results change as the result of a letter being typed or removed from the filtering phrase. Without the master sort list the incremental filtering might appear to operate much more slowly. In another embodiment, the column information is compressed so that all or a large portion of the column information fits in RAM. The column information can then be sorted using memory-sort algorithms, rather than pre-computing the sort order. In one example embodiment, the column information is compressed using a unique-string dictionary that includes each unique value that occurs in each attribute column file. The attribute column file contains pointers to items within this unique-string dictionary, rather than the strings themselves.

[0052] In one example embodiment, the pre-computed sort list is generated and used as follows. Referring to Figure 2D, a sort process begins at state 202D, where a matching item list is retrieved or accessed from memory. At state 204D certain information in the matching item list is stored using a bit mask that optionally contains a bit for every item in a corresponding master sort list, that is for each indexed item for a

given target type. The bit indicates whether the item in the master sort list is a matching item or not, that is, whether the item is included in the matching item list. For example, each bit can be set to either a "1" to indicate the item is a match, or a "0" to indicate no match. For example, if there are 1,000,000 indexed items in the master sort list, then the bit mask would use 1,000,000/8 bytes = 125k. Advantageously, use of the bit mask often significantly reduces that time it takes to locate matches as a quick bit-check operation can be performed on a given bit mask bit position, rather than necessitating a search through all or a large portion of the master sort list.

[0053] At state 206D the bit for an item in the bit mask is read to determine whether the master sort list item corresponding to the bit is a matching item or not. If the item is a matching item, the process proceeds to state 208D at which the item is added to the sorted list results and the process proceeds to state 210D. Otherwise, the process from state 206D to state 210D. At state 210D a determination is made as to whether the end of the master sort list has been reached. If not, the process proceeds back to state 206D and examines the next bit in the bit mask corresponding to the next item in the master sort list. If the end of the master sort list has been reached, the process proceeds from state 210D to state 212D.

[0054] In one embodiment, a bit mask is generated using the index file information. For example, there can be one bit per document, indicating which documents contain each word in the search phrase. Then Boolean operations (for example, AND, OR, NOT, XOR, etc.) can be used to combine the bit masks for some or all of the fixed indexes, and for some or all the different words or character string, to get a bit mask of the matching results.

[0055] Referring back to Figure 1, the database or repository 105 may be configured as multiple files and/or databases stored on an internal or external storage device of the user terminal 104. A given index can include the item content, and the time, date, item size, or other attributes from when the index entry was created and/or last updated. The some or all of the foregoing index information can be used to determine if a file has been previously indexed or modified since it was last indexed, therefore needs to be indexed or re-indexed.

[0056] The search application 102 further includes a local search engine 107 that utilizes one or more of the indexes created by the index engine 103 to locate email, files, cached Web pages, databases and the like in response to a user query. For example, in response to a query the local search engine 107 accesses the index 105 and locates corresponding matches. The search engine 107 returns excerpts or headlines from relevant matches, and also returns links to the matches. In addition, the search application 102 optionally passes user queries to one or more remote search engines, receives the results, and displays the results to the user. In one embodiment, the search application 102 includes command line code that determines whether a user has entered a command into a search field, and if so, causes the command to be executed. While the search engine 107 and the index engine 103 are illustrated as separate entities, in one embodiment, they are combined in a single engine or module.

[0057] The search application 102 can be downloaded or accessed from a remote Web site, loaded via removable, optical, magnetic, or semiconductor memory, pre-loaded on the terminal's mass storage apparatus, or otherwise stored and/or made accessible to the terminal 104.

[0058] The terminal 104 can be a personal computer, an interactive television, a networkable programmable digital assistant, a computer networkable wireless phone, and the like, that optionally has access to the Internet via a network interface. The terminal 104 can include a display, keyboard, mouse, trackball, electronic pen, microphone (which can accept voice commands), other user interfaces, speakers, semiconductor, magnetic, and/or optical storage devices.

[0059] In addition to the search application 102, the user terminal 104 can run one or more commercially-available Web browser applications 106 such as Microsoft Internet Explorer® or Netscape Navigator®, which implement the basic World Wide Web standards such as HTTP and HTML.

[0060] The terminal 104 can also host and/or execute a commercially available e-mail application 109, such as Microsoft Outlook® which may be used to receive, send, and display emails. The e-mail application 109 and the browser 106 may be integrated with one another, and/or may be integrated with other application programs or the terminal operating system.

[0061] In the embodiment described herein, a Web site 108 hosts a remote search engine 110 executing on a computer system 111. The computer system 111 includes one or more content and index databases 112. The Web site 108 and search engine 110 are accessible to the search application 102 via the Internet 113. The Web site 108 may optionally include content that spans multiple Internet domains, and/or may be implemented using physical servers that are geographically remote from one another. In other embodiments, the Web site 108 may be in the form of an intranet site, in which case the terminal 104 may be coupled to the site by a private network. For example, Web site 108 may be in the form of an internal corporate store site for company employees.

[0062] In other embodiments, the Web site 108 may be replaced with another type of network site. For example, the various services described herein could alternatively be implemented on a hypertextual site or browsing area of an online services network such as America Online® or MSN®, in which case users may access the site using software that implements non-standard document formats and transfer protocols.

[0063] In addition, there can be several independent search engines associated with different Web sites, accessible to the terminal 104 via one or more computer networks.

[0064] As further depicted by Figure 1, the Web site 108 includes a commercially-available Web server application 114. The Web server application 114 accesses databases used to generate Web pages in response to queries from end users, including queries submitted via the search application 102. In addition, the Web server application 114 can respond to the browser's request for a page, and deliver the page to the Web browser 106 through the Internet 113.

[0065] By way of example, the search engine 110 may search server-based databases, such as databases 112, of the full text of Web pages selected from selected Web pages. By way of example, the databases 112 can be generated using a spider or the like that “crawls” the Internet searching for Web pages, which are then stored in the databases 112, and that follow the links in those Web pages to other Web pages, which are then stored in the databases. Because the databases

112, or portions thereof, may have been generated before a user submits a search query, these databases may not be fully current. When the search engine 110 performs a Web search in response to a user query, the search engine returns excerpts from relevant Web pages as stored in a corresponding database, and also returns links to the current version of the Web pages, if such exists.

[0066] In addition, a Web page may be added to the search engine databases 112 by directly entering a URL. Optionally, the URL may be submitted by a user or someone associated with the URL. Once a Web page is stored, the Web page is then indexed by the index engine 113. The indexing process may include Web page text, links, and other content. The index is stored in or in association with the search engine database 112. When a user submit a query or search terms, the search engine 110 searches the index based on the query or search terms, including Boolean terms. The search engine 110 locates matches, and links to the corresponding Web pages are transmitted to the user terminal 104 for display. While the search engine 110 and the index engine 113 are illustrated as separate entities, in one embodiment, they are combined in a single engine or module.

[0067] Optionally, certain types of Web pages and links can be excluded from being indexed. For example, optionally a Web site owner can request that the Web site pages are not to be included in the search engine database.

[0068] In addition the search application 102 includes a search application options form, via which the user can select the search application 102 to be configured in one of a docked mode, docked with auto-hide mode, and a "normal" Windows mode. If docked mode is selected, and assuming the search application 102 has been launched, a portion of the search application interface, such as a control bar, will constantly be visible at a fixed location of the user's display, such as on the top, left, right, or bottom of the user display. The control bar can include the search tabs discussed above, a main search field, a clear entry button, used to clear the main search field in response to a single click or activation, and a "go" button, used to initiate a search in those applications where the actual typing in of the search characters does not initiate the search. For example, when performing a

search over the Internet, the user may optionally need to click on the go button to initiate the search. An example control bar is illustrated in Figure 3I.

[0069] If the docked with auto-hide mode is selected, a portion of the search application interface will be at fixed location of the user's display, wherein the portion will visibly appear as a control bar when the user causes the cursor to point to the portion of the screen where the portion is docked for longer then a predetermined amount of time, such as 0.5 seconds. If the user moves the cursor off the control bar without performing a search, the control bar disappears, freeing screen space for use by other programs. If Windows mode is selected, the search application 102 operates as a conventional Windows program, wherein there is a non-docked, non-autohide window associated with the search application 102.

[0070] The option form also allows the user to set the search application 102 to start in email, files, Web, history, favorites, or database search mode.

[0071] Example search interfaces for different search targets, such as emails, files, the Web, and the like, will now be described. By way of example, the email search fields can include one or more of a content field, a from (sender) field, a to (addressee) field, date/time sent and/or received fields, a folder path field, a client field, a cc field, a size field, a bcc field, and a subject field. An example email search page or form is illustrated in Figure 3A.

[0072] By way of further example, the file search fields can include one or more of a content field, a file name field, a file type field, a date field, a file size field, a path field, an author field, a subject field, and so on. An example files search page or form is illustrated in Figure 3B.

[0073] By way of example, the history search fields can include one or more of a content field, a date/time (last viewed) field, a title field, a size field, a URL field, a format field, a category field, a domain field, a links field, a media type field, a language field, and/or a search term field. An example history search page or form is illustrated in Figure 3D. The Internet search fields can include a content field, a URL field, a title or Web site name field, a size field, a date field, a format field, a category field, a site field, a links field, and a language field, and/or a media type field. The favorites search fields can include one or more of a content field, a URL

or address field, a last refresh field, a title field, and/or the fields discussed above with respect to the Internet search fields. An example favorites search page or form is illustrated in Figure 3E.

[0074] Example email attachment search fields can include one or more of a content field, a name field, a date/time field, a from field, a size field, a MIME tag field, an extension field, and/or path field. An example email attachment search page or form is illustrated in Figure 3F.

[0075] Optionally, incremental indexing can be performed for files, emails, email attachments, Internet (or other network) search results, favorites, specific databases, and/or the like. Incremental indexing can be performed in direct response to a user command, continuously, periodically, and/or upon the occurrence of one or more specified conditions, generates and/or updates a corresponding index. For example, Web pages can be indexed as soon as they are stored or cached. Advantageously, incremental indexing can be used to provide consistently current search indexes.

[0076] For example, with respect to emails an email index can be incrementally updated upon the receipt of new emails, at a specified recurring period (for example, every 60 seconds), at one or more specific times during the day, or when the host computer system is idle. In one embodiment, the host computer system is considered idle when one or more of the following conditions are met: when central processor usage falls below a first threshold; when the host computer bus utilization falls below a second threshold, when a user interface device, such as a keyboard, has not been activated for a first period of time. In other embodiments, different criteria can be used to determine with a computer system is idle. In addition, the user can manually specify that indexing of new email shall be immediately performed, or that all email should be re-indexed.

[0077] By way of further example, with respect to files, a files index can be updated upon the creation, editing, or saving of a file, at a specified recurring period (for example, every 60 seconds), at one or more specific times during the day, or when the host computer system is idle. In addition, the user can manually specify that indexing of new files shall be immediately performed, or that all files should be

re-indexed. An example files incremental indexing options form is illustrated in Figure 3J. Advantageously, the user can optionally specify different indexing trigger conditions for different target types, such as for email and files. In one embodiment, the user can optionally specify different indexing trigger conditions for history, favorites, and attachments as well. Optionally, a server hosting a database can be configured to notify the search application of database changes, and the search application's index engine can index the changes substantially immediately after such notification.

[0078] Advantageously, an embodiment of the search application 102 can be customized by a user to meet the user's particular needs or preferences. For example, the user can select which email application or applications the email search is to be performed in conjunction with. For example, the user can select Microsoft Outlook®, Outlook Express, Netscape® Mail, Eudora® and/or other email applications. In addition, in one embodiment, the user can select one or more Internet search engines to be used in performing a search. As described above, the search engines can be executed by the host computer, or by a remote server. For example, in one embodiment the user can specify the Internet or other network searches are to be performed using one or more of Google™, Teoma™, and AltaVista® search engines.

[0079] With respect to Internet, email, file, or other searches, the user can optionally specify that only search results that are likely to be relevant are to be displayed. For example, if the user requests that only search results that are likely to be relevant are to be displayed, then only the higher ranked search results are displayed to the user. For example, only the top 20, 50, 100, 500, or 1000 search results may be displayed. Relevancy can be determine using one or more techniques, such as whether an exact match is found for the search terms, how many times the search terms are found in a document, the spacing of search terms in a document from each other, Optionally, the relevancy of each found document or file is scored, and the score for one or more of the files or documents are displayed to the user adjacent to the corresponding search results.

[0080] In addition, the user can optionally specify which local and/or network folders are to be indexed. Further, the user can optionally specify, on a global or file-by-file basis, that the file contents and all attributes are to be indexed, or only specified attributes, such as file name and/or size, are to be indexed. The user can also specify, on a global or file-by-file basis, that only certain types of files, or files with certain extensions, are to be indexed. For example, a user can specify that only .txt, .doc, .avi, .pdf., and .mpg are to be indexed.

[0081] Figure 2C illustrates an example indexing process for a given target that can be performed using the indexing/scanning module. As discussed above, the target can be a document, email, file, Web pages, or the like. Optionally, the user can specify that one or more of the following are to be included in the history index and/or search: Web pages located using the Web search interface corresponding to Web tab 310A, Web pages corresponding to the user's favorites, Web pages directly addressed using the address fields on any of the search interfaces, Web pages accessed via a separate browser, such as Microsoft Explorer.

[0082] In this example, the user has specified that indexing is to be performed when the host computer is idle. Beginning at state 202C, an indexing/scanning module determines if the host computer is idle. If the host computer is idle, the process proceeds to state 204C, where the scan process begins. At state 204C index item entries are marked, via a bit or flag associated with a given item, as unseen. As will be discussed below, the "unseen" bit is used to determine if a given item has been deleted and so is to be removed from the index. At state 206C a first item located in an appropriate directory on the mass storage device, which can be a disk drive, is located. At state 208C, because the first item was located, the corresponding index entry is now marked as seen by setting the corresponding flag or bit.

[0083] At state 210C the modification date and time, and/or creation date and time, of a given item is compared to the date and time the index was created or last updated to determine if the file needs to be indexed or re-indexed. For, example, if a file has been modified or created since the last time the index was updated, then those files are to be indexed.

[0084] Optionally, for email files and/or other file types, the indexing/scanning module generates its own "change ID" for each appropriate file. For example, for emails the change ID is generated based on email characteristics or attributes, such as subject, sender name, and/or date. By way of example, and not limitation, the change ID ("uid") can be an aggregate of two or more of the receive time, size, subject, and sender name, as well as the containing folder id, and message-store ID as follows.

[0085] uid = entryid + '|' + fullpathtocontainingfolder + '|' + folderid + '|' + storeid '|' + client.

entryid:
for the Outlook client, entryid = the MAPI entryid.
for other clients, entryid = the "message id" that can be found in the email headers,
and if that's not present, entryid is generated as follows:
entryid = receiveddata + '|' + size + '|' + subject + '|' + sendername

folderid:
for Outlook, folderid = the MAPI entryid of the containing folder
for OE (Outlook Express), use an id from its store
for other email clients, use the full path to containing folder

storeid:
for Outlook, storeid = the MAPI store id of the containing message store
for other clients, storeid is an empty string.

[0086] When performing state 210C during a scan operation, the index module examines the previously calculated change ID for each document or file, generates a new change ID for the documents or files, and compares the previous

and new change IDs. If the change IDs are different for a file, then that file will be re-indexed.

[0087] At state 212C, the new and/or modified item indexed or re-indexed. At state 214C a determination is made as to whether there are additional items in the appropriate disk directories. If there are, the process proceeds from state 214C to state 206C, where the index process is repeated for the next item. Once all items have been indexed, the process proceeds to 216C. The index item entries are examined to determine if any of the entries are still designated as unseen, indicating that the item was not found during the scan and index process. If the item is designated as unseen then it is inferred that the item has been deleted, and those unseen items are deleted from the index.

[0088] As illustrated in Figure 3A, one example search application interface includes a control bar 302A, including search mode tabs for files 304A, email 306A, email attachments 308A, the Internet World Wide Web ("Web") 310A, prior Web search results ("History") 312A, and favorites 314A. There is also an options button 316A that, if selected, provides the user with a variety of forms that allow the user to customize the search application 102 in accordance with the user's preferences and needs. In addition, there is a help button 318A, and a suggestion button 320A, which can be activated when the user wants to submit a suggestion regarding the search application 102 or improvements thereto. Advantageously, having the suggestion button 320A located on a main interface makes it more likely users will provide helpful suggestions, as compared to having such a suggestion button located on a buried menu or rarely accessed interface.

[0089] The tabbed interfaces can have a main search field 322A, wherein the user can enter a search string of one or more alphanumeric characters. The main search field is used to search for a string corresponding to one or more of the search fields associated with the search mode, and optionally other attributes. Thus, for example, with respect to the email tab 306A, the search application 102 will incrementally search for the main search field string in the email contents, from (sender) field, to (addressee) field, date/time sent or received fields, folder path field, client field, cc field, size field, and bcc field.

[0090] As illustrated in Figure 3A, the search results are displayed in a list area or pane 324A, which includes a list of the search results, including relevant attributes in column format. In the example illustrated in Figure 3A, the attributes include a from (sender) attribute column, a to (addressee) attribute column, date/time sent and/or received attribute columns, a folder path attribute column, a client attribute column, a cc attribute column, a size attribute column, a bcc attribute column, and a subject field. In this example, each of the columns has a corresponding search field 330A-348A.

[0091] In addition, a view area or pane 326A is provided that displays the content of the first item or user-selected item from the list pane or area 324A. The user can print the search results displayed in the list pane or area 324A, as well as the document, email, Web page, file, and the like, displayed in the view pane or area 324A.

[0092] Further, when the user clicks on a list pane entry, the corresponding contents are displayed in the view pane 326A. If the user double-clicks, or presses the Enter button, on the list pane entry, the search application causes the entry to launch in its native application. For example, if the user double-clicks on a list pane entry corresponding to a Word file, the file will open in Word. Similarly, if the user double-clicks on a Web page entry in the list pane 324A, the Web page will open in the user's default browser. If the user double-clicks an email entry, the email will open in the user's default email application, such as Microsoft Outlook®.

[0093] The user can also open the folder containing a file listed in the list pane by right-clicking on the file name in the list area 324A and selecting "View Folder". Similarly, the user can open the folder containing an email listed in the list area 324A by right-clicking on the email name in the list pane and selecting "Locate On Disk". The user can right-click to mark email listed in the list area 324A as read or unread by using the corresponding "mark read" or "mark unread" buttons at the top of the view area 326A. Further, the user can activate the plus and minus keys (+/-) to move from one highlighted search term to the next (or previous) in the view area 326A.

[0094] In one embodiment, the user can adjust the width of the list and view areas or panes 324A, 326A by dragging a divider bar 328A located between them to the left or right. In addition, rather than having the list and view areas 324A, 326A visually joined, the list and view areas 324A, 326A can optionally float separately from one another, and the user can separately drag the areas as desired on the user's display device. The user can move up, down, and between the list and view panes 324A, 326A using appropriate controls, such as, by of example, up, down, left, right arrow buttons, the tab button, and/or the PgUp (page up) and PgDn (page down) buttons.

[0095] In addition, the user can adjust the column widths in the list pane or area 324A by dragging a corresponding column side. Further, the user can reorder the column placement by grabbing a corresponding column header, using, for example, the left mouse button, and then dragging the column to a new location. Optionally, the user can also delete columns. The user can cause the system to reverse a search sort order by clicking on a user selected column header.

[0096] Example searches will now be described. The searches can be performed using an index, such as that illustrated in Figure 2A, and using the search process as similarly described above with respect to Figure 2B.

[0097] By way of example, in order to perform an email search, a user can click on the email tab 306A and bring up the email search interface page, illustrated in Figure 3A. As illustrated in Figure 4A, at state 401A the search system waits for a user input. The user input can be, for example, a search character string or strings entered into the main search field 322A, a search character string or strings entered into an attribute search field, a sort command, or an inverse sort command. The search character or strings can include one or more alpha characters, numeric characters, words and/or phrases that appear in the email contents, from (addresser) field, to (addressee) field, date/time sent or received fields, folder path field, client field, cc field, size field, a bcc field, and a subject field of the email(s), that the user is searching for.

[0098] If the user has entered one or more characters or strings into the main search field 322A the process proceeds to state 402A where the search string

is received. The characters or strings can be typed in one at a time by the user or a string or strings of multiple characters can be pasted in with a paste operation. Proceeding to state 404A, a search is incrementally performed using each entered character by the search application's local search engine, and the list pane or area 324A displays incrementally narrowed down search results. Thus, states 402A and 404A take place at almost the same time. For example, state 404A may take place a fraction of a second or a very few seconds after state 402A. Similarly, a user can incrementally broaden the search results by deleting or backspacing over previously entered search characters. The search results are broadened substantially immediately in response to the user deleting or back spacing over a character, without requiring that the user click on or otherwise activate a "search" button or the like.

[0099] If the user entered one or more characters or strings into one or more corresponding column fields 330A-348A the process proceeds from state 401A to state 406A where the search characters or strings are received. For example, if the user is looking for an email that was received in April of 2003, the user can enter"2003-04" or a portion thereof into the date/time field 332A. At state 408A, as the user enters characters into a column search field, the search is further incrementally performed by the search application's local search engine, and the list pane or area 324A displays incrementally narrowed down search results. Thus, the user can enter or delete search terms in the search fields above each of the attribute data columns to incrementally limit or broaden the results based on matches in that column for the search term entered. The search is performed using the email index, including bulk and fixed indexes.

[0100] The user can optionally select a highlight process, wherein search terms will be highlighted in the list pane or area search results and/or in the view pane or area content display. The highlighting can be in the form of a different coloring, the use of different fonts, blinking text, and/or the like.

[0101] At state 410A, by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. For example, the user can click on the Size header to sort the results

based on size. The sort can have been pre-computed as similarly described above so that the sort can be immediately displayed. At state 412 the search results are accordingly sorted. In one embodiment, the default sort orders displays the smallest size email first and the largest size email last.

[0102] At state 414A, clicking on the column header a second time reverses the sort order displayed to the user. For example, if the user believes that the email being searched for is large in size, the user can click on the Size column header so that the larger files are displayed at the top of the column.

[0103] Figures 3G-H illustrate the email search interface during two different stages of an incremental search. The main search field 322A has the character string "2003-0" entered, the from field 330A has the character string "KU" entered, and folder field 334A has the character string "IN" entered, and the to field 338A has the character string "KM" entered with the NOT argument (-) preceding it. The search engine has narrowed the emails listed in list pane or area 324A to the twelve that have the character string "2003-0" in any of the emails' attributes or content, have "KU" in the from field, are located in a folder having the character string "IN" in the folder name, and that does not have the character string "KM" in the to field. The character strings are identically entered in Figure 3H, except the character string ("2003-07") entered in the main search field 322A now has one additional search character (a "7"). Substantially immediately after the "7" was entered, the search application incrementally narrowed the number of emails listed in the list pane 324A from the twelve illustrated in Figure 3G to the four emails listed in Figure 3H.

[0104] By way of further example, in order to perform a file search, a user can click on the file tab 304A and bring up the files search interface page, illustrated in Figure 3B. As illustrated in Figure 4B at state 401B the search system waits for a user input. The user input can be, for example, a search character string or strings entered into the main search field 322A, a search character string or strings entered into an attribute search field, a sort command, or an inverse sort command. If the user entered search characters or strings into the main file search field 306B, the entry is received at state 402B. For example, the entry can include one or more of

alpha characters, numeric characters, words and/or phrases that appear in the file contents, the file name, the file type, the file modification date field, the file size, or the file path. At state 404B, as the user enters characters into the main search field the search is incrementally performed by the search application's local search engine, and the list pane or area 308B displays incrementally narrowed down search results.

[0105] If the user has entered one or more characters or strings into one or more corresponding column attribute fields the process proceeds from state 401B to state 406B where the search characters or strings are received. For example, the user can provide a relevant string of characters in a corresponding column attributes field, such as a file name field 312B, a file type field 314B, a date field 316B, a file size field 318B, and a path field 320B. By way of example, if the user is looking for a document located in a "Documents" file on the user's computer "C" drive, the user can enter "C: Documents" or a portion thereof in the path field 320B. At state 408B, as the user enters characters into a column search field, the search is further incrementally performed by the search application's search engine, and the list pane or area 308B displays incrementally narrowed down search results. The search is performed using the file index, including corresponding bulk and fixed indexes.

[0106] At states 410B, 412B by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. For example, the user can click on the Size header to sort the results based on size. In one embodiment, the default sort order displays the smallest size file first, and the largest size file last. At states 414B, 416B clicking on the column header a second time reverses the sort order displayed to the user. As discussed above, the search terms can optionally be highlighted in either or both the list pane or area 308B and the view pane or area 310B.

[0107] When searching the Internet and/or Web sites, a user can click on the Web site tab and bring up the Web search interface page, illustrated in Figure 3C. As illustrated in Figure 4C, at state 402C, the user enter a search query into a main search field 304C, including alpha characters, numeric characters, words and/or phrases that the user wants to search for in the Web site contents, the Web

site name, and/or the Web site URL. At state 404C, the user initiates the search, such as by activating the "Go" button or pressing the Enter button and the initiation command is received by the search application.

[0108] At state 406C, the query is transmitted over a network, such as the Internet, to one or more search engines, such as Google™, Teoma™, and AltaVista®, which perform searches in parallel based at least in part on the user entry. At state 408C, the search results from the one or more search engines are returned to the search application, and the search results are displayed in the list area or pane 306C and the Web page contents of a selected or highest ranked search result is displayed in the view pane or area 308C. Optionally, some or all of the Web pages corresponding to the search results are pre-cached on the user's terminal 104 or on other storage local to the user. For example, the Web pages of the first twenty (or other predetermined quantity) listed search results can be pre-cached. In one embodiment, the maximum number of pre-cached Web pages corresponding to the search results is set to be equal to the number of search results that can be displayed in the list pane.

[0109] At state 410C the search system waits for a user input. The user input can be, for example, a search character string entered into the main search field, a search character string entered into an attribute search field, a sort command, or an inverse sort command. If the user entered search characters or strings into the main file search field, the entry is received at state 412C. At state 414C, as the user enters characters into the main search field the search is incrementally performed by the search application's local search engine, and the list pane or area 308B displays incrementally narrowed down search results.

[0110] At state 416C, the user can narrow the search results displayed by entering a relevant string of characters in a corresponding column attributes field. The illustrated example includes a "results" column field 310C that can be used to search for all indexed attributes and/or content. Other embodiments can include additional or different columns and fields, such as a URL column and field, a title or Web site name column and field, a size column and field, a date column and field, a format column and fields, a category column and field, a site column and field, a

links column and field, and a language column and field, a media type column and field corresponding to the type of media used on the page, and/or the like.

[0111] The format field and column are used to search for and categorize pages according to the page or document type and/or extension. For example, the format can be a Word document (.doc), an Acrobat document (.pdf), or a PowerPoint document (.ppt). The site field and column are used to search for and categorize pages according to a Web sites top-level domain name (for example, www.zzzzzzz.com).

[0112] The category field and column are used to search for and categorize pages according to their genre or type, which can have descriptive labels such as "hubs", "personal home page", "commercial", and/or the like. The search system can examine certain Web page and site characteristics during the crawling of the Internet or thereafter, and based at least in part on those characteristics, identify the Web page as belonging to one or more categories. If the categorization is performed before a user requests a search, a user search request, including a category term, can be performed much faster than if the categorization was performed at the time of, or in response to the user search request.

[0113] For example, the category “hubs” or “directory” can correspond to Web pages that have many different links to other Web pages. In addition to the quantity of links, the quality of links can also be taken into account by the search system in categorizing a Web page as a hub or directory. The quality of the links can be scored based on a variety of parameters, including the number of different domains the links link to, how many links are alive or broken (a broken link is a hyperlink that does not work), and/or other parameters. Thus, for example, in one embodiment, the higher the number of different domains the links link to and/or the greater the number or percentage of alive links, the higher the quality score. If the score exceeds a predetermined threshold, the search system will categorize the page as a hub page.

[0114] With respect to the “personal home page” category, by way of example, the search system can look for certain key words or phrases, such a “family,” “children,” and/or “personal home page.” In addition, the search system can

determine how many pictures or JPEG files are on the page, and the level of sophistication of the HTML or other formatting code used to create the page. Thus, for example, based on the number of key words, the number of pictures, and/or the sophistication of the HTML code, a determination is made as to whether a page is likely to be a personal home page. In one embodiment, the greater the quantity of personal-oriented key words and pictures, and the lower the code sophistication (for example, the absence or low level of script files, in line IFRAMES, custom tags), the greater the likelihood that the page is a personal web page. A score can be assigned by the search system based on such properties, and if the score exceeds a predetermined threshold, the search system will categorize the page as a personal home page.

[0115] With respect to the "commercial" or business category, by way of example, the search system can look for certain key words or phrases, such a "price," "quantity," "stock," "ship," "corporation," and/or "shopping cart." In addition, the search system can determine the level of sophistication of the HTML or other formatting code used to create the page. For example, the greater the use of script files, in line IFRAMES, custom tags, and the like, the greater the probable sophistication of the code. By way of example, based on the number of key words and/or the sophistication of the HTML code, a determination is made as to whether a page is likely to be a commercial or business page. In one embodiment, the greater the quantity of business-oriented key words, and the greater the code sophistication, the greater the likelihood that the page is a commercial or business web page. A score can be assigned by the search system based on such properties, and if the score exceeds a predetermined threshold, the search system will categorize the page as a commercial or business web page.

[0116] With respect to the links category, by way of example, the search system can rank pages based on the number of links and/or the quality of links that contain the search characters or strings. For example, if the user was interested in searching for information on Idealab, the user can enter the term Idealab in the links field, the greater the number of links a page has to the Idealab.com domain, the higher the search ranking. By way of example, the quality of the link can be based

on how many links are alive or not broken and/or the quality of links on the linked pages.

[0117] At state 418C, as the user enters characters or strings into one or more column search fields, the search results displayed to the user are incrementally limited to those that contain the characters or strings entered by the user. In one embodiment, this narrowing process does not need to access remote search engines, as the search result information and Web pages are already cached locally. At state 420C, by clicking on an appropriate column header, the user can command the system to sort the search results at state 422C based on a selected column. At state 424C, clicking on the column header a second time reverses the sort order displayed to the user at state 426C.

[0118] The user can optionally print the information contained in the list pane or area 306C, as well as the Web pages displayed in the view pane or field 308C. In addition, the user can enter a Web address directly in the Address Field in the address field 312C, and then press the keyboard Enter button or the displayed Go button 312C to go to that page. As described below with respect to the favorites function, the user can cause the search application to add the address or URL to the user's favorites list by activating the plus (+) button 320C. Advantageously, the user can navigate through the found Web pages using the Forward and Backward control buttons 314C, 316C, and can refresh a Web page using a Refresh button 318C. The Backward control is configured to navigate to a previously viewed favorites Web page and the Forward control is configured to navigate a next favorites Web page.

[0119] To search the results or history of prior Internet and/or Web searches, a user can click on the History tab 312A and bring up the history search interface page, illustrated in Figure 3D. The history process copies Web sites visited by the user, and indexes content and attributes for substantially instant searching of those historical Web pages. When the History interface is presented to the user, stored Web pages previously viewed in the search application's view pane or area 308D, and optionally, stored Web pages previously viewed using other user browsers, are listed in the history list pane or area 306D. Optionally, based on a user-selected option, the view pane or area 308D either shows page corresponding

to a select item as the user saw it when on the date/time it was added to the history or the most recent version of the page in Internet Explorer's cache. These pages can be displayed in the view pane or area 308D even when the user is offline.

[0120] As illustrated in Figure 4D, at state 401D the search system waits for a user input. The user input can be, for example, a search character string entered into the main search field, a search character string entered into an attribute search field, a sort command, or an inverse sort command.

[0121] At state 402D, alpha characters, numeric characters, words and/or phrases, such as those that may appear in the Web page contents, the Web site name or title, the Web page URL, the Web page size, the page category, the page domain, the page language, the links on the page, the data/time the Web page was last viewed, the search terms entered when the Web page was originally located by the search application, the name of the browser or other tool used to originally locate the Web page, and/or the media type used on the page that are entered by the user into the main search field 304D are received.

[0122] At state 404D, as the user enters characters into the main search field 304D the search of the listed items is incrementally performed by the search application's search engine, and the list pane or area 306D displays incrementally narrowed down search results. The view pane or area 308D displays the selected page. The user can optionally specify whether the view pane or area 308D will display the stored Web page, as the user saw it when the Web page was added to the history, or the most recent version of the page stored in a local cache, such as Microsoft's Internet Explorer's cache. Because, in one embodiment, the Web pages are cached, the previously viewed Web pages can be displayed in the view pane or area 308 even when the user's terminal is offline.

[0123] The user can also provide a relevant string or strings of characters in a corresponding column field to specify certain search result attributes, such as a content field, a date/time (last viewed) field 310D, a URL field, 312D, a title field 314D, a size field 316D, a media type field (not shown), a search term field 318D, and/or the browser originally used field (not shown), a Web page size field, a page category field, a page domain field, a page language field, and a links field, which

are received at state 406D. At state 408D, as the user enters characters or strings into a column search field, the search is further incrementally performed by the search application's search engine, and the list pane or area 306D displays incrementally narrowed down search results. At states 410D, 412D, by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. At states 414D, 416D clicking on the column header a second time reverses the sort order displayed to the user.

[0124] Optionally, the size of the history index can be limited based on size or date, which can be specified by the user. In one embodiment, the history functionality can integrated with the Web search tab, so that a user can search his/her history directly from the Web tab in addition to live Web searches. Optionally, the user can also enter a URL or address into the address field 320D to browse to a new URL and have that page added to the history. As described below with respect to the favorites function, the user can cause the search application to add the address or URL to the user's favorites list by activating the plus (+) button 322D.

[0125] With reference to Figure 3E, the favorites function is used to select and display Web pages that the user often refers to and so wants to access quickly. The user can select an add favorites button, such as the plus (+) symbol in the history or Web interfaces, as illustrated in Figures 3C and 3D, above a Web page to cause the search application to add it to the user's favorites. In addition, the user can enter the desired address or URL of a Web page into address field 316E, and click the plus (+) button 318E to add the address to the user's favorites list, or click the minus (-) button 320E to remove the address displayed in the address field 316E from the user's favorites list. The Web pages included in the user's favorites are cached, attribute and content indexed, and once indexed, instantly searchable.

[0126] To search the cached favorites Web pages, a user can click on the favorites tab 314A and bring up the favorites search interface page, illustrated in Figure 3E. In response to the user selecting the favorites search mode, user favorites are listed in the favorites list pane or area 306E. The view pane or area 308E either shows that page as the user saw it when on the date/time it was added

to the favorites or the most recent version of the page in Internet Explorer's cache. These pages can be displayed in the view pane or area 308D even when the user is offline.

[0127] As illustrated in Figure 4E, at state 401E the search system waits for a user input. If the user provides an entry into a main search field 304E, such as alpha characters, numeric characters, words and/or phrases that the user thinks may appear in the favorites Web page contents, the Web site name or title, and/or the Web page URL, the entries are received at state 402E. At state 404E, as the user enters characters into the main search field 304E the search is incrementally performed by the search application's search engine, and the list pane or area 306E displays incrementally narrowed down search results. The view pane or area 308E displays the selected page. The user can optionally specify whether the view pane or area 308E will display the stored Web page, as the user saw it when the Web page was added to the favorites, or the most recent version of the page stored in a local cache, such as Microsoft's Internet Explorer's cache. Because, in one embodiment, the Web pages are cached, the previously viewed Web pages can be displayed in the view pane or area 308 even when the user's terminal is offline.

[0128] The user can also provide a relevant string of characters in a corresponding column field, to specify certain search result attributes, such as a content field, a date/time (last viewed) field 310E, a URL field, 312E, a title field 314E, a size field 316E, a media type field (not shown), a search term field 318E, and/or the browser originally used field (not shown), a page category field, a page domain field, a page language field, and a links field, which are received at state 406E. At state 408E, as the user enters characters into a column search field, the search is further incrementally performed by the search application's search engine, and the list pane or area 306E displays incrementally narrowed down search results. At states 410E, 412E, by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. At states 414E, 416E clicking on the column header a second time reverses the sort order displayed to the user.

[0129] With reference to Figure 3F, the attachment function is used to locate email attachments. To search for email attachments a user can click on the attachments tab 308A and bring up the attachments search interface page which lists attachments in the attachments list pane or area 306F. As illustrated in Figure 4F, at state 401F the search system waits for a user input. The user can enter into a main search field 304F, alpha characters, numeric characters, words and/or phrases that the user thinks may appear in the desired attachment contents, name, date/time created, date/time received, from (sender) field, size, MIME tag, extension, and/or path, which are received at state 402F.

[0130] At state 404F, as the user enters characters into the main search field 304F the search is incrementally performed by the search application's search engine, and the list pane or area 306F displays incrementally narrowed down search results. The view pane or area 308F displays the selected page.

[0131] The user can also provide a relevant string of characters in a corresponding column field to specify certain search result attributes, such as a content field (now shown), a name field 310F, a date/time field 312F, a from (sender) field 314F, a size field 316F, a MIME tag field 318F, an extension field 320F, and/or a path field 322F which are received at state 406F. At state 412F, as the user enters characters into a column search field, the search is further incrementally performed by the search application's local search engine, and the list pane or area 306F displays incrementally narrowed down search results.

[0132] At states 410F, 412F, by clicking on an appropriate column header, the user can command the system to sort the search results based on a selected column. At states 414F, 416F clicking on the column header a second time reverses the sort order displayed to the user.

[0133] In one embodiment, a search interface page includes a selection menu that specifies which of email, attachments, files, the Web, favorites, and/or history (previously accessed and stored Web pages) targets, are to be searched. In accordance with the user selection one or more of the email, attachments, files, the Web, favorites, and/or history, or corresponding indexes will be searched. In this embodiment, the column attribute search fields optionally will correspond to the

selected search targets. Thus, for example, if the user selects both email and files as search targets, the column attribute fields can include one or more of a from (sender) field, a to (addressee) field, date/time sent and/or received fields, a email folder path field, a client field, a cc field, a size field, and a bcc field, wherein the foregoing fields are appropriate for email searches, and one or more of a file name field, a file type field, a date last modified or created field, a file size field, and a file path field.

[0134] The search application 102 optionally ignores punctuation of a first set of punctuation when indexing and performing a search, such as an email or files search, and includes punctuation of a second set of punctuation in indexing and search operations. For example, the first set of punctuation can include hyphens, commas and/or semicolons. The second set of punctuation includes punctuation marks that are more likely to be useful when performing a search, such as the period or dot (.), commonly used in file extensions, and the "at" sign (@), which is commonly used in email addresses. Optionally, the user can specify which punctuation marks are to be included when indexing and performing searches, and which punctuation marks are to be ignored.

[0135] In one embodiment, when using a string of one or more characters as a search string on which to perform a search, such as an email or file content search, the search string is treated as a prefix. That is, the search string should match the initial characters and/or words in a potential matching string for the file or email to be displayed in the list pane or area. For example, if the search string is "act", the search application 102 will list a file containing the word "actual", but will not list a file if the only appearance of "act" is "fact."

[0136] The user can enter multiple separate search words or strings and each one will optionally be treated as a prefix. For example, searching "Joh Do" can be used to locate the strings "John Doe". Thus, one embodiment of the present invention provides multiword separate prefix searching. The searching can be performed incrementally. For example, if the user enter "Jo D" documents with the strings ("Jon" and "David"), ("Joe" and "Daniel"), ("John" and "Doe") will be located. If user then adds an "h" to "Jo" so that the search strings are now "Joh D" then the

list of search results will be substantially immediately narrowed to present only documents having at least one string beginning with "Joh" and one string beginning with "D", such as a document containing ("John" and "Doe"). Further, the user can enter one or more additional search strings into one or more other search fields, such as one or more column search fields and the search system will incrementally search for documents that have strings that correspondingly begin with the search strings or that are exact matches for the search strings.

[0137] Optionally, when certain standard characters are present in a given attribute, such as the standard "www." in a URL, the search application treats the character following the standard characters as the first character. Thus, for example, when searching for the string "loc" by entering it in the URL field 310E in Figure 3D, the URL "www.loc.gov.com" would be identified as a match. Optionally, the user can specify that the search application 102 should look for the search string no matter where it appears in a file or in email content.

[0138] In one embodiment, the main search field and/or attribute fields discussed above can act as a command line interface, in addition to acting as search fields. Thus, before executing or applying a search operation on one or more search strings, a determination is made as to whether the first search string corresponds to a command or is included in a list of command words. If the first word or string does correspond to a command word then a corresponding command file is read, and the corresponding command is executed. If there is more than one word or string entered into a search field, if the first word or string corresponds to a command word, then the subsequent words or strings are optionally treated as command arguments or terms, if appropriate. In addition, command files can call other command files by including the called command file name and relevant arguments. The list of command word can grow or shrink as the user adds or deletes commands. The present invention is not limited to receiving commands into a search filed. In other embodiments, other data entry fields can be used to enter commands as well as data.

[0139] By way of example, the command words can include email (corresponding to a command to create an email using the following term to

determine who the addressee is), shop (corresponding to a command for finding the lowest online price for the product named in the following term), book (corresponding to a command for finding a book at a named Web site), movies (corresponding to a command for finding a listing of show times at a named Web site), web (corresponding to a command for launching a browser, and if there is a URL following the "web" then the browser is launched to that URL), convert (corresponding to a command used to convert from one set of units or currency to another), msword (corresponding to a command to launch msword, and if there is a following term, open or create a document with a name corresponding to the term), programname (corresponding to a command to launch the program having the name programname), semail (corresponding to a command to search the email index using the following string(s)), sfiles (corresponding to a command to search the files index using the following string(s)), and so on with respect to the other search targets.

[0140] The command names can correspond to command files, which for example, can have the extension ".do," though other extensions can be used as well. The command files can optionally be programmed, created and/or edited by an end user, thereby providing for significant customizing by users and without requiring sophisticated programming skills. Further, the user can add additional commands as desired. In addition, the command names can be names selected by the user that are easy for the user to remember, as opposed to arbitrary names, or difficult to remember names. The instructions included in the command files can be instructions unique to the search application, instructions corresponding to other applications, and/or instructions that correspond to operating system instructions. Thus, a search field can also be used as a DOS, UNIX, LINUX, or other operating system command line. The command file can also include a URL.

[0141] For example, if the user types "president bush" in the files search mode main search field, then the search application searches for a file that includes the terms "president" and "bush." But if the user types "email samantha jones" the search application compares the first string, "email", with the command list, recognizes that email is on the command list and that email is a command, retrieves

an "email.do" command file that specifies how the command is to be processed, accordingly processes the term “samantha jones”, and generates a blank email to samantha jones by looking up the email address for samantha jones in the user’s email application.

[0142] By way of another example, if the user types in “semail samantha jones” the search application compares the first string, “semail”, with the command list, recognizes that semail is on the command list and that semail is a command, processes the rest of the line as an "semail" command, in this case a search within the user's indexed email for the strings “samantha” and “jones”.

[0143] Optionally, some of the commands can be built into the search application, and do not utilize a separate command file. For example, the semail, sfiles, and/or web commands can be built in and not use a separate command file.

[0144] Optionally, the results of the command are displayed using the list area and/or the view area. For example, with respect to the "semail" command, the list and view areas are employed as similarly described above with respect to Figure 3A.

[0145] At times, the arguments following a user-entered command may result in ambiguity in one of the arguments that are to be processed. For example, with respect to the convert command, where there is ambiguity, the user can be presented with several options from which the user can select. By way of example, if the user types "convert 5 miles" then the list area can be used to display user selectable choices, such as "meters", "feet", and “kilometers". If the user selects one of the choices, the search application will display the results in the view area. Thus, if the user selects “kilometers” the convert command with convert 5 miles into corresponding kilometers, and displays the results in the view area.

[0146] In another example, a command can be used to quickly retrieve information from a specific URL via the search application. For example, the book command file can include the following:

web http://search.barnesandnoble.com/booksearch/results.asp?WRD=$1

[0147] By way of further example, the movies command file can include the following:

web http://movies.yahoo.com/showtimes/showtimes.html?z=$1

[0148] The parameter "$1" in the above examples is filled in by the following string entered by the user. For example if the user typed in the entry "movies lord" the movies command would launch a browser, access the yahoo movie show time site, submit the string "lord", and the show times for movies that include the string "lord", such as "Lord of the Rings" would be displayed to the user. If the string(s) following the command word are not HTML compliant, such as containing a space, HTML-escaping is performed, and the string(s) that are in violation will optionally be converted into an HTML compliant string, such a by replacing the space with a +sign. Thus, "lord rings" is optionally converted into "lord+rings."

[0149] Advantageously, in certain embodiments, indexing of multiple forms of a word is performed, and where punctuation marks are in a word or character string, the word and character string can be selectively broken into multiple words or strings which can reduce index size and facilitate searching. For example, when indexing, a set of punctuation is optionally declared non-word symbols and are treated as spaces to separate words. For example, this set can include: < ([{ ". The foregoing example set members are selected because the included symbols are often used as open-parentheses and thus, a following character string can often be considered to be a new word. In addition, the double-quote is rarely used as a word joiner. Some characters, such as the < characters, are treated as a non-word symbol because they appear very frequently in HTML code used to used to generate Web pages. By excluding such characters, strings such as word are advantageously not treated as a word.

[0150] Optionally, punctuation not included in the set of excluded punctuation discussed above will be treated as the same as punctuation in the set only if the punctuation is within N characters of the start of the word. For example, N can be set at 2 or at another value. Optionally, punctuation not included in the set of

excluded punctuation will be treated as a space if the punctuation is after P characters of the start of the word. For example, P can be set at 3, or 5, or at another value. By way of further example, if N=2 and M=3, xy.com would be indexed as one word because the period is not within 2 characters of the start of the string and is not more than 3 characters after the string. In another example, if N=2 and M=3, nbc.org is treated as two words, nbc and org because the period is more than 3 positions away from the start of the string.

[0151] The values of M and P are selected so that the portion of a word or character string before the punctuation is long enough, such that even if the string is treated as two separate words or strings each string will be sufficiently unique or identifiable for searching purposes. However, if the punctuation occurs too near the beginning of a word or string, treating the prefix as a separate word or string may not provide enough characters for a user to recognize the word or string. For example, if "a.m." were broken into two one word strings, "a" and "m", the search results would not be as useful or may not be useful at all.

[0152] Optionally, the index process indexes the individual words separated by punctuation, so that for xy.com, xy and com are separately indexed.

[0153] By way of further examples, if N = 2 and P = 5, then for johndoe@zxcv.ca, all the punctuation marks are treated as spaces and the following strings are separately indexed: johndoe, zxvc, ca. Similarly, the string me@mnbvcxza.net is treated as a word or a single string. For the string 1,234,467, 1,234 is treated as a word or single character string, and 467 is treated as a word or character string.

[0154] Further, a user can exclude files, emails, and the like that contain a specified string from appearing in search results displayed to the user. For example, in one embodiment, the user can exclude files or email containing a particular string by putting a minus sign at the beginning of the character string when entering it into the main search field or other relevant column field. If a user wants to search for a file that does not contain a first string as a prefix or exact match, and does contain a second string as a prefix or exact match, the user can put a minus sign in front of the string to be excluded, then follow that string by one or more spaces, and then the

character string to be included. For example, if the user searches for an email that does not contain, as a prefix or exact match, the string “Fred” (or "Frederick", "Frederica", or other string or word with "Fred") and does include the string “Sol” (or “Solly”, Sole, or Solomon”), the user would enter “-Fred Sol”.

[0155] Thus, as described above, certain embodiments of the present invention provide advantageously provide for incremental searching for a variety of search targets. For example, the search targets can include one or more of files, emails, email attachments, Web pages, specific databases, and/or the like. Because a search is performed incrementally, the search results are provided or narrowed substantially immediately after each character is a search string is entered by a user. Thus, the user is provided with substantially immediate feedback as the search string is being entered, and so can quickly decide on the desirability of entering additional search characters, or of entering a new search string.

[0156] In addition, the user can specify that an exact word match is to be performed. In one example embodiment, if a selected punctuation symbol, such as =, follows a word or character string directly, and is followed by a space, as in "mark= ", then the word is searched as an exact match. In addition, optionally, if a selected punctuation symbol, which can be a !, @, #, $, %, ^, &, *,), ;, :, ‘, “, ?, >, and/or other punctuation symbol, follows a word or character string directly, and is followed by a space, as in "mark$ " or "mark. " or "mark- ", then optionally the word is searched as an exact match including the punctuation. So "mark- " will not match "market” or “mark. However, "mark-" will match "mark-down.”

[0157] In another embodiment, the search system described above is server-based, and the user can access the search functionally using a thin client. Thus, for example, the user does not need to download to or otherwise store the search application on the user’s terminal. Instead, the user can access over a network a remote search system and engine using a browser. The remote search system can be used to incrementally search content original to a Web site or database associated with the remote search system, and/or to search data that resides or originally resided on another Web site or network site. Nonetheless, even though the search engine is remotely located, once initial search results are

transmitted to the thin client, the used can quickly scroll down and view the content corresponding to the items in the search results as if the search application was hosted by the thin client.

[0158] Figure 5 illustrates an example computer system that can be used to provide a server based incremental search system. As depicted, one embodiment includes a browser 504 stored on and executed by a user terminal 502. While in the illustrated embodiment the terminal 502 is a thin client, it can optionally include a local index engine, local search engine, and email application similar or identical to those discussed above with reference to terminal 104 illustrated in Figure 1. In the example embodiment, the browser 504 can interpret HTML tags, handle IFRAMES, and execute JavaScript. The terminal 502 is coupled to a remote site 508 via a network 506, which can be, by way of example, the Internet. The terminal 502 can be coupled to the Internet using a network interface circuit and port.

[0159] The remote site 508 includes a computer server 515 that executes and hosts a search engine 510, an index engine 513, and a Web server 514. The computer server 515 includes one or more content and index databases 512 and JavaScript, which will be discussed in greater detail below. The search and index engines 510, 513 can be the same as or similar to the search engine 107, index engine 103, search engine 110, and index engine 103 discussed above, and can provide the same or similar functionality. The Web site 108 and search engine 110 are accessible to the search application 102 via the Internet 113. The remote site 508 can be coupled to the Internet using a network interface circuit and port. The Web site 108 may optionally include content that spans multiple Internet domains, and/or may be implemented using physical servers that are geographically remote from one another. In other embodiments, the Web site 108 may be in the form of an intranet site, in which case the terminal 502 may be coupled to the site by a private network. For example, Web site 508 may be in the form of an internal corporate store site for company employees.

[0160] By way of example, the search engine 510 may search local server-based databases of the full text of Web pages selected from selected Web pages. The databases can optionally be generated using a spider or the like that

search for Web pages on other Web sites, such as Web sites 518, 520, which are then stored in the databases, and that follow the links in those Web pages to other Web pages, which are then stored in the databases. Because the Web page databases, or portions thereof, may have been generated before a user submits a search query, these databases may not be fully current. When the search engine 510 performs a Web search in response to a user query, the search engine returns excerpts from relevant Web pages as stored in a corresponding database, and also returns links to the current version of the Web pages, if such exists.

[0161] By way of further example, as similarly discussed above with reference to Figure 1, the server system can create indexes such as those illustrated in Figure 2A using the process illustrated in Figure 2C, can create prefix indexes, and can pre-compute sort lists.

[0162] Figure 6 illustrates an example search process using the server based search system. At state 602, the user accesses via the browser 504 the server based system 508 over the Internet 506. At state 504, the server system 508 transmits HTML, and/or other formatting code, text, and JavaScript to the browser 504. JavaScript is a client-side scripting language that runs inside an Internet browser or Web client. JavaScript can be embedded in Web pages or in other HTML documents. JavaScript can be used to enhance Web page dynamics and interactivity, and can be used to perform calculations, check forms, generate new HTML pages using variable information, open and close windows and frames, and the like. When the browser loads a page that includes JavaScript code, the browser's interpreter reads and executes the JavaScript code.

[0163] At state 606 the HTML code is rendered by the browser 504, the JavaScript is executed, and the browser 504 displays the search interface as similarly discussed above with reference to Figures 3A-I. Thus, for example, the search interface can include a list pane or area and a view pane or area, and well as the search area, including a main search field and column attribute fields. As similarly discussed above, the user can select a particular target search interface by clicking on an appropriate tab or link. For example, a given target search interface can include a plurality of search fields, including a main search field and a plurality of

search fields. Thus, as similarly discussed above, an Internet search interface can include one or more of a content field, a URL field, a title or Web site name field, a size field, a date field, a format field, a category field, a site field, a links field, and a language field, and a media type field.

[0164] At state 608, the browser, via the executed JavaScript, monitors user inputs or deletions from the interface fields. For example, the user can enter into the main search field and/or into one or more attribute search fields one or more alpha characters, numeric characters, words and/or phrases that the user thinks may appear in the target content or attributes. In addition, the browser monitors and detects whether the user is paging up or down, or is scrolling off the page. Optionally, the browser continuously monitors and detects user inputs, deletions, scrolling, and/or paging up or down (collectively and individually also referred to as "user changes") during states 610-622, and if such is detected, the process proceeds or returns to state 610. At state 610 the browser transmits the user changes to the server system 508.

[0165] At state 612 the server system 508 incrementally searches for Web pages, documents, or other files in accordance with the search character, characters, string, or strings received by the server system 508. Thus, with each additional character entered by the user and detected at state 608, the search engine 510 will further refine the search. Similarly, with each deletion of a search string character, the search engine 510 will reduce the amount of search filtering to broaden the search. For example, when the user types "fast", four separate searches are optionally sent to the server, one for "f", one for "fa", one for "fas", and one for "fast". Each time, the server finds all documents containing words starting with that sequence of letters, and returns a list of the top matches. At state 614 the server system 508 transmits a list of search results to the browser 504.

[0166] In one embodiment, the JavaScript optionally instructs the server system 508 how many results to return, so that only as many results as are needed to fill the list pane are transmitted. Advantageously, this reduces the load on the server system 508, increases the speed of presentation, and yet provides to the user the illusion that the list goes on further. In such an embodiment, when the user

presses the PgDn button, clicks a More button, or scrolls down the list, an additional request is sent to the server for the next pagefull of results.

[0167] Optionally, to determine how long the transmitted search result list should be, the server system 508 autodetects the number of lines the browser 504 can display at a time. Optionally, the user can instruct the server system 508 on how long the list should be.

[0168] At state 616 the browser 504 displays the list in the list pane or area. At state 618, the browser 504 automatically selects the first item in the search result list to be displayed in the content pane or area. At state 620 to accelerate the presentation of content in the view pane for a selected item in the list pane, the pages or documents corresponding to the search result entries in the list pane are preloaded as soon as the list is received from the server system 508. The JavaScript loads IFRAMEs for each of the Web pages corresponding to the list entries. An inline floating frame or IFRAME is a construct which embeds a document into an HTML document so that embedded data can be displayed inside a subwindow of the browser's window. The IFRAME tag creates a floating frame at its location in the HTML file. The SRC attribute, which sets or retrieves a URL to be loaded, specifies the content to be displayed within the frame.

[0169] Thus, the Web page content loaded onto user's computer 502, while keeping hidden the display of the Web page content. Then, to present the content or Web page corresponding to a selected search list entry, the JavaScript renders the corresponding IFRAME visible in the view pane.

[0170] Figure 7 illustrates an example process of scrolling through a search list loaded via a browser as described above with reference to Figures 5 and 6. At state 702, the JavaScript detects when the user is scrolling up and down the list displayed in the browser 504. At state 704, the browser selects the corresponding search list item for display in the view pane. At state 706 the browser 504 displays the selected search result content that had already been stored in an IFRAME in the view pane. Advantageously, because the content for each item in the list has already been preloaded, the scrolling and content display takes place substantially instantaneously and the Internet does not have to be accessed.

[0171] Thus, as described above, certain embodiments of the present invention provide an efficient user interface, and advantageously provides for incremental searching for a variety of search targets using client-based or server-based search applications. Because search can be performed incrementally, the user is provided with substantially immediate feedback as the search string is being entered, and so can quickly decide on the desirability of entering additional search characters. Advantageously, the user interface provides target specific attribute search fields, thereby enabling a user to efficiently locate the desired email, files, attachments, Web pages, and the like. In addition, in certain embodiments, incremental indexing is performed, thereby providing consistently current search indexes. Advantageously, in certain embodiments indexing of multiple forms of a word is performed, and where punctuation marks are in a word or character string, the word and character string can be selectively broken into multiple words or strings which can reduce index size and facilitate searching.

[0172] It should be understood that certain variations and modifications of this invention would suggest themselves to one of ordinary skill in the art. The scope of the present invention is not to be limited by the illustrations or the foregoing.

WHAT IS CLAIMED IS:

1. A computerized method of selectively executing a command, the method comprising:

providing a user interface comprising a first field;

receiving at least a first string from a user-controlled input device in the first field;

determining if the first string comprises a command;

selectively executing a command process in response to determining that the first string comprises a command; and

selectively initiating an incremental search of a plurality of documents in response to determining that the first string does not comprise a command, wherein the incremental search updates a list of documents selected from the plurality of documents that each comprise the first string, wherein the list is updated as each character of the first string is received from the user-controlled input device.

METHODS AND SYSTEMS FOR SEARCH INDEXING

Abstract of the Disclosure

The present invention provides for quick and efficient searching. One embodiment includes a first instruction configured to read at least a first search string and a second search string entered into a same first search field, and a second instruction configured to incrementally filter search results to locate at least a first document that has a least a first word that begins with the first string and a second word that begins with the second string.

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Electronic Patent Application Fee Transmittal

Application Number:	14507519
Filing Date:	06-Oct-2014
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Filer:	Russell M. Jeide/Lynn Marmolijo
Attorney Docket Number:	X1.002C3

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Claims in Excess of 20	1202	2	80	160
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	1051	1	140	140

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1900**

Electronic Acknowledgement Receipt

EFS ID:	20988752
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Sandra Autry
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Attorney Docket Number:	X1.002C3
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Payment Type	Credit Card
Payment was successfully received in RAM	$1900
RAM confirmation Number	1585
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	RESP.pdf	70352 e68c48eb523b54b949e566382414b1cfba4d1edc	no	1
Warnings:					
Information:					
2		PRELIM.pdf	96665 90e6ef3f12e02d6e256d6cdae436fd54fd72e515	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	5

Warnings:					
Information:					
3		SPEC.pdf	171515 3445b3b7db3e7273d7d2b4b0910376b16607d4c6	yes	49

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	47
	Claims	48	48
	Abstract	49	49

Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	38694 3f2f6ef17935ec2bce8ae34e587f95f67dcf5b35	no	2
Warnings:					

Information:	
Total Files Size (in bytes):	377226

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/507,519	Filing Date 10/06/2014	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **12/17/2014**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 22	Minus	** 22	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
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/KAREN VESTAL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/507,519

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	22 minus 20 =	* 2			OR	x 80 =	160
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1760

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/507,519	10/06/2014	2658	1900	X1.002C3	22	1

CONFIRMATION NO. 9661

UPDATED FILING RECEIPT

20995
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IRVINE, CA 92614

OC00000072499606

Date Mailed: 12/23/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

William Gross, Pasadena, CA;
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Applicant(s)

William Gross, Pasadena, CA;
Steven Lee Colwell, Santa Barbara, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 11/972,563 01/10/2008 PAT 8856093
which is a CON of 10/654,588 09/03/2003 PAT 7370035
which claims benefit of 60/408,015 09/03/2002
and claims benefit of 60/413,013 09/23/2002
and claims benefit of 60/448,923 02/20/2003
and claims benefit of 60/470,903 05/14/2003
and claims benefit of 60/478,960 06/13/2003

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 10/14/2014
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/507,519**

Projected Publication Date: 04/02/2015

Non-Publication Request: No

Early Publication Request: No

Title

METHODS AND SYSTEMS FOR SEARCH INDEXING

Preliminary Class

704

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/507,519	10/06/2014	William Gross	X1.002C3

CONFIRMATION NO. 9661

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

NOTICE



Date Mailed: 12/23/2014

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  William Gross
  Steven Lee Colwell

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/507,519	10/06/2014	William Gross	X1.002C3

CONFIRMATION NO. 9661

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

PUBLICATION NOTICE

OC000000074383260

Title:METHODS AND SYSTEMS FOR SEARCH INDEXING

Publication No.US-2015-0095363-A1
Publication Date:04/02/2015

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	14/507519
	Filing Date	October 6, 2014
	First Named Inventor	William Gross
	Art Unit	2166
(Multiple sheets used when necessary)	Examiner	Johnese T. Johnson
SHEET 1 OF 4	Attorney Docket No.	X1.002C3

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	5,111,398 A	05-05-1992	Nunberg et al	
	2	5,303,361 A	04-1994	Colwell et al.	
	3	5,671,426 A	09-23-1997	Armstrong, III, John	
	4	5,692,173 A	11-25-1997	Chew, Chee Heng	
	5	5,721,897 A	02-24-1998	Rubinstein, Seymour I	
	6	5,778,361 a	07-1998	Nanjo et al.	
	7	5,819,273 A	10-06-1998	Vora et al.	
	8	5,832,208 A	11-03-1998	Chen et al.	
	9	5,907,837 A	05-25-1999	Ferrel et al.	
	10	5,920,854 A	07-06-1999	Kirsch et al.	
	11	6,006,225 A	12-21-1999	Bowman	
	12	6,035,325 A	03-07-2000	Potts	
	13	6,070,158 A	05-30-2000	Kirsch et al.	
	14	6,073,133 A	06-06-2000	Chrabaszcz	
	15	6,085,193 A	07-04-2000	Malkin et al.	
	16	6,112,172 A	08-29-2000	True et al.	
	17	6,182,068 B1	01-2001	Culliss	
	18	6,216,122 B1	04-10-2001	Elson	
	19	6,330,567 B1	12-11-2001	Chao	
	20	6,366,923 B1	04-2002	Lenk et al.	
	21	6,421,675 B1	07-16-2002	Ryan et al.	
	22	6,564,213 B1	05-13-2003	Ortega et al.	
	23	6,606,304 B1	08-2003	Grinter et al.	
	24	6,615,237 B1	09-02-2003	Kyne et al.	
	25	6,665,668 B1	12-16-2003	Sugaya et al.	
	26	6,711,565 B1	03-23-2004	Subramaniam et al.	
	27	6,704,747 B1	03-2004	Fong, Joseph Shi -Piu	
	28	6,751,603 B1	06-15-2004	Bauer et al.	
	29	6,757,713 B1	06-2004	Ogilvie et al.	

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	14/507519
	Filing Date	October 6, 2014
	First Named Inventor	William Gross
	Art Unit	2166
(Multiple sheets used when necessary)	Examiner	Johnese T. Johnson
SHEET 2 OF 4	Attorney Docket No.	X1.002C3

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	30	6,847,959 B1	01-25-2005	Arrouye et al.	
	31	6,862,713 B1	03-01-2005	Kraft et al.	
	32	6,873,982 B1	03-29-2005	Bates et al.	
	33	6,961,731 B2	11-01-2005	David M. Holbrook	
	34	7,035,903 B1	04-25-2006	Baldonado	
	35	7,047,502 B2	05-2006	Petropoulos et al.	
	36	7,054,855 B3	05-2006	Basso et al.	
	37	7,370,035 B2	05-2008	Gross et al.	
	38	7,424,510 B2	09-2008	Gross et al.	
	39	7,496,559 B2	02-2009	Gross et al.	
	40	8,019,741 B2	09-13-2011	Gross et al.	
	41	2001/0027406 A1	10-2001	Araki et al.	
	42	2001/0039490	11-08-2001	Verbitsky et al.	
	43	2001/0029508 A1	10-2001	Okada et al.	
	44	2002/0055981	05-09-2002	Spaey et al.	
	45	2002/0092019 A1	07-2002	Marcus, Dwight	
	46	2002/0019679 A1	02-2002	Okada et al.	
	47	2002/0111962	08/2002	Crucs, Kevin M.	
	48	2002/0165707	11-07-2002	Call, Charles L.	
	49	2002/0169763	11-14-2002	Tada et al.	
	50	2002/0178009	11-28-2002	Firman, Thomas R	
	51	2002/0184317	12-05-2002	Thankachan, Matthew	
	52	2003/0014415	01-16-2003	Weiss et al.	
	53	2003/0037321 A1	02-2003	Bowen, Matt	
	54	2002/0087408 A1	07-04-2002	Burnett	
	55	2003/0130993	07-10-2003	Mendelevitch et al.	
	56	2003/0171910 A1	09-2003	Abir, Eli	
	57	2003/0227489	12-11-2003	Arend et al.	
	58	2003/0229898	12-11-2003	Babu et al.	

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	14/507519
	Filing Date	October 6, 2014
	First Named Inventor	William Gross
	Art Unit	2166
(Multiple sheets used when necessary)	Examiner	Johnese T. Johnson
SHEET 3 OF 4	Attorney Docket No.	X1.002C3

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	2003/0233419	12-18-2003	Beringer, Joerg	
	60	2004/0073443	04-2004	Gabrick et al.	
	61	2004/0133564	07-08-2004	Gross et al.	
	62	2004/0143564	07-22-2004	Gross et al.	
	63	2004/0143569	07-22-2004	Gross et al.	
	64	2005/0256846	11-17-2005	Zigmond et al.	
	65	2006/0168067 A1	07-27-2006	Carlson et al.	
	66	2008-0114761 A1	05-2008	Gross et al.	
	67	2009-0150363 A1	06-2009	Gross et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]
	68	WO 99/01802	01-14-1999	Maine et al.		
	69	WO 99/39286	08-05-1999	Ainsbury et al.		
	70	WO 00/67159	11-09-2000	Adar et al.		
	71	WO 2004/023243	03-2004	Gross et al.		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	72	Lotus Magellan Product Information Guide, Circa 1989	
	73	Lotus Magellan Explorer's Guide" ©1989 Lotus Development Corporation	
	74	Chris Sherman, "Enfish Tracker Pro," © January 1999; printed from http://www.onlinemag.net/OL1999/sherman1.html	
	75	Jon Halpin, "PC Data Finder Goes A-Hunting," 19 June 2001; printed from http://www.pcmag.com/article2/0,4149,144228,00.asp	
	76	Carol Ellison, "Info to Go," 30 June 2002; printed from http://www.pcmag.com/article2/0,1759,3575.00.asp	

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	14/507519
	Filing Date	October 6, 2014
	First Named Inventor	William Gross
	Art Unit	2166
(Multiple sheets used when necessary)	Examiner	Johnese T. Johnson
SHEET 4 OF 4	Attorney Docket No.	X1.002C3

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	77	Steve Barth, 'Personal Toolkit: Navigating Information and Ideas," KMWorld April 2003, Volume 12, Issue 4; printed from http://www.kmworld.com/publications/magazine/Index.cfm?action=readarticle&article id-1505&publication id=1	
	78	Copy of International Search Report from corresponding PCT Application PCT/US03/27241	
	79	Chapter 14, Section 14.5 "JavaScript & DHTML Cookbook" by Danny Goodman; ISBN:0-596-00467-2; Publisher: O'Reilly; Print Publication Date 4/1/03	
	80	Stop words, Wikipedia, http://en.wikipedia.org/wiki/Stop_words; December 12, 2006	
	81	Inverted index, Wikipedia, http://en.wikipedia.org/wiki/Inverted_index; December 12, 2006	
	82	Proximity search (text), Wikipedia, http://en.wikipedia.org/wiki/Proximity_search_%28text%29; December 12, 2006	
	83	Computing Service, Email Addresses in Microsoft Outlook 98, December 05, 2000, Pages 1-3	
	84	http://www2.essex.ac.uk/cs/services/email/addressing2.html - searched on www.waybackmachine.com – Internet Archive Wayback Machine	
	85	Pogue, David, *Finding Files and Web Sites with Sherlock 2,* MAC OS 9: THE MISSING MANUAL, Chapter 15, pages 257-278, March 30, 2000	
	86	Shneiderman, B., et al., *Clarifying Search: A User-Interface Framework for Test Searches*, D-Lib Magazine, January 1997	
	87	Supplementary Search Report for EP 03794539.1, filed September 3, 2003 (Attorney Docket No.: X1.001VEP)	
	88	International Search Report for PCT/US2003/027241, filed September 3, 2003 (Attorney Docket No. X1.001VPC)	

20349920
040215

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

Electronic Acknowledgement Receipt

EFS ID:	21960545
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Lynn Marmolijo
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	02-APR-2015
Filing Date:	06-OCT-2014
Time Stamp:	19:26:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	ids.pdf	74813 d2921579a1f90bdd24aefc7d98442f84baf905c6	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	ids-list.pdf	111410 d8fc7e3c76a529bce575181039a572ac8e1eb1f7	no	4

Warnings:	
Information:	
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Total Files Size (in bytes):	186223

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

INFORMATION DISCLOSURE STATEMENT

Inventor	:	William T. Gross
App. No.	:	14/507519
Filed	:	October 6, 2014
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Examiner	:	Johnese T. Johnson
Art Unit	:	2166
Conf. No.	:	9661

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

References and Listing

Pursuant to 37 CFR 1.56, an Information Disclosure Statement listing references is provided herewith. Listed references are of record in U.S. patent application No. 11/972,563, filed January 10, 2008, now Patent No. 8,856,093 which is the parent of this Continuation application, and is relied upon for an earlier filing date under 35 USC 120. Copies of the references are not submitted pursuant to 37 CFR 1.98(d).

Pursuant to 37 C.F.R § 1.97(g) and (h), Applicant makes no representation that the information is considered to be material to patentability. Additionally, inclusion on this list is not an admission that any of the cited documents are prior art in this application. Further, Applicant makes no representation regarding the completeness of this list, or that better art does not exist.

No Disclaimers

To the extent that anything in the Information Disclosure Statement or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

Timing of Disclosure

This Information Disclosure Statement is being filed before the receipt of a First Office Action on the merits, and presumably no fee is required. If a First Office Action

on the merits was mailed before the mailing date of this Statement, the Commissioner is authorized to charge the fee set forth in 37 CFR 1.17(p) to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 2, 2015

By: /Russell M. Jeide/
Russell M. Jeide
Registration No. 54,198
Attorney of Record
Customer No. 20995
(949) 760-0404

20350283
040215

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/507,519	10/06/2014	William Gross	X1.002C3	9661

20995 7590 07/06/2015

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
JOHNSON, JOHNESE T

ART UNIT	PAPER NUMBER
2166	

NOTIFICATION DATE	DELIVERY MODE
07/06/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 14/507,519	Applicant(s) GROSS ET AL.	
	Examiner JOHNESE JOHNSON	Art Unit 2166	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/17/2014*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *2-23* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *2-23* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *10/6/2014* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *4/2/2015*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 2-5 and 8 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Spaey et al. (U.S. PG Pub No. 2002/0055981).

As to claim 2, Spaey discloses:

receiving a first partial search string in a first search field (see paragraph 26 and figure 3);

receiving a second partial search string in the first search field (see figures 3 and 8-9);

wherein the first and second partial search strings are separated by a string separator character in the first search field (see figures 3 and 8-9);

incrementally searching a set of documents in order to identify search results, wherein the incrementally searching comprises (see paragraph 167):

searching for a first one or more documents each including at least one string that corresponds to the first partial search string (see paragraph 167);

searching for a second one or more documents each including at least one string that corresponds to the second partial search string (see paragraph 167); and

updating the search results as each successive character of the first partial search string and the second partial search string is received respectively in the first search field by identifying one or more documents included in both the first one or more documents and the second one or more documents, wherein the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents (see paragraphs 157, 167, and figs 8-9).

As to claim 3, Spaey discloses:

wherein the first partial search string comprises characters corresponding to at least a portion of a first string being searched for and the second search string comprises characters corresponding to at least a portion of a second string being searched for (see paragraph 167).

As to claim 4, Spaey discloses:

displaying in a user interface an indication of the identified one or more documents included in both the first one or more documents and the second one or more documents (see paragraph 170).

As to claim 5, Spaey discloses:

displaying via the user interface a portion of a selected identified document (see figures 8-9).

As to claim 8, Spaey discloses:

wherein the documents comprise emails, text documents, contact information, appointment information, task information, music files, system files, photographs, and/or images (see paragraph 4 – html document).

4. Claim 6 is rejected under 35 U.S.C 103(a) as being unpatentable over Spaey et al. (U.S. PG Pub No. 2002/0055981) in view Call (Call hereinafter) (U.S. PG Pub No. 20020165707).

As to claim 6, Spaey and Thankachan do not explicitly disclose the following limitation, but Call discloses:

highlighting a plurality of occurrences of the first and second partial search strings in the selected document while not highlighting portions of text between occurrences of the first and second partial search strings in the selected document (see Abstract and paragraph 0115 and Figure 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because Call's teaching would have allowed Spaey and Thankachan to search, display, categorize, annotate

and highlight the text and highlighted text are specified by their starting and ending positions.

5. Claims 7 and 9-23 are rejected under 35 U.S.C 103(a) as being unpatentable over Spaey et al. (U.S. PG Pub No. 2002/0055981) in view of Matthew Thankachan (Thankachan hereinafter) (U.S. PG Pub No. 2002/0184317 A1).

As to claim 7, Spaey does not explicitly disclose the following limitation, but Thankachan discloses:

wherein the string separator character is selected from the group comprising a space, "<", "(", "[", "[", """, "!", "@", "a", "$", "%", " ", "&", "*", ")", ";", ":", """, "?", ">", ",", "=", and "+" (see paragraph 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because Thankachan's teaching would have allowed Spaey to provides a method of rapidly searching all of the emails in a storage location for a particular piece of data by checking a user-input search parameter against the contents of stored email messages.

As to claim 9, Spaey does not explicitly disclose the following limitation, but Thankachan discloses:

wherein at least some of the documents comprise at least the following email fields in which one or more of the first and second partial search strings may be located: to,

from, cc, bcc, subject, folder name, date, size, attachments or body (see paragraphs 4, 5, 11, and 16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because Thankachan's teaching would have allowed Spaey to provides a method of rapidly searching all of the emails in a storage location for a particular piece of data by checking a user-input search parameter against the contents of stored email messages.

As to claim 10, Spaey, as modified by Thankachan, discloses:

wherein at least some of the documents comprise at least the following file fields in which one or more of the first and second partial search strings may be located: name, path, size, item type, date modified, date created, or content (see paragraph 4).

As to claim 11, Spaey, as modified by Thankachan, discloses:

wherein at least some of the documents comprise at least the following contacts fields in which one or more of the first and second partial search strings may be located: name, email address, phone number, company, job title, or content (see paragraphs 2 and 20).

As to claim 12, Spaey as modified by Thankachan, discloses:

wherein at least some of the documents comprise at least the following calendar fields in which one or more of the first and second partial search strings may be located:

subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content (see paragraph 4).

As to claim 13, Spaey as modified by Thankachan, discloses:
wherein the search field corresponds to a single field of the documents and the incremental searching is performed only on content of the single field of the documents (see paragraphs 4, 5, 11, and 16).

As to claim 14, Spaey as modified by Thankachan, discloses:
wherein the single field of the documents comprises one of: to, from, cc, bcc, subject, folder name, date, size, attachments, or body fields of email documents (see paragraphs 4, 5, 11, and 16).

As to claim 15, Spaey as modified by Thankachan, discloses:
wherein the single field of the documents comprises one of: name, path, size, item type, date modified, date created, or content fields of file documents (see paragraph 4).

As to claim 16, Spaey as modified by Thankachan, discloses:
wherein the single field of the documents comprises one of: name, email address, phone number, company, job title, or content fields of contacts documents (see paragraphs 2 and 20).

As to claim 17, Spaey as modified by Thankachan, discloses:

wherein the single field of the documents comprises one of: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content fields of calendar documents (see paragraph 4).

As to claim 18, Spaey as modified by Thankachan, discloses:

wherein the first partial search string applies to the entirety of each document and the incremental searching of the second partial search string is performed only on content of a single field of the document (see paragraphs 4, 5, 11, and 16).

As to claim 19, Spaey as modified by Thankachan, discloses:

wherein the single field of the documents comprises one of: to, from, cc, bcc, subject, folder name, date, size, attachments, or body fields of email documents (see paragraphs 4, 5, 11, and 16).

As to claim 20, Spaey as modified by Thankachan, discloses:

wherein the single field of the documents comprises one of: name, path, size, item type, date modified, date created, or content fields of file documents (see paragraph 4).

As to claim 21, Spaey as modified by Thankachan, discloses:

wherein the single field of the documents comprises one of: name, email address, phone number, company, job title, or content fields of contacts documents (see paragraphs 2 and 20).

As to claim 22, Spaey as modified by Thankachan, discloses:

wherein the single field of the documents comprises one of: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content fields of calendar documents (see paragraph 4).

As to claim 23, Spaey as modified by Thankachan, discloses:

where modifiers can be applied to either or both of the first partial search string and second partial search string to include one or more operators from the group comprising AND, OR, NOT, NEAR, date ranges, and size ranges (see paragraph 15).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHNESE JOHNSON whose telephone number is (571)270-1097. The examiner can normally be reached on 4/5/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. J./
Examiner, Art Unit 2166

June 29, 2015
JJ

/HOSAIN ALAM/
Supervisory Patent Examiner, Art Unit 2166

Notice of References Cited	Application/Control No. 14/507,519	Applicant(s)/Patent Under Reexamination GROSS ET AL.	
	Examiner JOHNESE JOHNSON	Art Unit 2166	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2002/0055981 A1	05-2002	Spaey et al.	709/217
*	B	US-2002/0184317 A1	12-2002	Thankachan, Mathew	709/206
*	C	US-2002/0165707 A1	11-2002	Call, Charles G.	704/2
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	14/507519
	Filing Date	October 6, 2014
	First Named Inventor	William Gross
	Art Unit	2166
(Multiple sheets used when necessary)	Examiner	Johnese T. Johnson
SHEET 1 OF 4	Attorney Docket No.	X1.002C3

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	5,111,398 A	05-05-1992	Nunberg et al	
	2	5,303,361 A	04-1994	Colwell et al.	
	3	5,671,426 A	09-23-1997	Armstrong, III, John	
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Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JJ/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	14/507519
	Filing Date	October 6, 2014
	First Named Inventor	William Gross
	Art Unit	2166
(Multiple sheets used when necessary)	Examiner	Johnese T. Johnson
SHEET 2 OF 4	Attorney Docket No.	X1.002C3

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
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Examiner Signature	/Johnese Johnson/ (06/28/2015)	Date Considered

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	14/507519
	Filing Date	October 6, 2014
	First Named Inventor	William Gross
	Art Unit	2166
(Multiple sheets used when necessary)	Examiner	Johnese T. Johnson
SHEET 3 OF 4	Attorney Docket No.	X1.002C3

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
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Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]
	68	WO 99/01802	01-14-1999	Maine et al.		
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	71	WO 2004/023243	03-2004	Gross et al.		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
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	73	Lotus Magellan Explorer's Guide" ©1989 Lotus Development Corporation	
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Examiner Signature	/Johnese Johnson/ (06/28/2015)	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	14/507519
	Filing Date	October 6, 2014
	First Named Inventor	William Gross
	Art Unit	2166
(Multiple sheets used when necessary)	Examiner	Johnese T. Johnson
SHEET 4 OF 4	Attorney Docket No.	X1.002C3

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	77	Steve Barth, 'Personal Toolkit: Navigating Information and Ideas," KMWorld April 2003, Volume 12, Issue 4; printed from http://www.kmworld.com/publications/magazine/Index.cfm?action=readarticle&article id-1505&publication id=1	
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14507519	GROSS ET AL.
	Examiner	Art Unit
	JOHNESE JOHNSON	2166

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/28/2015								
	2	✓								
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	22	✓								
	23	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L5	2	"20020165707".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:52
L4	2	"20020184317".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:27
L3	9	(high$light$3 with occurrences) and (string with separator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:17
L2	3	"20020055981".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:02
L1	2	(partial with search with string with first with field) and ("non-adjacent").clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/28 23:51
S5	1	(partial with search with string with first with field) and (characters with portion first with string with search$3 with second) and name and path and size and item.clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:40
S4	3	(partial with search with string with first with field) and (characters with portion first with string with search$3 with second).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:37
S3	3	(partial with search with string with first	US-PGPUB;	AND	ON	2015/06/15

		with field) and (characters with portion first with string search$3 with second).clm.	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			09:37
S2	0	(partial with search with string with first with field) and (" characters corresponding to at least a portion of a first string being searched for and the second search string comprises characters corresponding to at least a portion of a second string being searched for").clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:34
S1	4	(partial with search with string with first with field).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:28

6/29/2015 12:53:48 AM
C:\Users\jjohnson14\Documents\EAST\Workspaces\14507519.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14507519	GROSS ET AL.
	Examiner	Art Unit
	JOHNESE JOHNSON	2166

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
	searched with keywords	6/28/2015	JJ

SEARCH NOTES		
Search Notes	Date	Examiner
searched for DP	6/28/2015	JJ
searched east DB	6/28/2015	JJ

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	William T. Gross
App. No.	:	14/507519
Filed	:	October 6, 2014
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Examiner	:	Johnson, Johnese T.
Art Unit	:	2166
Conf. No.	:	9661

RESPONSE TO JULY 6, 2015 OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the July 6, 2015 office action, Applicant submits the following:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Summary of Interview begins on page 7 of this paper.

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

1. **(Canceled)**

2. **(Previously Presented)** A method of performing a search comprising:

receiving a first partial search string in a first search field;

receiving a second partial search string in the first search field;

wherein the first and second partial search strings are separated by a string separator character in the first search field;

incrementally searching a set of documents in order to identify search results, wherein the incrementally searching comprises:

searching for a first one or more documents each including at least one string that corresponds to the first partial search string;

searching for a second one or more documents each including at least one string that corresponds to the second partial search string; and

updating the search results as each successive character of the first partial search string and the second partial search string is received respectively in the first search field by identifying one or more documents included in both the first one or more documents and the second one or more documents, wherein the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents.

3. **(Currently Amended)** The method of claim 2, wherein the first partial search string comprises characters corresponding to at least a portion of a first string being searched for and the second partial search string comprises characters corresponding to at least a portion of a second string being searched for.

4. **(Previously Presented)** The method of claim 2, further comprising:

displaying in a user interface an indication of the identified one or more documents included in both the first one or more documents and the second one or more documents.

5. **(Previously Presented)** The method of claim 4, further comprising displaying via the user interface a portion of a selected identified document.

6. **(Previously Presented)** The method of claim 5, further comprising highlighting a plurality of occurrences of the first and second partial search strings in the selected document while not highlighting portions of text between occurrences of the first and second partial search strings in the selected document.

7. **(Previously Presented)** The method of claim 2, wherein the string separator character is selected from the group comprising a space, "<", "(", "[", "{", """, "!", "@", "#", "$", "%", "^", "&", "*", ")", ";", ":", "'", "?", ">", ",", "=", and "+".

8. **(Previously Presented)** The method of claim 2, wherein the documents comprise emails, text documents, contact information, appointment information, task information, music files, system files, photographs, and/or images.

9. **(Previously Presented)** The method of claim 2, wherein at least some of the documents comprise at least the following email fields in which one or more of the first and second partial search strings may be located: to, from, cc, bcc, subject, folder name, date, size, attachments or body.

10. **(Previously Presented)** The method of claim 2, wherein at least some of the documents comprise at least the following file fields in which one or more of the first and second partial search strings may be located: name, path, size, item type, date modified, date created, or content.

11. **(Previously Presented)** The method of claim 2, wherein at least some of the documents comprise at least the following contacts fields in which one or more of the first and second partial search strings may be located: name, email address, phone number, company, job title, or content.

12. **(Previously Presented)** The method of claim 2, wherein at least some of the documents comprise at least the following calendar fields in which one or more of the first and second partial search strings may be located: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content.

13. **(Previously Presented)** The method of claim 2, wherein the search field corresponds to a single field of the documents and the incremental searching is performed only on content of the single field of the documents.

14. **(Previously Presented)** The method of claim 13, wherein the single field of the documents comprises one of: to, from, cc, bcc, subject, folder name, date, size, attachments, or body fields of email documents.

15. **(Previously Presented)** The method of claim 13, wherein the single field of the documents comprises one of: name, path, size, item type, date modified, date created, or content fields of file documents.

16. **(Previously Presented)** The method of claim 13, wherein the single field of the documents comprises one of: name, email address, phone number, company, job title, or content fields of contacts documents.

17. **(Previously Presented)** The method of claim 13, wherein the single field of the documents comprises one of: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content fields of calendar documents.

18. **(Currently Amended)** The method of claim 2, wherein the first partial search string applies to all textual content of the set of documents ~~the entirety of each document~~ and the incremental searching of the second partial search string is performed only on content of a single field of ~~the~~ documents within the set of documents.

19. **(Previously Presented)** The method of claim 18, wherein the single field of the documents comprises one of: to, from, cc, bcc, subject, folder name, date, size, attachments, or body fields of email documents.

20. **(Previously Presented)** The method of claim 18, wherein the single field of the documents comprises one of: name, path, size, item type, date modified, date created, or content fields of file documents.

21. **(Previously Presented)** The method of claim 18, wherein the single field of the documents comprises one of: name, email address, phone number, company, job title, or content fields of contacts documents.

22. **(Previously Presented)** The method of claim 18, wherein the single field of the documents comprises one of: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content fields of calendar documents.

23. **(Previously Presented)** The method of claim 2, where modifiers can be applied to either or both of the first partial search string and second partial search string

to include one or more operators from the group comprising AND, OR, NOT, NEAR, date ranges, and size ranges.

24. **(New)** A computing system comprising:

one or more hardware computer processors executing software to:

receive a first partial search string in a first search field;

receive a second partial search string in the first search field;

wherein the first and second partial search strings are separated by a string separator character in the first search field;

incrementally search a set of documents in order to identify search results, wherein the incrementally searching comprises:

searching for a first one or more documents each including at least one string that corresponds to the first partial search string;

searching for a second one or more documents each including at least one string that corresponds to the second partial search string; and

updating the search results as each successive character of the first partial search string and the second partial search string is received respectively in the first search field by identifying one or more documents included in both the first one or more documents and the second one or more documents, wherein the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents.

25. **(New)** The computing system of claim 24, wherein executing the software further causes the computing system to:

display, on a display device of the computing system, a user interface including an indication of the identified one or more documents included in both the first one or more documents and the second one or more documents.

26. **(New)** The computing system of claim 25, wherein executing the software further causes the computing system to:

display via the user interface a portion of a selected identified document.

27. **(New)** The computing system of claim 26, wherein executing the software further causes the computing system to:

highlight in the user interface a plurality of occurrences of the first and second partial search strings in the selected document while not highlighting portions between occurrences of the first and second partial search strings in the selected document.

28. **(New)** A non-transitory storage device storing software readable by a computing system to:

receive a first partial search string in a first search field;

receive a second partial search string in the first search field;

wherein the first and second partial search strings are separated by a string separator character in the first search field;

incrementally search a set of documents in order to identify search results, wherein the incrementally searching comprises:

searching for a first one or more documents each including at least one string that corresponds to the first partial search string;

searching for a second one or more documents each including at least one string that corresponds to the second partial search string; and

updating the search results as each successive character of the first partial search string and the second partial search string is received respectively in the first search field by identifying one or more documents included in both the first one or more documents and the second one or more documents, wherein the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents.

SUMMARY OF INTERVIEW

Attendees, Date and Type of Interview

The interview was conducted on October 2, 2015 and attended by Examiner Johnese Johnson and Applicant's representatives, Russell Jeide (Reg. No. 54,198) and Andrew Naglestad (in-house counsel).

Exhibits and/or Demonstrations

None

Identification of Claims Discussed

Claim 2

Identification of Prior Art Discussed

Art of record, including Spaey (U.S. PG Pub. No. 2002/0055981), Thankachan (U.S. PG Pub No. 2002/0184317), and Call (U.S. PG Pub No. 2002/0165707)

Proposed Amendments

None.

Principal Arguments and Other Matters

The cited art fails to teach or suggest the combination of features of the claims.

Results of Interview

Agreement was reached that the cited art does not appear to teach or suggest the combination of features of claim 2, as well as its dependents. The Examiner requested that a formal response with a brief summary of arguments be filed, along with a Terminal Disclaimer, in response to which the Examiner will perform an updated search.

REMARKS

Prior to entry of this amendment, claims 2-23 were pending. By this paper, claims 3 and 18 are amended, and claims 24-28 are added. Thus, claims 2-28 are pending and are presented for consideration.

Applicant thanks the Examiner for her courteous participation in the interview and willingness to contact the undersigned attorney if any barriers to allowability remain after her updated search.

Double Patenting

The Examiner noted in the interview that a terminal disclaimer with reference to one or more family members may be required to avoid subsequent issuance of a obviousness-type double patenting rejection. While Applicant does not necessarily agree that such a rejection is or would be appropriate, in order to expedite examination of this application Applicant plans to file a terminal disclaimer with reference to co-assigned U.S. Patent Nos. 8,856,093; 8,498,977; and 7,370,035.

The 102(e) rejection

In section 3 of the Office Action, independent claim 2, as well as dependent claims 3-4 and 8, are rejected user pre-AIA 35 U.S.C. § 102(e) as being unpatentable over Spaey (U.S. PG Pub. No. 2002/0055981). Applicant respectfully traverses this rejection. As discussed in the interview and summarized below, Spaey fails to teach or suggest multiple individual elements of claim 2, as well as the combination of features of claim 2.

Spaey illustrates receiving search terms in separate fields (see Figure 9). Thus, Spaey fails to teach or suggest at least:

> receiving a first partial search string in ***a*** **first search field**;
> receiving a second partial search string in ***the*** **first search field**;
> wherein the first and second partial search strings are separated by a string separator character in ***the first search field***;

as recited in claim 2. Furthermore, Spaey, as well as the other cited art, also fails to teach or suggest the particular search methodology recited in claim 2. In particular, the cited art fails to teach or suggest:

> incrementally searching a set of documents in order to identify search results, wherein the incrementally searching comprises:
>
> searching for **a first one or more documents** each including at least one string that corresponds to **the first partial search string**;
>
> searching for a **second one or more documents** each including at least one string that corresponds to **the second partial search string**; and
>
> updating the **search results** as each successive character of the first partial search string and the second partial search string is received respectively in the first search field by identifying **one or more documents included in both the first one or more documents and the second one or more documents**, wherein the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents

as recited in claim 2. The Office Action indicates on page 3 that Spaey (¶¶ 157, 167, and Figures 8-9) teaches these features. Applicant respectfully disagrees. With references to Figure 9 of Spaey (reproduced below), Spaey describes that "It allows searching on a combination of columns 58 (see FIG. 9). Search criteria 72 on multiple columns 58 are combined to create a more restrictive result set." *Spaey*, ¶ 169. However, each of the results shown in Figure 9 of Spaey match the search criteria entered into the two separate fields and there is no teaching or suggestion that the Spaey software located a first set of documents each including a string corresponding to a first search string, then also located a second set of documents each including a string corresponding to a second search string, and finally identified any documents included in each set of documents.

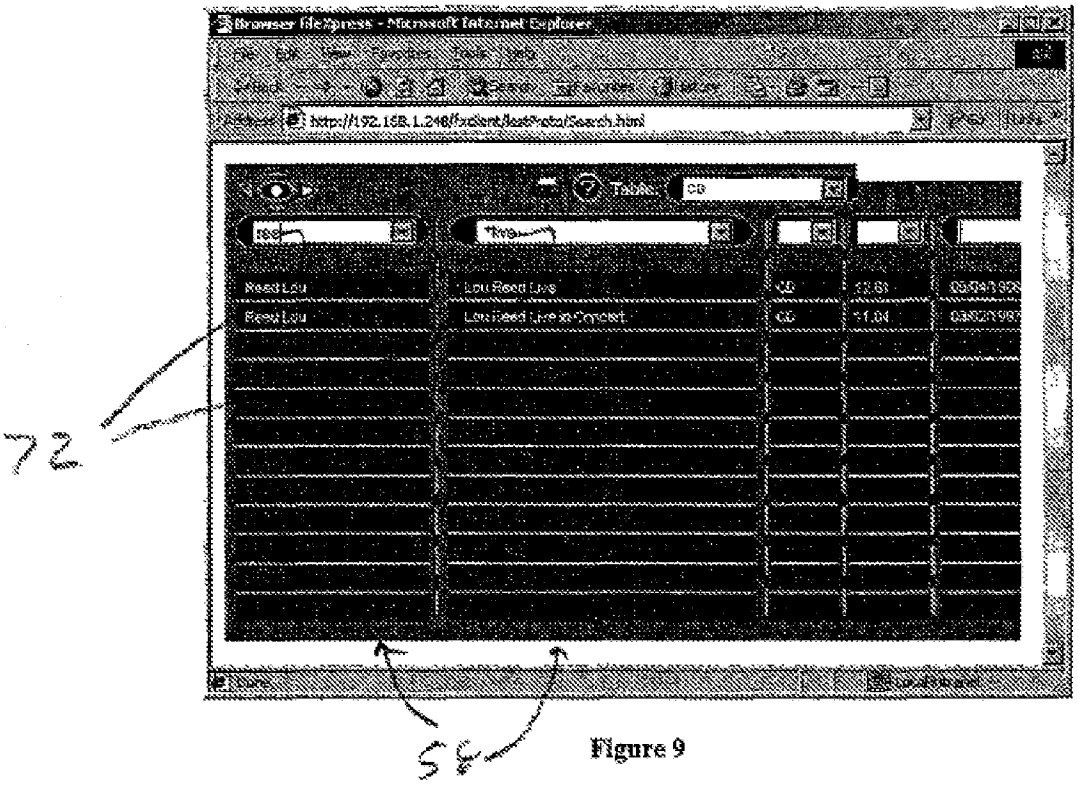


Figure 9

Additionally, Spaey, as well as the other art of record, fails to teach or suggest that "the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents," as recited in claim 2. The Office Action cites the same portions of Spaey as allegedly teaching this feature. However, no such teaching or suggestion is found in Spaey. In contrast, Spaey appears to search meta-data associated with a music file, such as artist, album, format, or length, according to search criteria entered into separate fields associated with these separate meta-data items. There is no teaching or suggestion of searching content of a document itself, such that the search results would include "the first partial search string and the second partial search string [are] non-adjacent in at least one of the identified documents," as recited in claim 2.

For at least the reasons discussed above, Applicant respectfully requests allowance of claim 2.

While each of independent claims 2, 24, and 28 differ in scope, claims 24 and 28 include certain limitations similar to those discussed above with reference to claim 2.

Accordingly, claims 24 and 28 are believed to be in condition for allowance for the same reasons as discussed above with reference to claim 2, where applicable.

Summary

In view of the remarks and claim amendments above, Applicant respectfully asserts that the above-captioned application is in condition for allowance and prompt allowance of the same is requested.

Dependent Claims are allowable at least for the reasons discussed with reference to their respective base claims, as well as their unique patentable features.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: November 5, 2015

By: /Russell M. Jeide/
Russell M. Jeide
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21074263
070715

Electronic Patent Application Fee Transmittal

Application Number:	14507519
Filing Date:	06-Oct-2014
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Filer:	Russell M. Jeide
Attorney Docket Number:	X1.002C3

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in Excess of 20	1202	5	80	400
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 1 month with $0 paid	1251	1	200	200
Miscellaneous:				
			Total in USD ($)	**600**

Electronic Acknowledgement Receipt

EFS ID:	24003401
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Heide Young
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	05-NOV-2015
Filing Date:	06-OCT-2014
Time Stamp:	18:45:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$600
RAM confirmation Number	5311
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		amendment.pdf	189786 85dc21b6a563993f6775f2a69bbffb67d688a6b9	yes	12

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Claims	2	6
Applicant summary of interview with examiner	7	7
Applicant Arguments/Remarks Made in an Amendment	8	12

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	32508 1286fa652024ccab83c9a8d410d91184b24f8e37	no	2

Warnings:

Information:

Total Files Size (in bytes):	222294

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/507,519	Filing Date 10/06/2014	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	11/05/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 27	Minus	** 22	= 5	X $80 =	400
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**400**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/KIMBERLY WHITE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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TERMINAL DISCLAIMER UNDER 37 CFR § 1.321

Inventor	:	William T. Gross
App. No.	:	14/507519
Filed	:	October 6, 2014
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Examiner	:	Johnson, Johnese T.
Art Unit	:	2166
Conf No.	:	9661

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Disclaimer by Assignee

The assignee of the above-identified application, Future Search Holdings, Inc. ("Assignee"), hereby disclaims the terminal part of the term of any patent granted on the above-identified application that would extend beyond the earliest expiration date of the full statutory term of any patents listed below and any patents issuing from any patent application listed below:

- U.S. Patent No. 8,856,093
- U.S. Patent No. 8,498,977
- U.S. Patent No. 7,370,035

(Above list hereinafter referred to as the "Listed Properties").

Assignee hereby agrees that any patent granted on the above-identified application shall be enforceable only for and during the period that such patent is commonly owned with any patents in the Listed Properties or any patents issuing from any patent application in the Listed Properties. This agreement extends to any patent granted on the above-identified application and shall be binding on Assignee, its successors, or assigns.

Assignee does not disclaim the terminal part of any patent granted on the above-identified application that would not extend beyond the expiration date of the full statutory term of any patent(s) issuing from the Listed Properties. Accordingly, if the actual term of any patent(s) issuing from the Listed Properties is shortened to anything less than the full statutory term - for example, if one of these patents: expires for failure to pay a maintenance fee; is held unenforceable; is found invalid; is statutorily disclaimed in whole; is terminally disclaimed under 37 CFR § 1.321(a); has all claims canceled by a reexamination certificate; or by other means. - Assignee does not hereby disclaim the portion of the term of any patent issuing from the above-captioned application that corresponds to that shortened period.

Right of Assignee and Ownership

In accordance with 37 CFR § 3.73(c), Assignee represents that it is the owner of a 100 percent interest in the above-identified application and the commonly owned Listed Properties. The Assignee represents that, to the best of Assignee's knowledge and belief, title is in the Assignee seeking to take action.

Empowerment of Attorney

Pursuant to 37 CFR § 1.321(a) the undersigned attorney of record is empowered to act on behalf of the Assignee by virtue of a Power of Attorney.

This Terminal Disclaimer is accompanied by the $160 fee set forth in 37 CFR § 1.20(d). The Commissioner is hereby authorized to charge any deficient fee to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR LLP

Date: November 9, 2015

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21996082

PTO/AIA/82A (07-13)
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NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	14/507,519
Filing Date	October 6, 2014
First Named Inventor	William T. Gross
Title	METHODS AND SYSTEMS FOR SEARCH INDEXING
Art Unit	2166
Examiner Name	Johnese T. Johnson
Attorney Docket Number	X1.002C3

SIGNATURE of Applicant or Patent Practitioner

Signature	/Russell M. Jeide/	Date (Optional)	
Name	Russell M. Jeide	Registration Number	54198
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Document Description: Power of Attorney

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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 20995

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☐ The address associated with the above-mentioned Customer Number

OR

☑ The address associated with Customer Number: 20995

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Future Search Holdings, Inc.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	11/6/15
Name	MARCIA GOODSTEIN		
Title	PRESIDENT		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

APPLICATION DATA SHEET

Application Information

Application Number:	14/507519
Filing Date:	October 6, 2014
Title:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Attorney Docket Number:	X1.002C3

Correspondence Information

Correspondence Customer Number:	20995
Phone Number:	(949) 760-0404
Fax Number:	(949) 760-9502
E-Mail Address:	efiling@knobbe.com

Representative Information

Representative Customer Number:	20995

Applicant Information

Applicant Authority Type:	Assignee
Applicant Name:	Future Search Holdings, Inc.
Street:	130 West Union Street
City:	Pasadena
State or Province:	CA
Country:	USA
Postal or Zip Code:	91103

Dated: November 9, 2015

By: /Russell M. Jeide/
Russell M. Jeide
Registration No. 54,198
Attorney of Record
Customer No. 20995
(949) 760-0404

22021907

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office;U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of1995, no persons arerequired to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Future Search Holdings, Inc.

Application No./Patent No.: 14/507519 Filed/Issue Date: October 6, 2014

Titled: METHODS AND SYSTEMS FOR SEARCH INDEXING

Future Search Holdings, Inc., a Delaware

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: William Gross To: Idealab

   The document was recorded in the United States Patent and Trademark Office at
   Reel 16083, Frame 831, or for which a copy thereof is attached.

2. From: Idealab To: X1 Technologies, Inc.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 15504, Frame 975, or for which a copy thereof is attached.

This collection of information is required by37 CFR3.73(b). The information is required toobtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentialityis governed by35 U.S.C. 122and 37 CFR1.11 and1.14. Thiscollection is estimated to take 12 minutes to complete, including gathering, preparing, and submittingthe completed application form to the USPTO.Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent tothe Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.**SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: Steve Colwell To: XI Technologies, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 15505, Frame 37, or for which a copy thereof is attached.

4. From: Steve Colwell To: X1 Technologies, Inc. (Formerly X1 Technologies, LLC)

The document was recorded in the United States Patent and Trademark Office at
Reel 16201, Frame 361, or for which a copy thereof is attached.

5. From: X1 Technologies, Inc. To: Future Search Holdings, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 28094, Frame 491, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Russell M. Jeide/	November 09, 2015
Signature	Date
Russell M. Jeide	54198
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that yoube given certain informationin connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, pleasebe advised that: (1) the general authority forthe collection of thisinformation is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and(3) the principal purpose forwhich the information isused by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent applicationor patent. If you do not furnish the requested information,the U.S. Patent and Trademark Office may not be able to process and/or examineyour submission,which may result in termination of proceedings or abandonment of the applicationor expiration of the patent.

The informationprovided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the informationin order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an InternationalApplication filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, arecord may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from thissystem of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	14507519
Filing Date:	06-Oct-2014
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Filer:	Russell M. Jeide/Lynn Marmolijo
Attorney Docket Number:	X1.002C3

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	1	160	160
		Total in USD ($)		**160**

Electronic Acknowledgement Receipt

EFS ID:	24023152
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Sandra Autry
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	09-NOV-2015
Filing Date:	06-OCT-2014
Time Stamp:	18:49:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$160
RAM confirmation Number	5797
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer Filed	TD.pdf	93696 7c2ea4eae9fe0aa38e063d7198381afa2c1da3b6	no	2
Warnings:					
Information:					
2	Power of Attorney	POA_.pdf	2107632 630bbaf4afb8b24ed658ebe986083ab75b162aa6	no	2
Warnings:					
Information:					
3	Application Data Sheet	CORRADS.pdf	55911 c29f7def2bd104151a6853dfc1552d9b5eaeb3f4	no	2
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
4	Assignee showing of ownership per 37 CFR 3.73	373.PDF	123064 e40a7c8510c55645ae82f42e2992e50840ea0eab	no	3
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30490 437351a333727654e2f9498534e46521623e1583	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2410793		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/507,519	10/06/2014	William Gross	X1.002C3

CONFIRMATION NO. 9661

POA ACCEPTANCE LETTER

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

OC000000078724659

Date Mailed: 11/19/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/09/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/hachristian/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/507,519	10/06/2014	2166	2300	X1.002C3	22	1

CONFIRMATION NO. 9661

REPLACEMENT FILING RECEIPT

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

OC000000078724681

Date Mailed: 11/19/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

William Gross, Pasadena, CA;
Steven Lee Colwell, Santa Barbara, CA;

Applicant(s)

Future Search Holdings, Inc., Pasadena, CA;

Power of Attorney: The patent practitioners associated with Customer Number 20995

Domestic Priority data as claimed by applicant

This application is a CON of 11/972,563 01/10/2008 PAT 8856093
which is a CON of 10/654,588 09/03/2003 PAT 7370035
which claims benefit of 60/408,015 09/03/2002
and claims benefit of 60/413,013 09/23/2002
and claims benefit of 60/448,923 02/20/2003
and claims benefit of 60/470,903 05/14/2003
and claims benefit of 60/478,960 06/13/2003

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 10/14/2014
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/507,519**
Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

METHODS AND SYSTEMS FOR SEARCH INDEXING

Preliminary Class

707

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

Please Direct All Correspondence to Customer Number 20995

RESPONSE TO INFORMATIONAL NOTICE

Inventor	:	William T. Gross
App. No.	:	14/507,519
Filed	:	October 6, 2014
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Art Unit	:	2166
Conf No.	:	9661

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The above-captioned application was filed without a Declaration and/or Substitute Statement. Enclosed in compliance with 37 CFR 1.53(f) are the following.

(X) Declaration(s) for:

1. William T. Gross
2. Steven Lee Colwell

The Commissioner is hereby authorized to charge any additional fees which may be required, now or in the future, or credit any overpayment, to Account No. 11-1410.

/Russell M. Jeide/
Russell M. Jeide
Registration No. 54,198
Attorney of Record
Customer No. 20995
(949) 760-0404

22097981
111815

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/507,519 filed on October 6, 2014.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: William Gross Date (Optional): 11-6-15

Signature: William Gross

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PTO/AIA/01 (06-12)
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	METHODS AND SYSTEMS FOR SEARCH INDEXING

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/507,519 filed on October 6, 2014.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Steven Lee Colwell Date (Optional): 11-10-15

Signature: [signature]

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	24233675
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Christina Graul
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	02-DEC-2015
Filing Date:	06-OCT-2014
Time Stamp:	13:38:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response to Pre-Exam Sequence Notice	Transmittal_Letter.pdf	25220 bd325934cb5645390d3fcd931dd22e38da2cc7c0	no	1

Warnings:	
Information:	

2	Oath or Declaration filed	Signed_Dec_WilliamGross.pdf	265330 bafa17c913792592a40f2263b7ef2d9b67aec7b7	no	1
Warnings:					
Information:					
3	Oath or Declaration filed	Signed_Dec_Colwell.pdf	224355 b87c97d9cc3b2742f3a41535bf901c0bfdee04f5	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	514905	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Application Number	Application/Control No.	Applicant(s)/Patent Under Reexamination
14507519	14/507,519	GROSS ET AL.

Document Code - DISQ	Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	X APPROVED	☐ DISAPPROVED
Date Filed: 11/09/2015	**This patent is subject to a Terminal Disclaimer**	

Approved/Disapproved by:	
/MANUEL SALDANA/	

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/507,519	10/06/2014	William Gross	X1.002C3	9661

20995 7590 05/10/2016
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
JOHNSON, JOHNESE T

ART UNIT	PAPER NUMBER
2166	

NOTIFICATION DATE	DELIVERY MODE
05/10/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No. 14/507,519	Applicant(s) GROSS ET AL.	
	Examiner JOHNESE JOHNSON	Art Unit 2166	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/5/2015*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *2-28* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *2-28* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

2. In response to the amendment filed 11/15/2015, claims 2-28 are currently pending. Claims 24-28 are newly added.

Allowable Subject Matter

3. Claims 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Based on their dependency claims 19 – 22 are also indicated as allowable

Claim Rejections - 35 USC § 103

4. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-5, 8, and 23-28 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Gross et al. (U.S. PG Pub No. 2004/0133564) in view of Ushioda et al. (U.S. PG Pub No. 20020007384 A1).

As to claims 2, 24, and 28, Gross discloses:

one or more hardware computer processors executing software to (see paragraph 33 - the functions described herein are preferably performed by executable code and instructions running on one or more general-purpose computers):

receiving a first partial search string in a first search field (see paragraph 13 - receiving at least a first search string and a second search string as the first and second search strings are being entered into the same search field [The examiner notes that an entered string is considered partial as it as incrementally searched, letter by letter]);

receiving a second partial search string in the first search field (see paragraph 12 - receiving at least a first search string and a second search string as the first and second search strings are being entered into the same search field [The examiner notes that an entered string is considered partial as it as incrementally searched, letter by letter]);

wherein the first and second partial search strings are separated by a string separator character in the first search field (see paragraph 165 -spaces to separate words);

incrementally searching a set of documents in order to identify search results, wherein the incrementally searching comprises (see paragraph 13 - to incrementally filter search results to locate at least a first document that has a least a first word that begins with the first string and a second word that begins with the second string):

searching for a first one or more documents each including at least one string that corresponds to the first partial search string (see paragraph 13 - to

incrementally filter search results to locate at least a first document that has a least a first word);

searching for a second one or more documents each including at least one string that corresponds to the second partial search string (see paragraph 13 - to incrementally filter search results to locate at least …a second word that begins with the second string); and

updating the search results as each successive character of the first partial search string and the second partial search string is received respectively in the first search field by identifying one or more documents included in both the first one or more documents and the second one or more documents (see paragraph 29 - As a user enters in a search term into a field, the search results are refined incrementally with each entered character. Thus, the search results are shown as the user enters search characters or terms).

However, Gross does not explicitly disclose the following limitation, but Ushioda discloses:

wherein the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents (see figure 12c – [the examiner notes that the retrieval expressions or search strings are not located next to each other in the respective documents]).

It would have been obvious, at the time the invention was made, to have modified the teachings of Gross, by that of Ushioda, to reduce the time required to search through and retrieve documents.

As to claim 3, Gross, as modified, discloses:

wherein the first partial search string comprises characters corresponding to at least a portion of a first string being searched for and the second partial search string comprises characters corresponding to at least a portion of a second string being searched for (see paragraph 13 - receiving at least a first search string and a second search string as the first and second search strings are being entered into the same search field [The examiner notes that an entered string is considered partial as it as incrementally searched, letter by letter or character]).

As to claims 4 and 25, Gross, as modified, discloses:

displaying in a user interface an indication of the identified one or more documents included in both the first one or more documents and the second one or more documents (see paragraph 122 - the search results from the one or more search engines are returned to the search application, and the search results are displayed in the list area or pane 306C and the Web page contents of a selected or highest ranked search result is displayed in the view pane or area 308C).

As to claims 5 and 26, Gross, as modified, discloses:

displaying via the user interface a portion of a selected identified document (see figure 3c – [the portion of a document that displays the highlighted search terms]).

As to claims 6 and 27, Gross, as modified, discloses:

highlighting a plurality of occurrences of the first and second partial search strings in the selected document while not highlighting portions of text between occurrences of the first and second partial search strings in the selected document (see Ushioda, paragraph 289 - By highlighting a character string that matches a keyword, the user can easily know whether or not a desired document has been retrieved).

As to claim 8, Gross, as modified, discloses:

wherein the documents comprise emails, text documents, contact information, appointment information, task information, music files, system files, photographs, and/or images (see paragraph 10 – For example, the search targets can include one or more of files, emails, email attachments, Web pages, specific databases, and/or the like).

As to claim 23, Gross, as modified, discloses:

where modifiers can be applied to either or both of the first partial search string and second partial search string to include one or more operators from the group comprising AND, OR, NOT, NEAR, date ranges, and size ranges (see Gross, paragraph 150 – ("Joe" ***and*** "Daniel")).

2. Claims 7 and 9-17 are rejected under 35 U.S.C 103(a) as being unpatentable over Gross et al. (U.S. PG Pub No. 2004/0133564) in view of Ushioda et al. (U.S. PG Pub No. 20020007384 A1) and further in view of Matthew Thankachan (Thankachan hereinafter) (U.S. PG Pub No. 2002/0184317 A1).

As to claim 7, Gross and Ushioda do not explicitly disclose the following limitation, but Thankachan discloses:

wherein the string separator character is selected from the group comprising a space, "<", "(", "[", "[", """, "!", "@", "a", "$", "%", " ", "&", "*", ")", ";", ":", """, "?", ">", ",", "=", and "+" (see paragraph 18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because Thankachan's teaching would have allowed Gross and Ushioda to provides a method of rapidly searching all of the emails in a storage location for a particular piece of data by checking a user-input search parameter against the contents of stored email messages.

As to claim 9, Gross and Ushioda do not explicitly disclose the following limitation, but Thankachan discloses:

wherein at least some of the documents comprise at least the following email fields in which one or more of the first and second partial search strings may be located: to, from, cc, bcc, subject, folder name, date, size, attachments or body (see paragraphs 4, 5, 11, and 16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because Thankachan's teaching would have allowed Spaey to provides a method of rapidly searching all of the emails in a storage location for a particular piece of data by checking a user-input search parameter against the contents of stored email messages.

As to claim 10, Gross, as modified, discloses:

wherein at least some of the documents comprise at least the following file fields in which one or more of the first and second partial search strings may be located: name, path, size, item type, date modified, date created, or content (see Gross, paragraph 45 - a folder path, a size attribute; paragraph 85 - the modification date and time, and/or creation date and time, of a given item).

As to claim 11, Gross, as modified, discloses:

wherein at least some of the documents comprise at least the following contacts fields in which one or more of the first and second partial search strings may be located: name, email address, phone number, company, job title, or content (see Gross, paragraph 73 - By way of example, the email search fields can include one or more of a content field, a from (sender) field, a to (addressee) field, date/time sent and/or received fields, a folder path field, a client field, a cc field, a size field, a bcc field, and a subject field).

As to claim 12, Gross, as modified, discloses:

wherein at least some of the documents comprise at least the following calendar fields in which one or more of the first and second partial search strings may be located: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content (see Gross, paragraph 73 - By way of example, the email search fields can include one or more of a content field, a from (sender) field, a to (addressee) field, date/time sent and/or received fields, a folder path field, a client field, a cc field, a size field, a bcc field, and a subject field).

As to claim 13, Gross, as modified, discloses:

wherein the search field corresponds to a single field of the documents and the incremental searching is performed only on content of the single field of the documents (see Gross, paragraphs 74 – [The examiner notes that a search may correspond to a path field of a file]).

As to claim 14, Gross, as modified, discloses:

wherein the single field of the documents comprises one of: to, from, cc, bcc, subject, folder name, date, size, attachments, or body fields of email documents (see Gross, paragraph 73 - By way of example, the email search fields can include one or more of a content field, a from (sender) field, a to (addressee) field, date/time sent

and/or received fields, a folder path field, a client field, a cc field, a size field, a bcc field, and a subject field. An example email search page or form is illustrated in FIG. 3A).

As to claim 15, Gross, as modified, discloses:

wherein the single field of the documents comprises one of: name, path, size, item type, date modified, date created, or content fields of file documents see Gross, paragraphs 74 – [The examiner notes that a search may correspond to a path field of a file]).

As to claim 16, Gross, as modified, discloses:

wherein the single field of the documents comprises one of: name, email address, phone number, company, job title, or content fields of contacts documents (see Gross, paragraph 73 - By way of example, the email search fields can include one or more of a content field, a from (sender) field, a to (addressee) field, date/time sent and/or received fields, a folder path field, a client field, a cc field, a size field, a bcc field, and a subject field).

As to claim 17, Gross, as modified, discloses:

wherein the single field of the documents comprises one of: subject, start date/time, duration, recipients, location, recurrence, attendees, attachments, or content fields of calendar documents (see Gross, paragraphs 74 – [The examiner notes that a search may correspond to a path field of a file]).

Response to Arguments

6. Applicant's arguments with respect to claims 2-28 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHNESE JOHNSON whose telephone number is (571)270-1097. The examiner can normally be reached on 4/5/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fred Ehichioya can be reached on 571-272-4034. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. J./
Examiner, Art Unit 2166

March 10, 2016
JJ

/FRED I EHICHIOYA/
Supervisory Patent Examiner, Art Unit 2168

Notice of References Cited	Application/Control No. 14/507,519	Applicant(s)/Patent Under Reexamination GROSS ET AL.	
	Examiner JOHNESE JOHNSON	Art Unit 2166	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2004/0133564 A1	07-2004	Gross, William	G06F17/30398	1/1
*	B	US-2002/0007384 A1	01-2002	USHIODA, AKIRA	G06F17/30569	715/264
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S117	114	(incremental$4 with search$3) and documents and "715".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:22
S116	18	(incremental$4 with search$3 with engine) and documents and "715".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:22
S115	259	(incremental$4 with search$3 with engine) and documents	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:17
S114	378	(incremental$4 with search$3 with engine)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:16
S113	17	(high$light$3 or underscor$3) with (terms or keywords) with document and "707".clas. and (incremental$4 with search$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:14
S112	48	(high$light$3 or underscor$3) with (terms or keywords) with document and "707".clas. and (auto$complet$4 or predict$4 or suggest$4) and incremental$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:10
S111	690	(high$light$3 or underscor$3) with (terms or keywords) with document and "707".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:06
S110	47	((first adj2 string) same (second adj2	US-PGPUB;	AND	ON	2016/03/10

		string) same (search with results)) and (results with (high$light$3 or underscor$3)) and "707".clas.	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			17:04
S109	47	((first adj2 string) same (second adj2 string) same (search with results)) and ((results with high$light$3 or underscor$3)) and "707".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:03
S108	2	"8498977".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:55
S107	13	((first adj2 string) same (second adj2 string) same (high$light$3 or underscor$3)) and "707".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:49
S106	11	(first adj2 string) same (second adj2 string) same results same (high$light$3 or underscor$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:47
S105	3	(first adj2 string) same (second adj2 string) same results same document same (high$light$3 or underscor$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:47
S104	52	((non-contiguous or non-adjacent) with strings with results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:43
S103	17	((non-contiguous or non-adjacent) with search with results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:40
S102	2	((first near3 string) same (second near3 string) same results same document) and (search$3 with documents) and ((strings or results) with non-adjacent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	AND	ON	2016/03/10 16:34

			IBM_TDB			
S101	130	((first near3 string) same (second near3 string) same results same document) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:28
S100	38	(incremental$4 with search$3) and (first near3 string) and (second near3 string) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 15:46
S99	161	(predict$4 or suggest$4) and (search$3 near3 documents) and (phrase or strings or sentence) and ((phrase or strings or sentence) near3(box or field)) and incremental$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 15:21
S98	869	(predict$4 or suggest$4) and (search$3 near3 documents) and (phrase or strings or sentence) and ((phrase or strings or sentence) near3(box or field))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 13:00
S97	2060	(predict$4 or suggest$4) and (search$3 near3 documents) and (phrase or strings or sentence) and ((phrase or strings or sentence) with (box or field))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:46
S96	9485	(predict$4 or suggest$4) and (search$3 near3 documents) and (phrase or strings or sentence)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:31
S95	67	AUTO$COMPLET$4 and (search$3 same director$4 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:13
S94	317	AUTO$COMPLET$4 and (search near3 documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:12
S93	0	AUTO$COMPLET and (search near3 documents)	US-PGPUB; USPAT; USOCR; FPRS;	AND	ON	2016/03/10 12:12

			EPO; JPO; DERWENT; IBM_TDB			
S92	0	(AUTO$COMPLET same (field or box)) and (search$3 with (documents or directory))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:10
S91	0	(AUTO$COMPLET same (search$3 with documents))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:07
S90	0	(AUTO$COMPLET same (search adj engine))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:06
S89	194	(AUTO$COMPLET$4 same (phrase or sentence or strings)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 11:16
S88	359	AUTO$COMPLET$4 and (search$3 with (phrase or sentence or strings)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 10:59
S87	600	(incremental$4 with search$3) and (partial with (search$3 or string or phrase))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:28
S86	169	(incremental$4 with search$3) and (predict$3 with search$3) and partial	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:26
S85	265	(incremental$4 with search$3) and (predict$3 with search$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:25
S84	243	(incremental$4 with search$3) and (predict$3 with search)	US-PGPUB; USPAT;	AND	ON	2016/03/09 19:24

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S83	99	(incremental$4 with search$3) same (predict$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:24
S82	1152	(incremental$4 with search$3) and (predict$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:24
S81	11	(incremental$4 with search$3) and (search with engine) and (phrase or strings) and (separat$3 with (space or comma)) and (incremental$4 same predict$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:18
S80	80	(incremental$4 with search$3) and (search with engine) and (phrase or strings) and (separat$3 with (space or comma)) and (suggest$3 or recommend$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:17
S79	19	(incremental$4 with search$3) and (search with engine) and (parti$4 with (phrase or strings)) and (separat$3 with (space or comma))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:15
S78	132	(incremental$4 with search$3) and (search with engine) and (phrase or strings) and (separat$3 with (space or comma))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:13
S77	18	((incremental$4 with search$3) same phrase same (field or box))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:02
S76	14	((incremental$4 with search$3) same phrase same field)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:01

S75	112	((incremental$4 with search$3) same phrase)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:01
S74	221	(incremental$4 with search$3) and (partial near3 match$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:56
S73	0	(incremtal$4 with search$3) and (partial with match$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:56
S72	0	(incremtal$4 with search$3) and (partial near3 match$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:56
S71	0	(incremtal$4 with search$3) and (parital near3 match$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:56
S70	21	(two with partial with (search or strings or field)) and ((incremental$4 with search$3)) and documents	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:54
S69	17	(two with partial with (search or strings)) and ((incremental$4 with search$3)) and documents	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:54
S68	4	(two with partial with search with strings) and ((incremental$4 with search$3)) and documents	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:09
S67	0	(two with partial with search with strings) and ((incremental$4 with search$3) same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	AND	ON	2016/03/09 18:08

			DERWENT; IBM_TDB			
S66	40	(two with partial with search with strings)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:07
S55	20	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3 same results) and (highlight$3 with results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:17
S54	147	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3 same results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:15
S53	147	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3 same results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:14
S52	198	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:13
S51	17	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat$3 same results) and (results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:12
S50	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat$3 same results) and (docuemnts same results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:12
S49	19	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:12
S48	19	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3) and (	US-PGPUB; USPAT; USOCR;	AND	ON	2016/02/06 19:11

		results same highlight$3) and (search$3 same documents)	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S47	0	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat3) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:11
S46	0	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:11
S45	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:11
S44	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (docuemnts same results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:10
S43	0	S37 AND ((G06F17/30864 or G06F17/30964).IPCR.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:44
S42	0	S33 AND ((G06F17/30864 or G06F17/30964).IPCR.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:44
S41	2	S33 AND ((G06F17/30864 OR G06F17/3053 OR G06F17/30371 OR G06F17/30575 OR G06F17/30194 OR G06F17/30368 OR G06F17/30581 OR G06F17/30038 OR G06F17/3028 OR G06F17/30345 OR G06F17/30997 OR G06F17/30554 OR G06F17/30598 OR G06F3/04842 OR G06F17/30339 OR G06F17/30507 OR G06F17/30516 OR G06F3/0482 OR G06F17/30011 OR G06F17/30067 OR G06F17/30327 OR G06F17/30336 OR G06F17/30424 OR G06F17/3043 OR G06F17/30477 OR G06F17/30528 OR G06F17/30917 OR G06F17/30958 OR G06F17/2705 OR G06F17/30 OR G06F17/30203 OR	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:43

		G06F17/30241 OR G06F17/30504 OR G06F17/3051 OR G06F17/3056 OR G06F17/3089 OR G06F3/04817 OR G06F11/10 OR G06F11/1451 OR G06F11/1464 OR G06F15/167 OR G06F17/212 OR G06F17/241 OR G06F17/243 OR G06F17/30044 OR G06F17/30076 OR G06F17/30091 OR G06F17/30106 OR G06F17/30109 OR G06F17/30112 OR G06F17/30117 OR G06F17/3012 OR G06F17/30176 OR G06F17/30185 OR G06F17/30224 OR G06F17/30268 OR G06F17/30277 OR G06F17/30303 OR G06F17/30312 OR G06F17/3033 OR G06F17/30362 OR G06F17/30389 OR G06F17/30392 OR G06F17/30404 OR G06F17/30412 OR G06F17/30442 OR G06F17/30445 OR G06F17/30466 OR G06F17/3048 OR G06F17/30483 OR G06F17/30522 OR G06F17/30557 OR G06F17/30584 OR G06F17/30601 OR G06F17/30604 OR G06F17/30619 OR G06F17/3064 OR G06F17/30643 OR G06F17/30654 OR G06F17/30678 OR G06F17/30746 OR G06F17/30787 OR G06F17/30796 OR G06F17/30825 OR G06F17/30837 OR G06F17/30843 OR G06F17/30867 OR G06F17/3087 OR G06F17/30876 OR G06F17/30882 OR G06F17/30884 OR G06F17/30893 OR G06F17/30896 OR G06F17/30899 OR G06F17/30902 OR G06F17/3097 OR G06F17/30994 OR G06F1/26 OR G06F21/606 OR G06F21/6218 OR G06F2201/84 OR G06F2216/01 OR G06F2216/03 OR G06F3/0483 OR G06F3/0484 OR G06F3/04847 OR G06F3/0613 OR G06F3/0619 OR G06F3/0644 OR G06F3/067 OR G06F8/65).CPC. OR (G06F17/30).IPCR.)				
S40	29120	S39 AND ((G06F17/30864 OR G06F17/3053 OR G06F17/30371 OR G06F17/30575 OR G06F17/30194 OR G06F17/30368 OR G06F17/30581 OR G06F17/30038 OR G06F17/3028 OR G06F17/30345 OR G06F17/30997 OR G06F17/30554 OR G06F17/30598 OR G06F3/04842 OR G06F17/30339 OR G06F17/30507 OR G06F17/30516 OR G06F3/0482 OR G06F17/30011 OR G06F17/30067 OR G06F17/30327 OR G06F17/30336 OR G06F17/30424 OR G06F17/3043 OR G06F17/30477 OR G06F17/30528 OR G06F17/30917 OR G06F17/30958 OR G06F17/2705 OR G06F17/30 OR G06F17/30203 OR G06F17/30241 OR G06F17/30504 OR G06F17/3051 OR G06F17/3056 OR G06F17/3089 OR G06F3/04817 OR G06F11/10 OR G06F11/1451 OR G06F11/1464 OR G06F15/167 OR G06F17/212 OR G06F17/241 OR G06F17/243 OR G06F17/30044 OR	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:42

		G06F17/30076 OR G06F17/30091 OR G06F17/30106 OR G06F17/30109 OR G06F17/30112 OR G06F17/30117 OR G06F17/3012 OR G06F17/30176 OR G06F17/30185 OR G06F17/30224 OR G06F17/30268 OR G06F17/30277 OR G06F17/30303 OR G06F17/30312 OR G06F17/3033 OR G06F17/30362 OR G06F17/30389 OR G06F17/30392 OR G06F17/30404 OR G06F17/30412 OR G06F17/30442 OR G06F17/30445 OR G06F17/30466 OR G06F17/3048 OR G06F17/30483 OR G06F17/30522 OR G06F17/30557 OR G06F17/30584 OR G06F17/30601 OR G06F17/30604 OR G06F17/30619 OR G06F17/3064 OR G06F17/30643 OR G06F17/30654 OR G06F17/30678 OR G06F17/30746 OR G06F17/30787 OR G06F17/30796 OR G06F17/30825 OR G06F17/30837 OR G06F17/30843 OR G06F17/30867 OR G06F17/3087 OR G06F17/30876 OR G06F17/30882 OR G06F17/30884 OR G06F17/30893 OR G06F17/30896 OR G06F17/30899 OR G06F17/30902 OR G06F17/3097 OR G06F17/30994 OR G06F1/26 OR G06F21/606 OR G06F21/6218 OR G06F2201/84 OR G06F2216/01 OR G06F2216/03 OR G06F3/0483 OR G06F3/0484 OR G06F3/04847 OR G06F3/0613 OR G06F3/0619 OR G06F3/0644 OR G06F3/067 OR G06F8/65).CPC. OR (G06F17/30).IPCR.)				
S39	29120	g06f17/30864.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:40
S38	2	(incremental$4 near3 search$3) same (results with non$adjacent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:39
S37	33	"707".clas. and S31	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:21
S36	251	"707".clas. and S32	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:21

S35	4	707/705.ccls. and S32	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:21
S34	3636	707/705.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:20
S33	3	((incremental$4 with search$3) same (successive with character)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:11
S32	405	((incremental$4 with search$3) and (predict$5 or suggest$4)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:09
S31	54	((incremental$4 with search$3) same (predict$5 or suggest$4)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:08
S30	91	((incremental$4 with search$3) same character) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:05
S29	91	((incremental$4 with search$3) same character) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:00
S28	676	((incremental$4 with search$3)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:00
S27	312	((incremental$4 near3 search$3)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	AND	ON	2016/02/06 17:55

			DERWENT; IBM_TDB			
S26	76	((incremental$4 near3 search$3) same character) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:53
S25	312	((incremental$4 near3 search$3)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:52
S24	69	((incremental$4 near3 search$3) same (string)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:52
S23	272	(incremental$4 near3 search$3) same (string)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:51
S22	16	(incremental$4 near3 search$3) same (string with separat$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:51
S21	13	"60448923"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:45
S20	0	"60448923".did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:45
S19	0	"60448923".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:45
S18	40	(incremental$4 near3 search$3) and (string near4 separat$3)	US-PGPUB; USPAT; USOCR;	AND	ON	2016/02/06 17:42

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S17	6	(incremental$4 near3 search$3) same (string near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:39
S16	0	(incremental$4 near3 search$3) same (search near3 string near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:39
S15	0	(incremental$4 near3 search$3) same (search near3 string near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:38
S14	0	(incremental$4 near3 search$3) same (string near3 separat$3 near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:38
S13	16	(incremental$4 near3 search$3) same (string near3 separat$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:34
S12	6	(incremental$4 near3 search$3) same (string with separat$3 with (comma or space or slash or underscore or character))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:33
S11	18	(incremental$4 near3 search$3) and (string near3 separat$3) and (high$light$3 with (terms or string or keywords or search$3) with (text or results or summary))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/05 19:18
S10	2	"20020165707".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:52
S9	2	"20020184317".pn.	US-PGPUB;	AND	ON	2015/06/29

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			00:27
S8	9	(high$light$3 with occurrences) and (string with separator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:17
S7	3	"20020055981".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:02
S6	2	(partial with search with string with first with field) and ("non-adjacent").clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/28 23:51
S5	1	(partial with search with string with first with field) and (characters with portion first with string with search$3 with second) and name and path and size and item.clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:40
S4	3	(partial with search with string with first with field) and (characters with portion first with string with search$3 with second).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:37
S3	3	(partial with search with string with first with field) and (characters with portion first with string search$3 with second).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:37
S2	0	(partial with search with string with first with field) and (" characters corresponding to at least a portion of a first string being searched for and the second search string comprises characters corresponding to at least a portion of a second string being searched for").clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:34
S1	4	(partial with search with string with first with field).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	AND	ON	2015/06/15 09:28

			DERWENT; IBM_TDB			

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S65	6	(incremental$4 near3 search$3) same (string with separat$3 with (comma or space or slash or underscore or character))	US-PGPUB; USPAT	AND	ON	2016/02/06 18:47
S64	4	g06f17/30864.cpc. and "l8"	US-PGPUB; USPAT	AND	ON	2016/02/06 18:46
S60	48	"707".clas. and "l22"	US-PGPUB; USPAT	AND	ON	2016/02/06 18:45
S58	2	(partial with search with string with first with field) and ("non-adjacent").clm.	US-PGPUB; USPAT	AND	ON	2016/02/06 18:44
S57	18	(incremental$4 near3 search$3) and (string near3 separat$3) and (high$light$3 with (terms or string or keywords or search$3) with (text or results or summary))	US-PGPUB; USPAT	AND	ON	2016/02/06 18:44
S56	0	"l27" AND ((G06F17/30864 or G06F17/30964).IPCR.)	US-PGPUB; USPAT	AND	ON	2016/02/06 18:44

3/ 10/ 2016 9:11:45 PM
C:\ Users\ jjohnson14\ Documents\ EAST\ Workspaces\ 14507519.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14507519	GROSS ET AL.
	Examiner	Art Unit
	JOHNESE JOHNSON	2166

CPC- SEARCHED		
Symbol	Date	Examiner
G06F17/30864	2/6/2016	JJ
G06F17/30964	2/6/2016	JJ

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
	searched with keywords	6/28/2015	JJ
707	searched with keywords	2/6/2016	JJ
707	705	2/6/2016	JJ

SEARCH NOTES		
Search Notes	Date	Examiner
searched for DP	6/28/2015	JJ
searched east DB	6/28/2015	JJ
Consulted with SPE Jacob Betit	10/5/2015	JJ
searched google for: "incremental search + suggestions + highlights search (terms or keywords or string)".	2/6/2016	JJ
updated search in East DB	2/6/2016	JJ
updated DP search	2/6/2016	JJ
searched google for: "incremental search + characters + highlight + (terms or keywords or string)".	2/6/2016	JJ
searched google for: "incremental search + non-adjacent highlighted results".	2/6/2016	JJ
updated search in East DB	3/10/2016	JJ

INTERFERENCE SEARCH

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
707	705	2/6/2016	JJ
G06F	30964, 30864	2/6/2016	JJ

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Inventor	:	William T. Gross
App. No.	:	14/507519
Filed	:	October 6, 2014
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Examiner	:	Johnson, Johnese T.
Art Unit	:	2166
Conf. No.	:	9661

RESPONSE TO MAY 10, 2016 OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the May 10, 2016 Office Action, Applicant submits the following:

Summary of Interview begins on page 2 of this paper.

Remarks begin on page 3 of this paper.

SUMMARY OF INTERVIEW

Attendees, Date and Type of Interview

The interview was conducted on August 15, 2016 and attended by Examiner Johnese Johnson and Applicant's representatives, Russell Jeide (Reg. No. 54,198) and Tod Cole.

Exhibits and/or Demonstrations

None

Identification of Claims Discussed

All

Identification of Cited/Disclosed Art Discussed

Art of record.

Proposed Amendments

None

Principal Arguments and Other Matters

Rejections of claims based on Gross (App. No. 10/654,588, Pub. No. 2004/0133564, Patent No. 7,370,035) are inapplicable and improper because Gross is not prior art to the present application.

Results of Interview

Examiner Johnson agreed to withdraw the Office Action in view of all claim rejections improperly relying on Gross.

REMARKS

As discussed in the interview, all of the claim rejections in the Office Action include Gross (App. No. 10/654,588, Pub. No. 2004/0133564, Patent No. 7,370,035) as the primary reference. However, Gross is the grandparent of, and shares a common specification with, the present application, as shown on the Filing Receipt:

Domestic Priority data as claimed by applicant
This application is a CON of 11/972,563 01/10/2008 PAT 8856093
which is a CON of 10/654,588 09/03/2003 PAT 7370035
which claims benefit of 60/408,015 09/03/2002
and claims benefit of 60/413,013 09/23/2002
and claims benefit of 60/448,923 02/20/2003
and claims benefit of 60/470,903 05/14/2003
and claims benefit of 60/478,960 06/13/2003

In view of the inapplicability of the rejections in the May 10, 2016 Office Action Applicant respectfully requests withdrawal of the Office Action. Furthermore, Applicant believes the claims to be in condition for allowance and respectfully request allowance of the pending claims.

If any further issues arise during examination, the Examiner is invited to call the undersigned representative, Russell Jeide, directly at (949)721-5381 to discuss.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: August 15, 2016

By: /Russell M. Jeide/
Russell Jeide
Registration No. 54,198
Attorney of Record
Customer No. 20995
(949) 760-0404

23327522

Electronic Patent Application Fee Transmittal

Application Number:	14507519
Filing Date:	06-Oct-2014
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Filer:	Russell M. Jeide/Lynn Marmolijo
Attorney Docket Number:	X1.002C3

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	2251	1	100	100
Miscellaneous:				
			Total in USD ($)	**100**

Electronic Acknowledgement Receipt

EFS ID:	26641806
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Tony Do
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	15-AUG-2016
Filing Date:	06-OCT-2014
Time Stamp:	16:31:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$100
RAM confirmation Number	081616INTEFSW16320900
Deposit Account	2564
Authorized User	tony do

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37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		x1002c3.pdf	161004 e0a89b957b75b0eef91e01f27829d96269ba011a	yes	4

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Applicant summary of interview with examiner	2	2
	Applicant Arguments/Remarks Made in an Amendment	3	4

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30636 1f4861a77bd25c5fc02243ca47a8ac9c9474777a	no	2

Warnings:

Information:

Total Files Size (in bytes):	191640

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/507,519	Filing Date 10/06/2014	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **08/15/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 27	Minus	** 27	=	X $ =	
Independent (37 CFR 1.16(h))	* 3	Minus	***3	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
TERRANCE LAWRENCE

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	26641806
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Tony Do
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	15-AUG-2016
Filing Date:	06-OCT-2014
Time Stamp:	16:31:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$100
RAM confirmation Number	081616INTEFSW16320900
Deposit Account	111410
Authorized User	tony do

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		x1002c3.pdf	161004 e0a89b957b75b0eef91e01f27829d96269ba011a	yes	4
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Applicant summary of interview with examiner		2	2	
	Applicant Arguments/Remarks Made in an Amendment		3	4	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30636 1f4861a77bd25c5fc02243ca47a8ac9c9474777a	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	191640		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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20995 7590 12/16/2016

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
JOHNSON, JOHNESE T

ART UNIT	PAPER NUMBER
2168	

DATE MAILED: 12/16/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/507,519	10/06/2014	William Gross	X1.002C3	9661

TITLE OF INVENTION: METHODS AND SYSTEMS FOR SEARCH INDEXING

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	03/16/2017

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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Alexandria, Virginia 22313-1450
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

20995 7590 12/16/2016
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/507,519	10/06/2014	William Gross	X1.002C3	9661

TITLE OF INVENTION: METHODS AND SYSTEMS FOR SEARCH INDEXING

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	03/16/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
JOHNSON, JOHNESE T	2168	707-003000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/507,519	10/06/2014	William Gross	X1.002C3	9661

20995 7590 12/16/2016

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
JOHNSON, JOHNESE T	

ART UNIT	PAPER NUMBER
2168	

DATE MAILED: 12/16/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/507,519	Applicant(s) GROSS ET AL.	
	Examiner JOHNESE JOHNSON	Art Unit 2168	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the remarks filed 8/15/2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *2-28*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/JOHNESE JOHNSON/ Examiner, Art Unit 2168	/FRED I EHICHIOYA/ Supervisory Patent Examiner, Art Unit 2168

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

2. This communication is in response to the remarks filed on 8/15/2016.

Terminal Disclaimer

3. The terminal disclaimer filed on 11/09/2015 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date(s) of 8,856,093, 8,498,977, and 7,370,035, has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject Matter

4. After thorough search and examination of the present application, and in light of the prior art made of record, claims 2-28 are allowed.

Reason for Allowance

5. The prior art made of record does not teach or fairly suggest the combination of elements, as recited in independent claims 2, 24, and 28.

More specifically, the prior art of records does not specifically suggest the limitation of "updating the search results as each successive character of the first partial search string and the second partial search string is received respectively in the first

search field by identifying one or more documents included in both the first one or more documents and the second one or more documents, wherein the first partial search string and the second partial search string are non-adjacent in at least one of the identified documents." in combination with all the other limitations in the independent claims 2, 24, and 28.

These features together with other limitations of the independent claim are novel and non-obvious over the prior art of record. The dependent claims 3-23, and 25-27 being definite, enabled by the specification, and further limiting to the independent claims, are also allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHNESE JOHNSON whose telephone number is (571)270-1097. The examiner can normally be reached on 4/5/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fred Ehichioya can be reached on 571-272-4034. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. J./
Examiner, Art Unit 2166

November 14, 2016
JJ

/FRED I EHICHIOYA/
Supervisory Patent Examiner, Art Unit 2168

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	0	(partial with search with string with first with field) and (" characters corresponding to at least a portion of a first string being searched for and the second search string comprises characters corresponding to at least a portion of a second string being searched for").clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L3	3	(partial with search with string with first with field) and (characters with portion first with string search$3 with second).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L5	1	(partial with search with string with first with field) and (characters with portion first with string with search$3 with second) and name and path and size and item.clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L8	12	(high$light$3 with occurrences) and (string with separator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L14	0	(incremental$4 near3 search$3) same (string near3 separat$3 near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L15	0	(incremental$4 near3 search$3) same (search near3 string near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L16	0	(incremental$4 near3 search$3) same (search near3 string near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20

L19	0	"60448923".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L20	0	"60448923".did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L24	77	((incremental$4 near3 search$3) same (string)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L30	102	((incremental$4 with search$3) same character) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L34	3684	707/705.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L39	35488	g06f17/30864.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L40	35488	L39 AND ((G06F17/30864 OR G06F17/3053 OR G06F17/30371 OR G06F17/30575 OR G06F17/30194 OR G06F17/30368 OR G06F17/30581 OR G06F17/30038 OR G06F17/3028 OR G06F17/30345 OR G06F17/30997 OR G06F17/30554 OR G06F17/30598 OR G06F3/04842 OR G06F17/30339 OR G06F17/30507 OR G06F17/30516 OR G06F3/0482 OR G06F17/30011 OR G06F17/30067 OR G06F17/30327 OR G06F17/30336 OR G06F17/30424 OR G06F17/3043 OR G06F17/30477 OR G06F17/30528 OR G06F17/30917 OR G06F17/30958 OR G06F17/2705 OR G06F17/30 OR G06F17/30203 OR G06F17/30241 OR G06F17/30504 OR G06F17/3051 OR G06F17/3056 OR G06F17/3089 OR G06F3/04817 OR G06F11/10 OR G06F11/1451 OR	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20

		G06F11/1464 OR G06F15/167 OR G06F17/212 OR G06F17/241 OR G06F17/243 OR G06F17/30044 OR G06F17/30076 OR G06F17/30091 OR G06F17/30106 OR G06F17/30109 OR G06F17/30112 OR G06F17/30117 OR G06F17/3012 OR G06F17/30176 OR G06F17/30185 OR G06F17/30224 OR G06F17/30268 OR G06F17/30277 OR G06F17/30303 OR G06F17/30312 OR G06F17/3033 OR G06F17/30362 OR G06F17/30389 OR G06F17/30392 OR G06F17/30404 OR G06F17/30412 OR G06F17/30442 OR G06F17/30445 OR G06F17/30466 OR G06F17/3048 OR G06F17/30483 OR G06F17/30522 OR G06F17/30557 OR G06F17/30584 OR G06F17/30601 OR G06F17/30604 OR G06F17/30619 OR G06F17/3064 OR G06F17/30643 OR G06F17/30654 OR G06F17/30678 OR G06F17/30746 OR G06F17/30787 OR G06F17/30796 OR G06F17/30825 OR G06F17/30837 OR G06F17/30843 OR G06F17/30867 OR G06F17/3087 OR G06F17/30876 OR G06F17/30882 OR G06F17/30884 OR G06F17/30893 OR G06F17/30896 OR G06F17/30899 OR G06F17/30902 OR G06F17/3097 OR G06F17/30994 OR G06F1/26 OR G06F21/606 OR G06F21/6218 OR G06F2201/84 OR G06F2216/01 OR G06F2216/03 OR G06F3/0483 OR G06F3/0484 OR G06F3/04847 OR G06F3/0613 OR G06F3/0619 OR G06F3/0644 OR G06F3/067 OR G06F8/65).CPC. OR (G06F17/30).IPCR.)				
L42	0	L33 AND ((G06F17/30864 or G06F17/30964).IPCR.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L43	0	L37 AND ((G06F17/30864 or G06F17/30964).IPCR.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L44	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (docuemnts same results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L45	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	AND	ON	2016/11/14 09:20

			DERWENT; IBM_TDB			
L46	0	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L47	0	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat3) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L49	19	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
L50	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat$3 same results) and (docuemnts same results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/11/14 09:20
S1	4	(partial with search with string with first with field).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:28
S2	0	(partial with search with string with first with field) and (" characters corresponding to at least a portion of a first string being searched for and the second search string comprises characters corresponding to at least a portion of a second string being searched for").clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:34
S3	3	(partial with search with string with first with field) and (characters with portion first with string search$3 with second).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:37
S4	3	(partial with search with string with first with field) and (characters with portion first with string with search$3 with second).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/15 09:37
S5	1	(partial with search with string with first with field) and (characters with portion	US-PGPUB; USPAT;	AND	ON	2015/06/15 09:40

		first with string with search$3 with second) and name and path and size and item.clm.	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S6	2	(partial with search with string with first with field) and ("non-adjacent").clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/28 23:51
S7	3	"20020055981".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:02
S8	9	(high$light$3 with occurrences) and (string with separator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:17
S9	2	"20020184317".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:27
S10	2	"20020165707".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2015/06/29 00:52
S11	18	(incremental$4 near3 search$3) and (string near3 separat$3) and (high$light$3 with (terms or string or keywords or search$3) with (text or results or summary))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/05 19:18
S12	6	(incremental$4 near3 search$3) same (string with separat$3 with (comma or space or slash or underscore or character))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:33
S13	16	(incremental$4 near3 search$3) same (string near3 separat$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:34

S14	0	(incremental$4 near3 search$3) same (string near3 separat$3 near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:38
S15	0	(incremental$4 near3 search$3) same (search near3 string near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:38
S16	0	(incremental$4 near3 search$3) same (search near3 string near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:39
S17	6	(incremental$4 near3 search$3) same (string near3 space)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:39
S18	40	(incremental$4 near3 search$3) and (string near4 separat$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:42
S19	0	"60448923".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:45
S20	0	"60448923".did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:45
S21	13	"60448923"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:45
S22	16	(incremental$4 near3 search$3) same (string with separat$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	AND	ON	2016/02/06 17:51

			DERWENT; IBM_TDB			
S23	272	(incremental$4 near3 search$3) same (string)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:51
S24	69	((incremental$4 near3 search$3) same (string)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:52
S25	312	((incremental$4 near3 search$3)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:52
S26	76	((incremental$4 near3 search$3) same character) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:53
S27	312	((incremental$4 near3 search$3)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 17:55
S28	676	((incremental$4 with search$3)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:00
S29	91	((incremental$4 with search$3) same character) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:00
S30	91	((incremental$4 with search$3) same character) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:05
S31	54	((incremental$4 with search$3) same (predict$5 or suggest$4)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR;	AND	ON	2016/02/06 18:08

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S32	405	((incremental$4 with search$3) and (predict$5 or suggest$4)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:09
S33	3	((incremental$4 with search$3) same (successive with character)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:11
S34	3636	707/705.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:20
S35	4	707/705.ccls. and S32	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:21
S36	251	"707".clas. and S32	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:21
S37	33	"707".clas. and S31	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:21
S38	2	(incremental$4 near3 search$3) same (results with non$adjacent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:39
S39	29120	g06f17/30864.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:40
S40	29120	S39 AND ((G06F17/30864 OR	US-PGPUB;	AND	ON	2016/02/06

		G06F17/3053 OR G06F17/30371 OR G06F17/30575 OR G06F17/30194 OR G06F17/30368 OR G06F17/30581 OR G06F17/30038 OR G06F17/3028 OR G06F17/30345 OR G06F17/30997 OR G06F17/30554 OR G06F17/30598 OR G06F3/04842 OR G06F17/30339 OR G06F17/30507 OR G06F17/30516 OR G06F3/0482 OR G06F17/30011 OR G06F17/30067 OR G06F17/30327 OR G06F17/30336 OR G06F17/30424 OR G06F17/3043 OR G06F17/30477 OR G06F17/30528 OR G06F17/30917 OR G06F17/30958 OR G06F17/2705 OR G06F17/30 OR G06F17/30203 OR G06F17/30241 OR G06F17/30504 OR G06F17/3051 OR G06F17/3056 OR G06F17/3089 OR G06F3/04817 OR G06F11/10 OR G06F11/1451 OR G06F11/1464 OR G06F15/167 OR G06F17/212 OR G06F17/241 OR G06F17/243 OR G06F17/30044 OR G06F17/30076 OR G06F17/30091 OR G06F17/30106 OR G06F17/30109 OR G06F17/30112 OR G06F17/30117 OR G06F17/3012 OR G06F17/30176 OR G06F17/30185 OR G06F17/30224 OR G06F17/30268 OR G06F17/30277 OR G06F17/30303 OR G06F17/30312 OR G06F17/3033 OR G06F17/30362 OR G06F17/30389 OR G06F17/30392 OR G06F17/30404 OR G06F17/30412 OR G06F17/30442 OR G06F17/30445 OR G06F17/30466 OR G06F17/3048 OR G06F17/30483 OR G06F17/30522 OR G06F17/30557 OR G06F17/30584 OR G06F17/30601 OR G06F17/30604 OR G06F17/30619 OR G06F17/3064 OR G06F17/30643 OR G06F17/30654 OR G06F17/30678 OR G06F17/30746 OR G06F17/30787 OR G06F17/30796 OR G06F17/30825 OR G06F17/30837 OR G06F17/30843 OR G06F17/30867 OR G06F17/3087 OR G06F17/30876 OR G06F17/30882 OR G06F17/30884 OR G06F17/30893 OR G06F17/30896 OR G06F17/30899 OR G06F17/30902 OR G06F17/3097 OR G06F17/30994 OR G06F1/26 OR G06F21/606 OR G06F21/6218 OR G06F2201/84 OR G06F2216/01 OR G06F2216/03 OR G06F3/0483 OR G06F3/0484 OR G06F3/04847 OR G06F3/0613 OR G06F3/0619 OR G06F3/0644 OR G06F3/067 OR G06F8/65).CPC. OR (G06F17/30).IPCR.)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			18:42
S41	2	S33 AND ((G06F17/30864 OR G06F17/3053 OR G06F17/30371 OR G06F17/30575 OR G06F17/30194 OR G06F17/30368 OR G06F17/30581 OR G06F17/30038 OR G06F17/3028 OR G06F17/30345 OR G06F17/30997 OR G06F17/30554 OR G06F17/30598 OR G06F3/04842 OR G06F17/30339 OR	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:43

		G06F17/30507 OR G06F17/30516 OR G06F3/0482 OR G06F17/30011 OR G06F17/30067 OR G06F17/30327 OR G06F17/30336 OR G06F17/30424 OR G06F17/3043 OR G06F17/30477 OR G06F17/30528 OR G06F17/30917 OR G06F17/30958 OR G06F17/2705 OR G06F17/30 OR G06F17/30203 OR G06F17/30241 OR G06F17/30504 OR G06F17/3051 OR G06F17/3056 OR G06F17/3089 OR G06F3/04817 OR G06F11/10 OR G06F11/1451 OR G06F11/1464 OR G06F15/167 OR G06F17/212 OR G06F17/241 OR G06F17/243 OR G06F17/30044 OR G06F17/30076 OR G06F17/30091 OR G06F17/30106 OR G06F17/30109 OR G06F17/30112 OR G06F17/30117 OR G06F17/3012 OR G06F17/30176 OR G06F17/30185 OR G06F17/30224 OR G06F17/30268 OR G06F17/30277 OR G06F17/30303 OR G06F17/30312 OR G06F17/3033 OR G06F17/30362 OR G06F17/30389 OR G06F17/30392 OR G06F17/30404 OR G06F17/30412 OR G06F17/30442 OR G06F17/30445 OR G06F17/30466 OR G06F17/3048 OR G06F17/30483 OR G06F17/30522 OR G06F17/30557 OR G06F17/30584 OR G06F17/30601 OR G06F17/30604 OR G06F17/30619 OR G06F17/3064 OR G06F17/30643 OR G06F17/30654 OR G06F17/30678 OR G06F17/30746 OR G06F17/30787 OR G06F17/30796 OR G06F17/30825 OR G06F17/30837 OR G06F17/30843 OR G06F17/30867 OR G06F17/3087 OR G06F17/30876 OR G06F17/30882 OR G06F17/30884 OR G06F17/30893 OR G06F17/30896 OR G06F17/30899 OR G06F17/30902 OR G06F17/3097 OR G06F17/30994 OR G06F1/26 OR G06F21/606 OR G06F21/6218 OR G06F2201/84 OR G06F2216/01 OR G06F2216/03 OR G06F3/0483 OR G06F3/0484 OR G06F3/04847 OR G06F3/0613 OR G06F3/0619 OR G06F3/0644 OR G06F3/067 OR G06F8/65).CPC. OR (G06F17/30).IPCR.)				
S42	0	S33 AND ((G06F17/30864 or G06F17/30964).IPCR.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:44
S43	0	S37 AND ((G06F17/30864 or G06F17/30964).IPCR.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 18:44

S44	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (docuemnts same results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:10
S45	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:11
S46	0	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat3 same results) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:11
S47	0	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat3) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:11
S48	19	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:11
S49	19	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3) and (results same highlight$3) and (search$3 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:12
S50	0	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat$3 same results) and (docuemnts same results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:12
S51	17	(incremental$4 same search$3 same documents) and (incremental$4 same characters) and (incremental$4 same updat$3 same results) and (results same highlight$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:12
S52	198	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	AND	ON	2016/02/06 19:13

			DERWENT; IBM_TDB			
S53	147	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3 same results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:14
S54	147	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3 same results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:15
S55	20	(incremental$4 same search$3) and (incremental$4 same characters) and (incremental$4 same updat$3 same results) and (highlight$3 with results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/02/06 19:17
S66	40	(two with partial with search with strings)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:07
S67	0	(two with partial with search with strings) and ((incremental$4 with search$3) same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:08
S68	4	(two with partial with search with strings) and ((incremental$4 with search$3)) and documents	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:09
S69	17	(two with partial with (search or strings)) and ((incremental$4 with search$3)) and documents	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:54
S70	21	(two with partial with (search or strings or field)) and ((incremental$4 with search$3)) and documents	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:54
S71	0	(incremtal$4 with search$3) and (parital near3 match$3)	US-PGPUB; USPAT; USOCR;	AND	ON	2016/03/09 18:56

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S72	0	(incremtal$4 with search$3) and (partial near3 match$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:56
S73	0	(incremtal$4 with search$3) and (partial with match$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:56
S74	221	(incremental$4 with search$3) and (partial near3 match$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 18:56
S75	112	((incremental$4 with search$3) same phrase)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:01
S76	14	((incremental$4 with search$3) same phrase same field)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:01
S77	18	((incremental$4 with search$3) same phrase same (field or box))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:02
S78	132	(incremental$4 with search$3) and (search with engine) and (phrase or strings) and (separat$3 with (space or comma))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:13
S79	19	(incremental$4 with search$3) and (search with engine) and (parti$4 with (phrase or strings)) and (separat$3 with (space or comma))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:15
S80	80	(incremental$4 with search$3) and	US-PGPUB;	AND	ON	2016/03/09

		(search with engine) and (phrase or strings) and (separat$3 with (space or comma)) and (suggest$3 or recommend$5)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			19:17
S81	11	(incremental$4 with search$3) and (search with engine) and (phrase or strings) and (separat$3 with (space or comma)) and (incremental$4 same predict$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:18
S82	1152	(incremental$4 with search$3) and (predict$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:24
S83	99	(incremental$4 with search$3) same (predict$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:24
S84	243	(incremental$4 with search$3) and (predict$3 with search)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:24
S85	265	(incremental$4 with search$3) and (predict$3 with search$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:25
S86	169	(incremental$4 with search$3) and (predict$3 with search$3) and partial	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:26
S87	600	(incremental$4 with search$3) and (partial with (search$3 or string or phrase))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/09 19:28
S88	359	AUTO$COMPLET$4 and (search$3 with (phrase or sentence or strings)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	AND	ON	2016/03/10 10:59

			IBM_TDB			
S89	194	(AUTO$COMPLET$4 same (phrase or sentence or strings)) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 11:16
S90	0	(AUTO$COMPLET same (search adj engine))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:06
S91	0	(AUTO$COMPLET same (search$3 with documents))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:07
S92	0	(AUTO$COMPLET same (field or box)) and (search$3 with (documents or directory))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:10
S93	0	AUTO$COMPLET and (search near3 documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:12
S94	317	AUTO$COMPLET$4 and (search near3 documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:12
S95	67	AUTO$COMPLET$4 and (search$3 same director$4 same documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:13
S96	9485	(predict$4 or suggest$4) and (search$3 near3 documents) and (phrase or strings or sentence)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 12:31
S97	2060	(predict$4 or suggest$4) and (search$3 near3 documents) and (phrase or strings or sentence) and ((phrase or strings or sentence) with (box or field))	US-PGPUB; USPAT; USOCR; FPRS;	AND	ON	2016/03/10 12:46

			EPO; JPO; DERWENT; IBM_TDB			
S98	869	(predict$4 or suggest$4) and (search$3 near3 documents) and (phrase or strings or sentence) and ((phrase or strings or sentence) near3(box or field))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 13:00
S99	161	(predict$4 or suggest$4) and (search$3 near3 documents) and (phrase or strings or sentence) and ((phrase or strings or sentence) near3(box or field)) and incremental$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 15:21
S100	38	(incremental$4 with search$3) and (first near3 string) and (second near3 string) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 15:46
S101	130	((first near3 string) same (second near3 string) same results same document) and (search$3 with documents)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:28
S102	2	((first near3 string) same (second near3 string) same results same document) and (search$3 with documents) and ((strings or results) with non-adjacent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:34
S103	17	((non-contiguous or non-adjacent) with search with results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:40
S104	52	((non-contiguous or non-adjacent) with strings with results)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:43
S105	3	(first adj2 string) same (second adj2 string) same results same document same (high$light$3 or underscor$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:47
S106	11	(first adj2 string) same (second adj2 string) same results same (high$light$3	US-PGPUB; USPAT;	AND	ON	2016/03/10 16:47

		or underscor$3)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S107	13	((first adj2 string) same (second adj2 string) same (high$light$3 or underscor$3)) and "707".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:49
S108	2	"8498977".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 16:55
S109	47	((first adj2 string) same (second adj2 string) same (search with results)) and ((results with high$light$3 or underscor$3)) and "707".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:03
S110	47	((first adj2 string) same (second adj2 string) same (search with results)) and (results with (high$light$3 or underscor$3)) and "707".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:04
S111	690	(high$light$3 or underscor$3) with (terms or keywords) with document and "707".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:06
S112	48	(high$light$3 or underscor$3) with (terms or keywords) with document and "707".clas. and (auto$complet$4 or predict$4 or suggest$4) and incremental$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:10
S113	17	(high$light$3 or underscor$3) with (terms or keywords) with document and "707".clas. and (incremental$4 with search$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:14
S114	378	(incremental$4 with search$3 with engine)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:16

S115	259	(incremental$4 with search$3 with engine) and documents	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:17
S116	18	(incremental$4 with search$3 with engine) and documents and "715".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:22
S117	114	(incremental$4 with search$3) and documents and "715".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2016/03/10 17:22

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S56	0	"l27" AND ((G06F17/30864 or G06F17/30964).IPCR.)	US-PGPUB; USPAT	AND	ON	2016/02/06 18:44
S57	18	(incremental$4 near3 search$3) and (string near3 separat$3) and (high$light$3 with (terms or string or keywords or search$3) with (text or results or summary))	US-PGPUB; USPAT	AND	ON	2016/02/06 18:44
S58	2	(partial with search with string with first with field) and ("non-adjacent").clm.	US-PGPUB; USPAT	AND	ON	2016/02/06 18:44
S60	48	"707".clas. and "l22"	US-PGPUB; USPAT	AND	ON	2016/02/06 18:45
S64	4	g06f17/30864.cpc. and "l8"	US-PGPUB; USPAT	AND	ON	2016/02/06 18:46
S65	6	(incremental$4 near3 search$3) same (string with separat$3 with (comma or space or slash or underscore or character))	US-PGPUB; USPAT	AND	ON	2016/02/06 18:47

11/14/2016 9:23:24 AM
C:\Users\jjohnson14\Documents\EAST\Workspaces\14507519.wsp

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14507519	GROSS ET AL.
	Examiner	**Art Unit**
	JOHNESE JOHNSON	2166

CPC						
Symbol					**Type**	**Version**
G06F		17	/	30985	F	2013-01-01
G06F		17	/	30964	I	2013-01-01
G06F		17	/	30864	I	2013-01-01
G06F		17	/	30861	I	2013-01-01
H04L		51	/	22	I	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

/JOHNESE JOHNSON/ Examiner.Art Unit 2166	11/14/16	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	27	
/FRED I EHICHIOYA/ Supervisory Patent Examiner.Art Unit 2168	11/17/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14507519	GROSS ET AL.
	Examiner	**Art Unit**
	JOHNESE JOHNSON	2166

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION												
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED							
707	705	G	0	6	F	17 / 30 (2006.01.01)								
CROSS REFERENCE(S)														
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)													

/JOHNESE JOHNSON/ Examiner.Art Unit 2166	11/14/16	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	27	
/FRED I EHICHIOYA/ Supervisory Patent Examiner.Art Unit 2168	11/17/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14507519	GROSS ET AL.
	Examiner	**Art Unit**
	JOHNESE JOHNSON	2166

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1	16	17												
1	2	17	18												
2	3	18	19												
3	4	19	20												
4	5	20	21												
5	6	21	22												
6	7	22	23												
7	8	23	24												
8	9	24	25												
9	10	25	26												
10	11	26	27												
11	12	27	28												
12	13														
13	14														
14	15														
15	16														

/JOHNESE JOHNSON/ Examiner.Art Unit 2166	11/14/16	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	27	
/FRED I EHICHIOYA/ Supervisory Patent Examiner.Art Unit 2168	11/17/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14507519	GROSS ET AL.
	Examiner	Art Unit
	JOHNESE JOHNSON	2166

CPC- SEARCHED		
Symbol	Date	Examiner
G06F17/30864	2/6/2016	JJ
G06F17/30964	2/6/2016	JJ

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
	searched with keywords	6/28/2015	JJ
707	searched with keywords	2/6/2016	JJ
707	705	2/6/2016	JJ

SEARCH NOTES		
Search Notes	Date	Examiner
searched for DP	6/28/2015	JJ
searched east DB	6/28/2015	JJ
Consulted with SPE Jacob Betit	10/5/2015	JJ
searched google for: "incremental search + suggestions + highlights search (terms or keywords or string)".	2/6/2016	JJ
updated search in East DB	2/6/2016	JJ
updated DP search	2/6/2016	JJ
searched google for: "incremental search + characters + highlight + (terms or keywords or string)".	2/6/2016	JJ
searched google for: "incremental search + non-adjacent highlighted results".	2/6/2016	JJ
updated search in East DB	3/10/2016	JJ
updated search in East DB	11/14/2016	JJ

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
707	705	2/6/2016	JJ
G06F	30964, 30864	2/6/2016	JJ

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

20995 7590 12/16/2016
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/507,519	10/06/2014	William Gross	X1.002C3	9661

TITLE OF INVENTION: METHODS AND SYSTEMS FOR SEARCH INDEXING

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	~~UNDISCOUNTED~~ SMALL	~~$960~~ $480	$0	$0	~~$960~~ $480	03/16/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
JOHNSON, JOHNESE T	2168	707-003000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 Knobbe, Martens, Olson, & Bear LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Future Search Holdings, Inc.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Pasadena, CA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies .....

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 11-1410 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
☒ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Russell M. Jeide/ Date March 14, 2017
Typed or printed name Russell M. Jeide Registration No. 54198

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	William Gross
App. No	:	14/507519
Filed	:	October 6, 2014
For	:	METHODS AND SYSTEMS FOR SEARCH INDEXING
Examiner	:	Johnese T. Johnson
Art Unit	:	2168
Conf No.	:	9661

COMMENTS ON THE EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant takes no position regarding any reasons for allowance presented by the Examiner (in the Notice of Allowance or elsewhere in the application's file history) other than the positions applicant may have previously taken during prosecution. Therefore, the Examiner's reasons for allowance should not be attributed to applicant as an indication of the basis for applicant's belief that the claims are patentable. Furthermore, applicant respectfully asserts that there may also be additional reasons for patentability of the claimed subject matter not explicitly stated in this record and applicant does not waive its rights to such arguments by not further addressing such reasons herein.

Applicant also respectfully reserves the right to traverse the characterizations of what any particular reference shows or teaches, of what any combination of references shows or teaches, or the appropriateness of combining references. Further, by making certain amendments to the claims, applicant is not conceding that previously pending claims are not patentable. Rather, the amendments are being made to facilitate

expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the application's disclosure. Accordingly, reviewers of this or any child or related prosecution history shall not reasonably infer that the applicant has made any disclaimers or disavowals of any subject matter.

Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: March 14, 2017

By: /Russell M. Jeide/
Russell M. Jeide
Registration No. 54,198
Attorney of Record
Customer No. 20995
(949) 760-0404

25298523

25395259
030317

Electronic Patent Application Fee Transmittal

Application Number:	14507519
Filing Date:	06-Oct-2014
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Filer:	Russell M. Jeide/Lynn Marmolijo
Attorney Docket Number:	X1.002C3

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	28624764
Application Number:	14507519
International Application Number:	
Confirmation Number:	9661
Title of Invention:	METHODS AND SYSTEMS FOR SEARCH INDEXING
First Named Inventor/Applicant Name:	William Gross
Customer Number:	20995
Filer:	Russell M. Jeide/Imran Ahmed
Filer Authorized By:	Russell M. Jeide
Attorney Docket Number:	X1.002C3
Receipt Date:	14-MAR-2017
Filing Date:	06-OCT-2014
Time Stamp:	18:36:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$480
RAM confirmation Number	031517INTEFSW18362700
Deposit Account	111410
Authorized User	Imran Ahmed

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	issue-fee.pdf	1436448 724f8ec2b3b4865320e73122cbe68733a0bb7b99	no	1
Warnings:					
Information:					
2	Post Allowance Communication - Incoming	comments.pdf	72032 63b3bbc37ea19b10b8633a934d116473dd7ddc37	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30593 ffa6fb880d912fda24a879fa5f737ca48aa1c68e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1539073		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/507,519	04/25/2017	9633139	X1.002C3	9661

20995 7590 04/05/2017

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 28 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

William Gross, Pasadena, CA;
Future Search Holdings, Inc., Pasadena, CA;
Steven Lee Colwell, Santa Barbara, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
14/507,519	**09/29/2023 06:59:59 PM ET**	**X1.002C3**

Title of Invention

METHODS AND SYSTEMS FOR SEARCH INDEXING

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	9633139
CONFIRMATION #	9661	FILED BY	Caroline Bialeck
PATENT CENTER #	62903805	FILING DATE	10/06/2014
CUSTOMER #	20995	FIRST NAMED INVENTOR	William Gross
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Russell Jeide

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
POA_X1002C3.pdf	2	Power of Attorney	483 KB
373_Statement_X1002C3.pdf	3	Assignee showing of ownership per 37 CFR 3.73	113 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
POA_X1002C3.pdf	C85B96E7A4F0AFBCD76AEA0CB3E8C99C7792A70C4AD72C81676F32004BA1D9AE22C5618D5BF864464B48C1BE9E828F8D4E1BFCB2CDC9BC96F822B0CBAB80FA51

373_Statement_ X1002C3.pdf 237AEDED81BEC00BAC4D14F6A95A0149226BE581C8171D9837DC72466896FB37ADC1E69D8FC2D5C7DA842DB7302ECB60F7E22F9B608BFB7685D285FB2B1CB746

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/96 (08-12)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: X1 Discovery, Inc.

Application No./Patent No.: 9633139 Filed/Issue Date: 2017-04-25

Titled: METHODS AND SYSTEMS FOR SEARCH INDEXING

X1 Discovery, Inc., a California

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: GROSS, WILLIAM To: IDEALAB

   The document was recorded in the United States Patent and Trademark Office at
   Reel 063435, Frame 0059, or for which a copy thereof is attached.

2. From: IDEALAB To: X1 TECHNOLOGIES, INC.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 063435, Frame 0312, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: COLWELL, STEVE To: X1 TECHNOLOGIES, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 063436, Frame 0210, or for which a copy thereof is attached.

4. From: X1 TECHNOLOGIES, INC. To: FUTURE SEARCH HOLDINGS, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 063439, Frame 0379, or for which a copy thereof is attached.

5. From: FUTURE SEARCH HOLDINGS, INC. To: X1 DISCOVERY, INC.

The document was recorded in the United States Patent and Trademark Office at
Reel 063435, Frame 0126, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Russell M. Jeide/	September 29, 2023
Signature	Date
Russell M. Jeide	54,198
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/82A (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	14/507519
Filing Date	10/06/2014
First Named Inventor	William Gross
Title	METHODS AND SYSTEMS FOR SEARCH INDEXING
Art Unit	2168
Examiner Name	Johnson, Johnese T.
Attorney Docket Number	X1.002C3

SIGNATURE of Applicant or Patent Practitioner

Signature	/Russell M. Jeide/	Date (Optional)	
Name	Russell M. Jeide	Registration Number	54,198
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ *Total of 11 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/80 (07-17)
Approved for use through 09/30/2025. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

[X] Practitioners associated with Customer Number: 20995

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

[ ] The address associated with Customer Number:

OR

[ ]

Firm or individual name		
Address		
City	State	Zip
Country		
Telephone	Email	

Assignee name and address: X1 Discovery, Inc.

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature	Date September 29, 2023
Name John Patzakis	Telephone 626 319-2333
Title Chief Legal Officer	

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0035. Public burden for this form is estimated to average 18 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.** If filing this completed form by mail, send to: **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/507,519	10/06/2014	William Gross	X1.002C3

CONFIRMATION NO. 9661

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

POA ACCEPTANCE LETTER

OC000000063231241

Date Mailed: 10/16/2023

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/29/2023.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/sleutchit/