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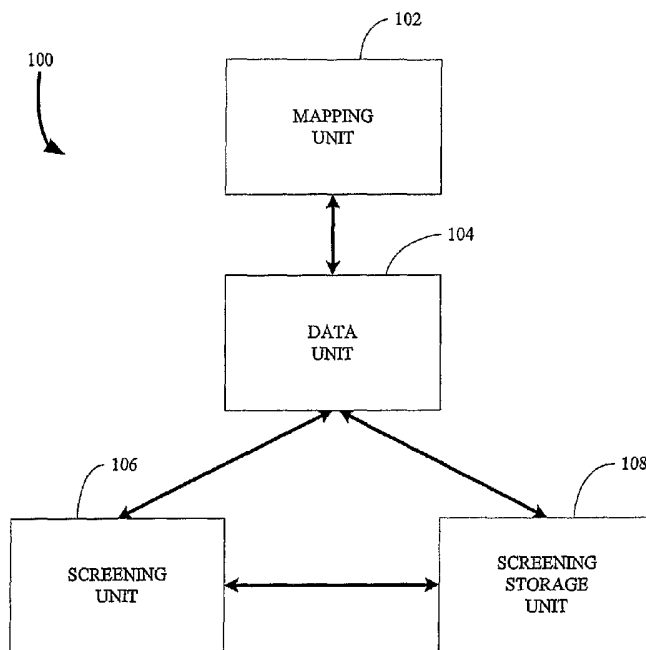
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(54) Title: PATENT MAPPING



(57) Abstract: The present inventive subject matter provides systems, methods, software, and data structures for patent mapping, storage, and searching. Some such embodiments include mapping patent documents, claims, and claim limitations. Some further embodiments provide for searching a universe of patent documents by patent document, claim, limitation, class, element, or concept.

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PATENT MAPPING

Related Applications

This application is related to United States Patent Application Serial Number 10/710,656, entitled "Patent Mapping," by Steven W. Lundberg, Janal M. Kalis, and Pradeep Sinha, filed July 27, 2004 which is incorporated herein by reference and to which this application claims priority; United States Patent Application Serial Number 10/910,265, entitled "Patent Mapping," by Steven W. Lundberg, Janal M. Kalis, and Pradeep Sinha, filed August 10, 2004 which is incorporated herein by reference and to which this application claims priority; and to United States Provisional Patent Application Serial Number ___/___,___ (attorney docket number 750.022PRV), entitled "Patent Mapping," by Steven W. Lundberg, Janal M. Kalis, and Pradeep Sinha, filed on even date herewith which is incorporated herein by reference and to which this application claims priority.

Field

The inventive subject matter relates to patent mapping and more particularly to systems, software, methods and data structures for patent mapping.

Background

Tools for identifying patents for a particular purpose such as a prior art search, validity analysis, or a freedom to operate investigation, operate by performing Boolean queries using various search operators. These operators allow for searching by date, terms, document number, and patent classification, among others. These tools further allow for searching individual document portions such as a document title, abstract, or claim set.

Other searching tools accept freeform text. Such tools accept a freeform text block and extract information from the text block deemed most likely to return acceptable results. However, such tools are still limited to only performing Boolean queries and displaying a list of results.

These search tools often provide large numbers of results, most of which are irrelevant. These tools fail to present results in a manner allowing for quick relevancy determinations. The presentation also fails to provide enough detail suggesting how to adjust a search for obtaining only relevant results. Further, the search tools provide the documents of the result set in a manner very similar to the traditional paper format of the documents.

Brief Description of the Drawings

FIG. 1 is a functional block diagram of one example embodiment.

FIG. 2 is a system schematic diagram of one example embodiment.

FIG. 3 is a method flow diagram of one example embodiment.

FIG. 4 is a method flow diagram of one example embodiment.

FIG. 5 is a method flow diagram of one example embodiment.

FIG. 6 is a method flow diagram of one example embodiment.

FIG. 7A – FIG. 7G illustrate user interfaces of example embodiments.

FIG. 8A-8C illustrate user interfaces of example embodiments.

FIG. 9A-9C illustrate user interfaces of example embodiments.

FIG. 10A-10B illustrate user interfaces of example embodiments.

Description

The inventive subject matter provides systems, software, methods, and data structures for patent mapping, searching, and display to quicken analysis of patent documents for virtually any purpose. Various example embodiments of the inventive subject matter assist practitioners in producing higher quality work product by reducing irrelevant search results, leaving more time and money to focus on the more important analysis. Some further embodiments assist in analysis by interweaving patent documents and linking various portions of individual patent documents with other portions of the same document. Yet further embodiments assist in analyzing patent documents by identifying

similarities and differences between one or more patent documents or portions thereof.

In the following detailed description, reference is made to the accompanying drawings that form a part hereof, and in which are shown by way of illustration specific embodiments in which the inventive subject matter can be practiced. It is understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention.

The leading digit(s) of reference numbers appearing in the Figures generally corresponds to the Figure number in which that component is first introduced, such that the same reference number is used throughout to refer to an identical component which appears in multiple Figures. Signals and connections may be referred to by the same reference number or label, and the actual meaning will be clear from its use in the context of the description.

The inventive subject matter herein, in one example embodiment is useful to conduct a patent clearance study to clear a large number of components and assemblies of interest. Such a large scale clearance project presents a number of challenges and opportunities.

When performing such a study of a large number of patent documents, such as United States and foreign patents and patent applications, the same patent documents need to be screened many times against a wide range of assemblies and components. This can lead to considerable wasted effort unless a well structured approach is taken. Further, the sheer volume of the work creates a special incentive to devise a triage system of review, wherein as much of the work as possible can be done by the least expensive resources. Efficient methodologies of review can be implemented using the inventive subject matter to not only produce relevant results, but also to control cost.

Projects, such as patent clearance studies, often do not capture knowledge that can be re-used as a resource at a later point in time either within the parameters of the clearance study or for other purposes. The inventive subject matter provides a process and system that retains

at least some of the knowledge gained through the study, in an accessible manner.

In the present example embodiment, a pool of patent documents to be mapped and screened is identified using various techniques. Some such techniques include identifying patent documents by assignee, patent class, keyword searches, inventor information such as name or city and state of residence, title, or other information within patent documents or other source of data related to patent documents. New patent documents can be added or subtracted from this pool while mapping is in progress, or at a later date when the patent pool or clearance study is updated.

In some embodiments, depending on the requirements of a patent clearance study, at least the independent claims of each patent document within the identified patent pool will be mapped using a computer system and software operating on the system. In some embodiments, the mapping includes assigning a reusable concept to a patent claim as a whole, termed the "claim concept," the claim concept being broad enough to encompass the broadest possible reading of the claim. For example, if the claim is directed to a dog with a red tail, the claim concept may be "dog," or a mapper may assign it to the claim concept "animal," depending on preferences, experience, breadth of the clearance study, or requirements. Further concepts may be mapped to claim elements or limitations. These concepts are termed "limitation concepts," and, in essence, define limits on the scope of the claim concept(s) assigned to a claim as a whole. For example, the limitation concept "red tail" may be mapped to the example claim. Or, the claim directed to a dog with a red tail may be mapped to both claim concepts "dog" and "animal," and a further concept tail.

Further, claim concepts, or limitation concepts, may be arranged or structured in a hierarchical fashion, with multiple levels. For instance, the claim concept "dog" may be structured as a sub-concept of "animal." "Red tail" may be structured as a sub-concept of "tail."

In some embodiments, after the claim is mapped to one or more claim concepts, the limiting elements are mapped. These limitations are

found in the preamble and/or body of claim. First, limitations of interest in the claim are identified. In some embodiments, not all limitations need be mapped. Limitations of interest may be highlighted, or otherwise selected or annotated. The highlighted limitations are then mapped, or associated, with one or more reusable limitation concepts kept in a concept catalog or index or other data structure. The catalog may also contain reusable claim concepts. If the catalog does not contain a suitable limitation concept to map to, a new limitation concept is added to the catalog "on the fly" or at a later time. Periodically the catalog is reviewed and similar claim or limitation concepts are merged together when possible to limit the size of the concept catalog. In some embodiments, a patent claim with one or two particularly narrow limitations may only require mapping of the one or two limitations to corresponding limitation concepts, in order to capture the most salient information concerning the claim's scope.

Within any given patent document there are often many claims with similar limitations. Once a claim is mapped in a given patent, the mapping software may analyze each successive claim chosen for mapping and suggest mappings based on the way the previous claim(s) in the patent document have been mapped. Automated suggestions may also be made using mappings established for claims in other patent documents. Using this tool, mapping is both greatly accelerated and also made more uniform.

In some embodiments, a screening tool is used to rule out patent documents that are not of interest to a target subject matter. A target subject matter to be screened, in various embodiments, includes any patentable subject matter, such as a method, apparatus, or composition of matter, whether actual or hypothetical. In some embodiments, the process of using the screening tool includes opening a screening activity data structure and identifying a target subject matter to be screened, for example, by typing in a description of the subject matter into a field or alternatively picking it from a preexisting list. A pool of patent documents to screen is also assembled or identified. Patent documents to be screened may be added to the pool based on such search criteria as one

or more of assignee, patent classification, keyword, inventor or other data identifiable in a patent document, or by any other selection criteria. All these methods or others may be used to identify a pool of patent documents to screen the target subject matter against. Alternatively, in addition, one or more claim concepts in the catalog may be identified, such that the identified claim concepts are broad enough to cover the target subject matter. The one or more claim concepts may be used to create a pool of limitation concepts to be screened, wherein the claims mapped to these concepts are added to the pool. If claims are identified for screening based on a claim concept, then the parent patent document containing the identified claims may also be added to the pool. Alternatively, the pool may be formed only of claims to be screened and not necessarily every claim of any patent that has a claim in the pool.

The following embodiment assumes that a pool of patent documents is initially assembled for screening and in turn the pool of claims to be screened belong to these patent documents. The claim concepts or limitation concepts associated with the identified pool of patents (and associated claims to which the concepts are mapped) to be screened are assembled into a concept pool for use in screening the patent documents in view of the target subject matter. A screener then reviews the concepts in the concept pool, ruling out any concepts that are not found in the target subject matter. Concepts may be marked as "definitely not in target subject matter", "maybe in target subject matter", or "don't know." If a concept is marked "definitely not found in target subject matter", then any claim mapped to that concept may be ruled out. If desired, in a software implementation, the inventive subject matter may require multiple concepts to be ruled "definitely not found" for any given claim to be ruled out.

In order to speed screening, the concepts in the pool being mapped may be reduced as follows. Once a concept is marked "definitely not in target subject matter", the screening software rules out all claims that are mapped to the eliminated concept. Any concepts that are solely mapped to the ruled out claims may then be marked "removed from consideration." Some embodiments also include annotating ruled

out claims or concepts as to why the claims or concepts ruled out were removed (e.g., which claim was ruled out to eliminate them). This annotating is in a data structure related to the concept as it applies to the particular target subject matter being analyzed. Using this process, the pool of concepts to be reviewed is reduced both by the action of ruling out concepts and by the corresponding elimination of concepts removed from consideration. In one embodiment, claim concepts may be the first concepts screened, allowing for a "high level" elimination of claims. For example, if the claim concept "dog" is ruled out, then all claims mapped to this claim concept may be ruled out. In turn, all limitation concepts mapped solely to ruled out claims are also eliminated from consideration.

In some embodiments, once all concepts in the concept pool are reviewed, there are assorted outputs that are preferably kept in a data structure. The first output includes a record of the screening. The record of the screening includes marking each concept with a status, such as: "definitely not in target subject matter", "maybe in target subject matter", "don't know", or "removed from consideration." This record can be revisited, reviewed, or edited. The second output includes a list of claims that are not applicable to the target subject matter. For example, any claim ruled out is added to the list of claims that are not applicable to the subject of the target subject matter. This list flows from the status of each concept and in turn the claims the concept belongs to. The third output includes a list of patent documents that are not applicable to the target subject matter. Any patent document with all claims ruled out is added to this list of non-applicable patent documents. This list flows from the status of each claim within a parent patent. The third output includes a list of all claims that are not definitively ruled out in the screening process. The fourth output is a list of patent documents or claims not ruled out. This is a list of all patent documents that are not definitively ruled out in the screening process. There may also be a list of claims removed from consideration. These outputs may be presented as paper reports or as on-line reports or displays which allow a user to drill through the eliminated concepts, claims or patent documents, or to view the

supporting patent specification or portions thereof for a ruled out or ruled in patent document.

Another output is specific to a patent or a family or other groups of patents. This output may be an index to the mapped claims in the patent or group. For instance, the index may list all mapped claim concepts and/or limitation concepts with applicable claim numbers indicated for each concept. Concepts appearing in all claims may be highlighted. Another output may be a hierarchy chart or diagram showing concept/sub-concept relationships. These outputs may be paper or online with interactive hyper-links to claims.

In some embodiments, mapping of patent documents and claims is semi-automated. In addition, mapping personnel can be trained to identify esoteric or narrow limitations in claims and map only those limitations. This reduces mapping time for inherently narrow patent claims. To screen out possibly applicable patent documents, the process only requires that limitations be mapped to a concept that is at least as broad as the limitation. It is not problematic that the mapping is to an overbroad concept because the screening process is intended only to eliminate patents or claims from consideration and not to positively identify patents that are infringed. Thus, these types of "false positives" are not a problem when using the tool, as the false positives can be ruled out by further review or study.

Screening can also be accomplished in reverse. That is, concepts applicable to the target subject matter can be identified as "present" or "maybe present." This process will identify potential claims that cover the target subject matter. However, this process would ideally require that all limitations in a claim be mapped accurately to concepts so as to not include a multitude of false positives or possibly false negatives.

In some embodiments, software and systems, according to the inventive subject matter herein, is web-based and accessible with a user name and password. Subscribers to such systems and software may receive a license to use the software for an individual project, a period of time, or on a pay-per-access or pay-per-unit of time basis.

FIG. 1 shows a functional block diagram of one example embodiment of the inventive subject matter. This example embodiment illustrates software 100 for mapping and searching for patent documents. In some embodiments, the patent documents include one or both of patents and published patent applications. In some embodiments, the patent documents include United States patent documents, while other embodiments include international patent documents. The software 100 for mapping these patent documents includes a mapping unit 102, a data unit 104, a searching unit 106, and a search storage unit 108.

In some embodiments of the software 100, the mapping unit 104, the searching unit 106, and the search storage unit 108 work with associations of data between various portions of patent documents. Some such associations include two limitation concepts associated with a concept that defines a relationship between limitation concepts, termed "relational concept." An example of such an association is, "A dog wags its tail." The two limitation concepts are "dog" and "tail." The relational concept is "wags." Some patent claims may contain many of such associations. For example, "A dog wags its tail that is brown." The first association is the same as before. The second association is between limitation concepts "tail" and "brown." The second relational concept is "is." "Is" in this context equates to "has color."

In one embodiment, any type of concept may have an associated definition. For instance, dog may be defined as a "canine species having four legs." As mentioned above, some claim concepts may be designated subordinate to other claim concepts, such as a processor concept that is subordinated to the concept of computers. In addition, a limitation concept may be designated as a subordinate concept to a claim concept or another limitation concept, for example, in a hierarchy. In some such embodiments, a subordinate concept can be designated as an inherent property of a concept. For instance, the limitation concept "head" may be designated an inherent property of "dog." In other embodiments, a concept definition includes various properties of the concept that are inherent, such as a personal computer concept having an inherent property of a housing encasing a number of components.

Other embodiments include concepts that are descriptive or actions such as "storing data" or "electronic funds transfer." The "storing data" example might include a definition that encompasses databases, storage devices, or storage media. The "electronic funds transfer" might encompass banking, money, network, transfer, Federal Reserve, or EFS. Some embodiments of concept definitions include a glossary of words useful in identifying the concept.

In some embodiments, the mapping unit 102 operates to paraphrase one or more portions of patent claim elements or limitations, and map the paraphrase to a concept. In some embodiments, the paraphrased portion is a general idea derived from a claim that is implicit to the claim, but not explicitly stated in the claim. This paraphrasing in various embodiments includes mapping one or more concepts to a claim. In some such embodiments, a limitation concept is mapped to one or more claim limitations or elements. The mapping unit 102 then stores mapped patent documents and/or claims in the data unit 104. In some embodiments, a mapping utility is included in the mapping unit 102. This mapping utility extracts language from an unmapped patent claim and compares the extracted language against concept definitions and previously mapped patent claims to determine a likely mapping. In some such embodiments, the mapping utility makes a mapping recommendation through a user interface. In other embodiments, the utility operates in a batch mode and automatically maps patent claims.

In some embodiments, the data unit 104 operates to store output from the mapping unit 102 and provide data to the searching screening unit 106. The data unit 104 also stores data received from the search storage unit 108 and serves data to the search storage unit 108 when requested. In one such embodiment, the data unit 104 includes a database management system (DBMS) for storing and retrieving data. In some embodiments, the DBMS is a relational database management system (RDBMS). In some other embodiments, the data unit 104 includes storing data in a Resource Description Framework Schema (RDFS). In some embodiments, the various units communicate with the

data unit 104 using a language such as Structured Query Language (SQL) or eXtensible Markup Language (XML).

The searching unit 106 includes tools for extracting patent data in a useful manner from the data unit 104. In some embodiments, the starting point for searching is the entire universe of patent documents in the data unit 104. Documents in this universe, or pool, are eliminated based on input by a searcher. In some embodiments, this input includes eliminating concepts from consideration. In some embodiments, when concepts are eliminated, patent claims or documents containing solely eliminated concepts are removed from the universe.

The storage unit 108 performs functions for storing and retrieving search results obtained by the screening unit 106 in the data unit 104. In some embodiments, storing the search results includes storing various parameters used in search including eliminated concepts, or even a list of specific documents excluded from a search. In other embodiments, a listing of identified patent documents is stored. Some such embodiments also store search parameters such as eliminated concepts.

FIG. 2 shows a schematic diagram of a system 200 according to one example embodiment of the inventive subject matter. The system 200 includes a processor 202 and a memory 204 holding the software 100 (as shown in FIG. 1). Some embodiments of the system 200 include an optional network interface 206 for accessing a network during execution of the software 100. In some such networked embodiments, the system is a client/server system where various portions of the software 100 are distributed across a network for performing various tasks required by the software. In some other networked embodiments, the system is a web-based system with software distributed across a network, such as a local or wide area network, an intranet, or the Internet, with various portions of the software distributed across the network. In some such web-based systems, a client computer causes the software 100 to execute through interaction with the software 100 through a client user process such as a web browser.

In some embodiments, the processor 202 represents a central processing unit (CPU) of any type of architecture, such as a CISC

(Complex Instruction Set Computing), RISC (Reduced Instruction Set Computing), VLIW (Very Long Instruction Word), or hybrid architecture, although any appropriate processor may be used. The processor 202 executes instructions, such as instructions contained within the software 100. In some other embodiments, the processor is a graphics processor on a video card. The processor 202 in these embodiments also includes a control unit that organizes data and program storage in memory 204 and transfers data and other information in and out of the system 200 and to and from a network over the network interface 206 and other devices attached to the network. Although the system 200 is shown to contain only a single processor 202, the present inventive subject matter applies equally to systems 200 that include multiple processors 202 such as multiple CPUs, multiple graphics processors, and combinations of CPU and graphics processors.

The memory 204 of the system 200 holds the software 100 as illustrated in FIG. 1. The memory 204 represents one or more mechanisms for storing data. For example, the memory 204, in various embodiments, includes read only memory (ROM), random access memory (RAM), magnetic disk storage media, optical storage media, flash memory devices, and/or other volatile and non-volatile machine-readable media. In other embodiments, any appropriate type of storage device or memory 204 can be used. Although only one memory 204 is shown, multiple memories 204 and multiple types of storage devices can be present. In various embodiments, some or all of the software 100, or other items, can be stored on the same or on different memory 204 or storage devices. Furthermore, although the system 200 is drawn to contain the memory 204, the memory 204 or other storage device can be distributed across other systems 200 or computing devices operatively coupled to the system 200 over the network interface 206 such as by a network or other wired or wireless communication link such as a network.

FIG. 3 is a method 300 flow diagram of one example embodiment. The method 300 of this embodiment includes selecting a patent claim 302, associating the patent claim to a claim concept 304, and associating the elements of the claim to one or more limitation concepts 306.

Selecting a patent claim 302 includes selecting a claim from a patent document for mapping.

Associating the patent claim to a claim concept 304 includes assigning a concept designation to the claim as a whole. In other words, the claim concept will ideally have a scope that is at least as broad or broader than the scope of subject matter covered by the claim. Some embodiments provide the ability to assign multiple claim concepts to a claim. Associating a limitation concept to a portion or element of the patent claim 306 includes assigning the limitation concept to a portion of the claim such as a single limitation, a phrase, an element, an individual word within the claim or a paraphrasing of the scope of one or more these portions. For example, consider a claim including the limitation, "a dog having a tail." The claim as a whole could be assigned to a claim concept "mammal" or "canine." The word "tail" could be assigned to a limitation concept "body part" or "appendage" or simply "tail." It is not necessary, in alternate embodiments, that both claim concepts and limitation concepts be mapped. One or the other could suffice to permit screening. As a further example, the claim as a whole could be assigned to a claim concept "dog," wherein a definition of the concept dog includes a tail.

The results of the associating 304 and 306 are stored to provide search users of a system, such as system 200 of FIG. 2, the ability to not only search for patent claims by concept, but also to screen patent claims by concept. Some such embodiments provide searchers the ability to pin point specific claims and claim language of interest or concern when performing a screen as part of a freedom to operate opinion.

Some further embodiments of the method 300 include associating a portion of the patent document, such as a portion of a description section, to a claim. Such an assigned portion, in some embodiments, is a portion of the description providing support for the patent claim, or element thereof. Some embodiments include associating one or more sentences of a description section to an individual claim element. This association information is stored to allow mappers or screeners quick

reference to support and explanation of the various patent claims and claim elements in the patent documents when mapping or screening.

FIG. 4 is a method 400 flow diagram of one example embodiment. The method of this embodiment includes maintaining a database of concepts 402. The method 400 further includes maintaining a database of mapped patent claims, each claim including at least mapping to a concept 404. In other embodiments, a claim may only be assigned to a single claim concept and no elements or limitations in the claim are mapped. Or, a claim element may be mapped to a single limitation concept, and the claim as a whole not being mapped to a claim concept. Some such embodiments may further provide that the mapped elements being non-inherent elements of the mapped concept. For instance, if the claim concept is dog, inherent elements such as legs or head are not mapped to limitation concepts, as it is assumed that such elements have to be implicitly or explicitly present in the claim in order for it to be assigned to the claim concept dog. In some embodiments, the mapped patent claims include independent claims and not dependent claims.

FIG. 5 is a method 500 flow diagram of one example embodiment for assisted patent mapping. The method 500 of this embodiment includes comparing patent claim language with language of mapped patent claims 502 and suggesting a mapping for the patent claim language based on the comparing 504. In some other embodiments, the claim language is mapped according to a concept schema. In such embodiments, the claim language is compared against and mapped according to concept definitions. In some further embodiments, claim language is compared against both concept definitions and previously mapped claim language.

FIG. 6 is a method 600 flow diagram of one example embodiment for screening a universe or pool of patent documents. This pool may be arbitrarily selected from the available universe of mapped claims or patent documents. The method 600 includes generating a list of first claim or limitation concepts contained in the universe of patent claims 602 and eliminating irrelevant concepts 604. This embodiment further includes generating a list of remaining first concepts showing

relationships, where applicable, between them 606 and eliminating irrelevant related concepts 608.

In some embodiments of the method 600, first concepts associated solely with eliminated relational concepts are eliminated upon elimination of the relational concept.

FIG. 7A – FIG. 7G illustrate user interfaces 700 of one example embodiment. The user interface 700 of FIG. 7A includes a hyperlinked listing of projects within a system including elements of the inventive subject matter. Selection of a project causes the user interface 710 of FIG. 7B to display.

The user interface 710 of FIG. 7B includes a listing of patents and patent applications included within the selected project. The listing of patent and application numbers are hyperlinked to further details within the system regarding the respective patents and applications. Some embodiments, including the embodiment of FIG. 7B, include the functionality to rank patents and applications within a project. The ranking allows users to rank the various documents, such as by relevance to the particular project.

The user interface 720 of FIG. 7C provides claim details of a patent or patent application, such as claim language and an indication if the claim is independent or dependent. The user interface 720 further provides hyperlinks to other information regarding the patent or patent application displayed in the user interface 720 such as cross references to other project and patent information, drawings of the patent or patent application, information regarding a patent family of which the displayed patent or patent application is a member of, and other user interfaces within the system, such as the user interface 730 illustrated in FIG. 7D.

The user interface 730 of FIG. 7D provides further information about claims of a particular patent or patent application. This information includes claim dependencies and concepts, classes, components, and constraints to which each claim is related or pertains to. The user interface 730 further includes links to other user interfaces of the system similar to the other user interfaces described herein.

User interface 740 of FIG. 7E is another user interface within the example system. The user interface 740 includes a claim map of limitations to claims. Such claim maps provide graphical view of limitations within claims of a patent or patent application. This allows a user to quickly comprehend relationships between claims in a patent. In some embodiments, a claim map can include claims of one or more patents or patent applications to provide a graphical representation of related claims. Such maps can include maps of patent families and can illustrate the relationship of claim limitations within a patent family. These maps can include independent claims, dependent claims, or both.

FIG. 7F illustrates a further user interface 750 illustrating another mapping of a set of claims 1-12. This map illustrates two concepts and an indication 752 of which claims include which concepts. This mapping can further indicate components and constraints that are included in the claims. Although the terms property, concept, component, and constraint are used in describing this and other embodiments of the inventive subject matter, these terms are merely exemplary. Other terms can be used to describe various claim elements, sub-elements, high and low-level concepts, and subject matter contained within claims without departing from the inventive subject matter herein. These terms are merely labels of a hierarchy of claims and claim portions.

FIG. 7G provides yet another user interface 760 of one example embodiment. This user interface 760 provides a map of an individual claim. The user interface 760 includes all, or a portion, of the claim text 762 and a mapping 764 of the claim and its limitations. The mapping 764 includes a property of the claim and limitation values thereof. The mapping 764 can be edited, removed, or otherwise altered or deleted. The user interface 760 also provides a mapping 764 status indicator 766. The mapping 764 status can include none, partial, or complete.

The various user interfaces of FIG. 7A – 7G present information to users about patent claims. Each user interface provides the claim information in a slightly different manner and with varying detail to allow users to view, create, edit, and delete data depending on various user needs.

The claim mapping device is scalable in that it is usable for both mapping of claims in a single patent, a small group of patents, a large portfolio of patents and patents in a technology area. Figures 7A to 7G illustrate claim mapping screens for performing mapping on claims in a single patent. The mapping screens create a report on features of the patent, such as title and issuance date and inventors. The mapping report also includes features of the claims such as common elements within the claims. Users may identify concepts using the claim language itself or using an ontology developed by the users themselves. Thus, the claim mapping device described herein is useful for creating a local ontology, useful for analyzing claims in a single patent.

The claim mapping device is also usable for mapping claims in a small collection of patents, such as patents of a particular inventor or patents asserted in a litigation matter. In this instance, users also create an ontology for describing concepts and components of the claims, which has local application to the collection of claims under consideration. In particular, the ontology may include concepts and components which are pertinent to the claims being analyzed but may not include all of the concepts and components that are parts of a larger art group or technology area.

The claim mapping device also has use in global mapping of patent portfolios or all patents within a particular art or technology area. In this embodiment, users create an ontology of concepts and components that are usable across a spectrum of claims in many patents. For each claim analyzed, the user selects the concepts and components from the ontology. If the ontology does not have the concept or component, the user adds it. As a result, the ontology is built and expanded for subsequent users. For some embodiments, as ontologies are created, the claim mapping device is capable of automatically mapping at least a portion of claims analyzed.

The claim mapping device is scalable in that it is usable for both mapping of claims in a single patent, a small group of patents, a large portfolio of patents and patents in a technology area.

FIG. 8A is a user interface 800 of one example embodiment. The user interface 800 provides a text search field 802 to search various documents, such as patents and patent applications, included within an example system. The search field 802 allows users to enter terms to search against the example system database of concepts mapped to claims. The results of such a search are displayed in the user interface 800 by concept name. The user interface 800 further displays a description of displayed claim concepts if such a description exists in the database. The concept names are hyperlinked to allow users to select the concept name to view further information about the concept. An example of further information about the "Gaming Machine" concept 804 is illustrated in FIG. 8B.

FIG. 8B illustrates a user interface 810 providing the further information about the "Gaming Machine" concept 804. The user interface 810 displays sub-concepts of the parent concept "Gaming Machine" 804. These sub-concepts, such as "Money Handler" 812, are hyperlinked to provide further information about the sub-concept. Selection of a sub-concept hyperlink, such as "Money Handler" 812, causes user interface 820 of FIG. 8C to be displayed. User interface 820 displays further sub-concepts of the selected "Money Handler" 812 sub-concept. The further sub-concepts are also hyperlinked, the selection of which will provide further details of the selection.

FIG. 9A illustrates a user interface 900 that provides a listing of concepts included within a database of an example system. The user interface 900 is useful to users searching for relevant patents and patent application for purposes such as a clearance search. The user interface 900 allows users review concepts 906 and select to include or exclude the concept from the search. After a user selects concepts 906 to include and exclude from the search, the user can select the "Update" button 902. Selection of the "Update" button 902 causes a result count 904 to be updated to reflect the number of claims and patents resulting from the concept 906 selections. The user can then select another tab, such as "Components" tab 907, "Constraints" tab 908, or "Patents" tab 909.

Selection of the "Components" tab 907 causes user interface 910 of FIG. 9B to be displayed. The components 912 included in the display are components that remain in the result set after inclusion and exclusion of concepts selected in the user interface 900 of FIG. 9A. Returning to FIG. 9B, the user can then select components 904 to include or exclude from the search. Then the user can select the "Update" tab 902 to update the result count 904. The user can further reduce the result set reflected in the result count 904 using a constraints user interface that operates in a similar fashion as user interfaces 900 of FIG. 9A and 910 of FIG. 9B. The constraints user interface is displayable by selecting the "Constraints" tab 908.

Once the user has reduced the result set, or at any time, the user can select the "Patents" tab 909. Selection of the "Patents" tab 909 causes the user interface 920 of FIG. 9C to display. The user interface 920 displays results of the search as described above with regard to FIG. 9A and FIG. 9B. The display of the search results includes identified patent or patent application numbers, identified claim numbers, and unresolved issues within the claims that prevents elimination of the claim from the search. The user can then resolve those issues to determine whether the patent claim is relevant to the purpose of the search. An unresolved issue can include a claim concept, component, or constraint that the user has not chosen to eliminate from the search. If the user decides to further eliminate concepts, components, or constraints from the search, the user can then select the respective tabs to cause the respective user interface to display, from which the search can be further limited.

FIG. 10A and FIG. 10B illustrate user interfaces according to example Embodiments. The user interface 1000 of FIG. 10A provides user the ability to enter one or more patent numbers in a text box 1002 and select action button "Go" 1004. Selection of the action button "Go" 1004 causes the user interface 1000 to submit the entered patent numbers to an example system which then obtains a copy of the document identified by the patent number and enter the document in the example system database. The example system obtains the copy of the

document electronically from another database, such as a patent office database available on the Internet. The example system then parses the electronic document to extract various elements of information such as claims, claim concepts, claim limitations, document title, filing date, classification, descriptive text related to claim terms, concepts, and limitations, and various other elements of information. Once the example system is complete with the parsing, the example system stores the information in a database and cause user interface 1010 of FIG. 10B to be displayed to the user.

It is understood that the above description is intended to be illustrative, and not restrictive. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the inventive subject matter should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled.

Claims

1. A data structure comprising: a first field containing data representing a first portion of a patent claim; a second field containing data representing a second portion of a patent claim; and a third field containing data representing a third portion of a patent claim, wherein the third field associates the first field to the second field.
2. The data structure of claim 1, further comprising: a fourth field containing data associating the patent claim of the first field to a patent disclosure providing support for the portion of the claim in the third field.
3. The data structure of claim 2, wherein the association of the fourth field includes a citation to a portion of the patent disclosure.
4. The data structure of claim 2, wherein the association of the fourth field includes a text of the patent disclosure.
5. The data structure of claim 1, wherein the first, second, and third fields contain text of the patent claim.
6. The data structure of claim 1, wherein the second field contains data representative of a concept defined in another data structure.
7. The data structure of claim 6, wherein the another data structure is a lookup table.
8. A method comprising: designating a first definitional concept of a patent claim; designating a second definitional concept of the patent claim; and designating a relational concept of the patent claim, wherein the relational concept relates the second definitional concept to the first definitional concept.

9. The method of claim 8, wherein designating the first definitional concept of the patent claim includes designating at least a portion of the patent claim as the first definitional concept.
10. The method of claim 9, wherein designating the second definitional concept of the patent claim includes designating at least a portion of the patent claim as the second definitional concept.
11. The method of claim 8, wherein designating the first and second definitional concepts and the relational concept of the patent claim includes assigning a concept to each of the elements, wherein the assigned concepts are derived from a patent document of the patent claim.
12. The method of claim 8, further comprising: associating the patent claim to a patent disclosure providing support for the patent claim.
13. The method of claim 12, wherein associating the patent claim to a patent disclosure providing support for the patent claim comprises: associating the relational concept to a portion of the patent disclosure.
14. The method of claim 13, wherein the associating the relational concept of the patent claim to a portion of the patent disclosure comprises: associating one or more words of the patent claim to one or more sentences of the patent disclosure.
15. A method comprising: maintaining a database of patent concepts, wherein each concept is defined to include elements inherent to the concept; and maintaining a database of mapped patent claims, each claim including an element mapped to a concept, the mapped elements being non-inherent elements of the mapped concept.
16. The method of claim 15, wherein each of the mapped patent claims is an independent claim.

17. The method of claim 15, wherein the mapped patent claims do not include a dependent claim containing only elements inherent to a concept mapped to a parent claim of the dependent claim.

18. A method comprising: comparing patent claim language with language of mapped patent claims; and suggesting a mapping for the patent claim language based on the comparing.

19. A method comprising: generating a list of first definitional concepts contained in a universe of patent claims; eliminating irrelevant first definitional concepts; generating a list of relational concepts associated with the remaining first definitional concepts; eliminating irrelevant relational concepts; generating a list of second definitional concepts associated to the remaining first definitional concepts by the remaining relational concepts; and eliminating irrelevant second definitional concepts.

20. The method of claim 19, wherein first definitional concepts only associated with eliminated relational concepts are eliminated and wherein relational concepts only associated with eliminated second definitional concepts are also eliminated.

21. A computer readable medium, with instructions thereon, for causing an appropriately configured computer to: generate a list of elements contained within a universe of patent claims; and eliminate elements, wherein eliminating an element present in a patent claim eliminates patent claims depending therefrom.

22. The computer readable medium of claim 21, wherein the elements comprise definitional concepts and relational concepts.

23. A method comprising: identifying a target subject matter; assigning the target subject matter to one or more concepts; identifying a

patent pool to screen the target subject matter against based on the one or more concepts; and assembling a concept pool from the identified patent pool.

24. The method of claim 23, further comprising: receiving input related to concepts in the concept pool; and removing patents from the patent pool based on the received input related to concepts in the patent pool.

FIG. 1

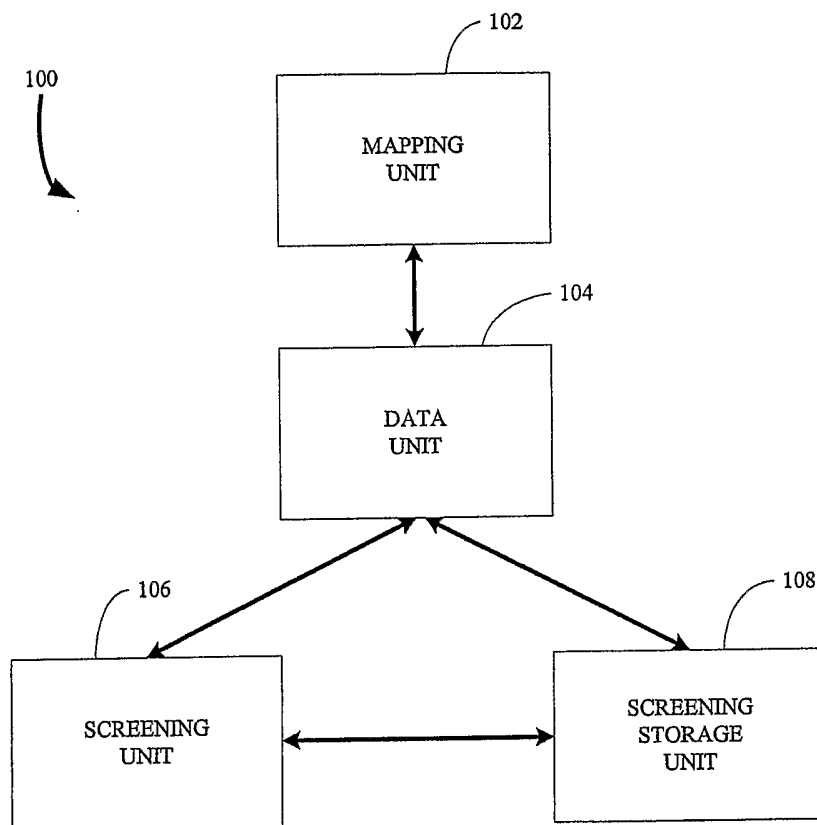


FIG. 2

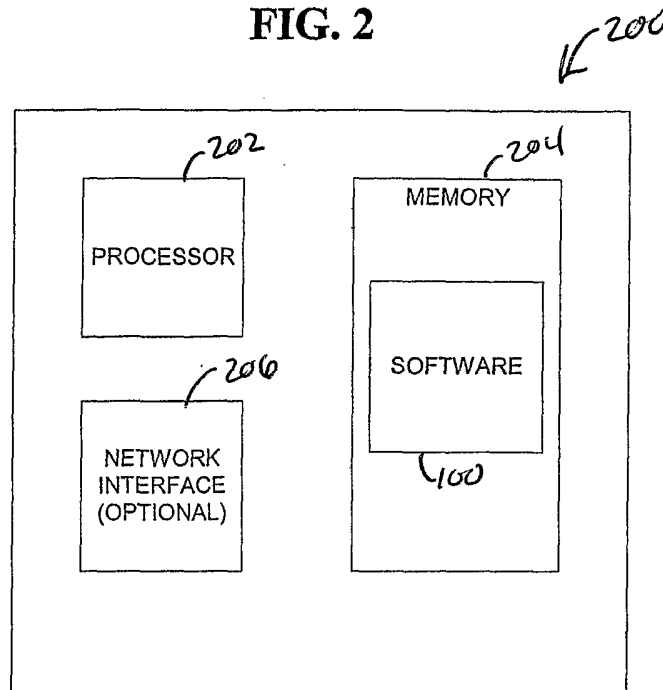


FIG. 3

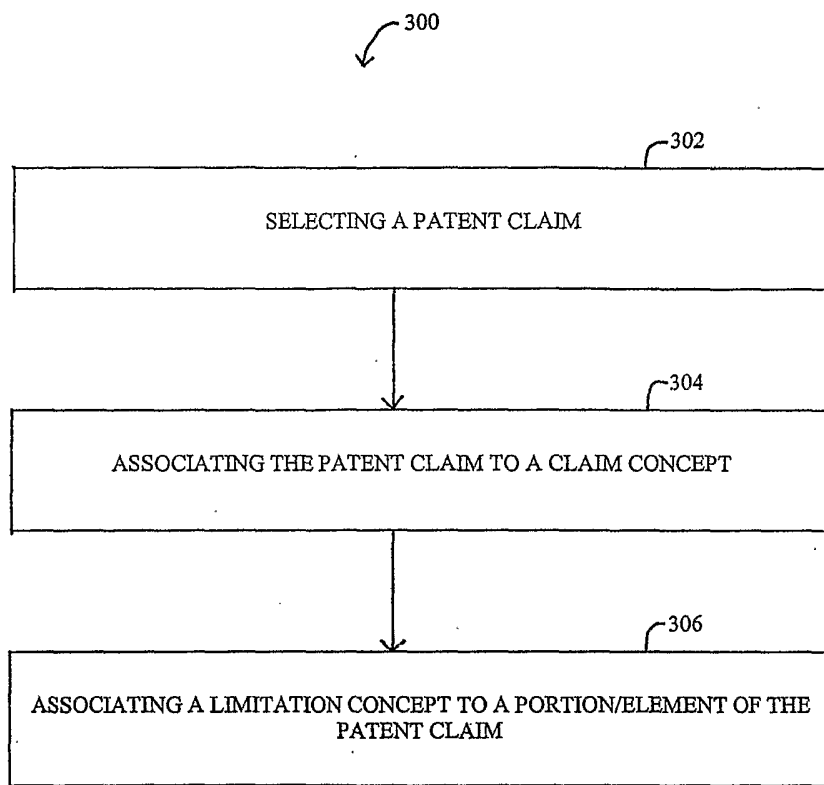


FIG. 4

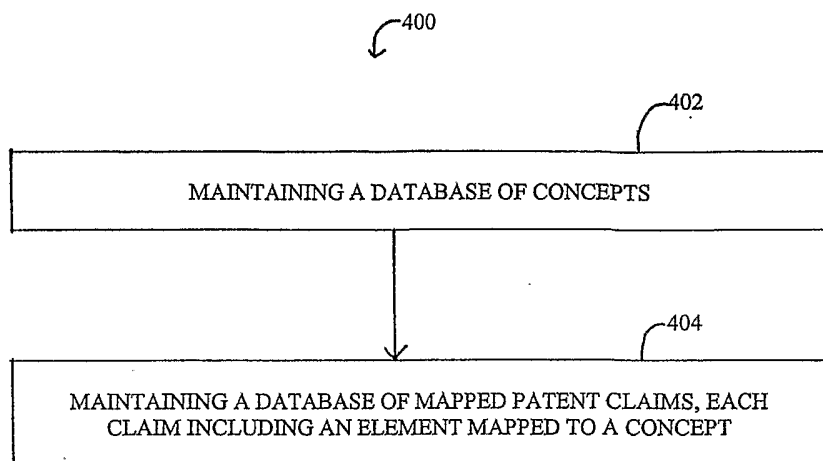


FIG. 5

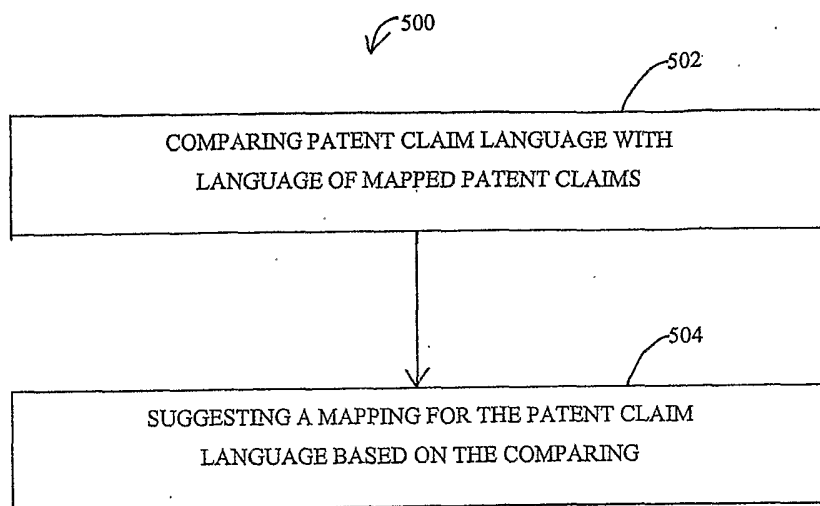
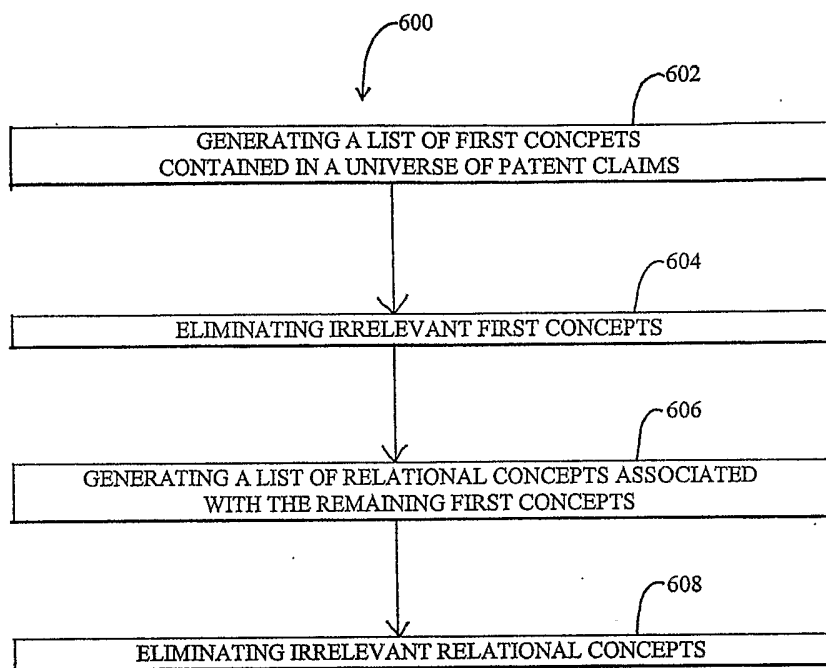


FIG. 6



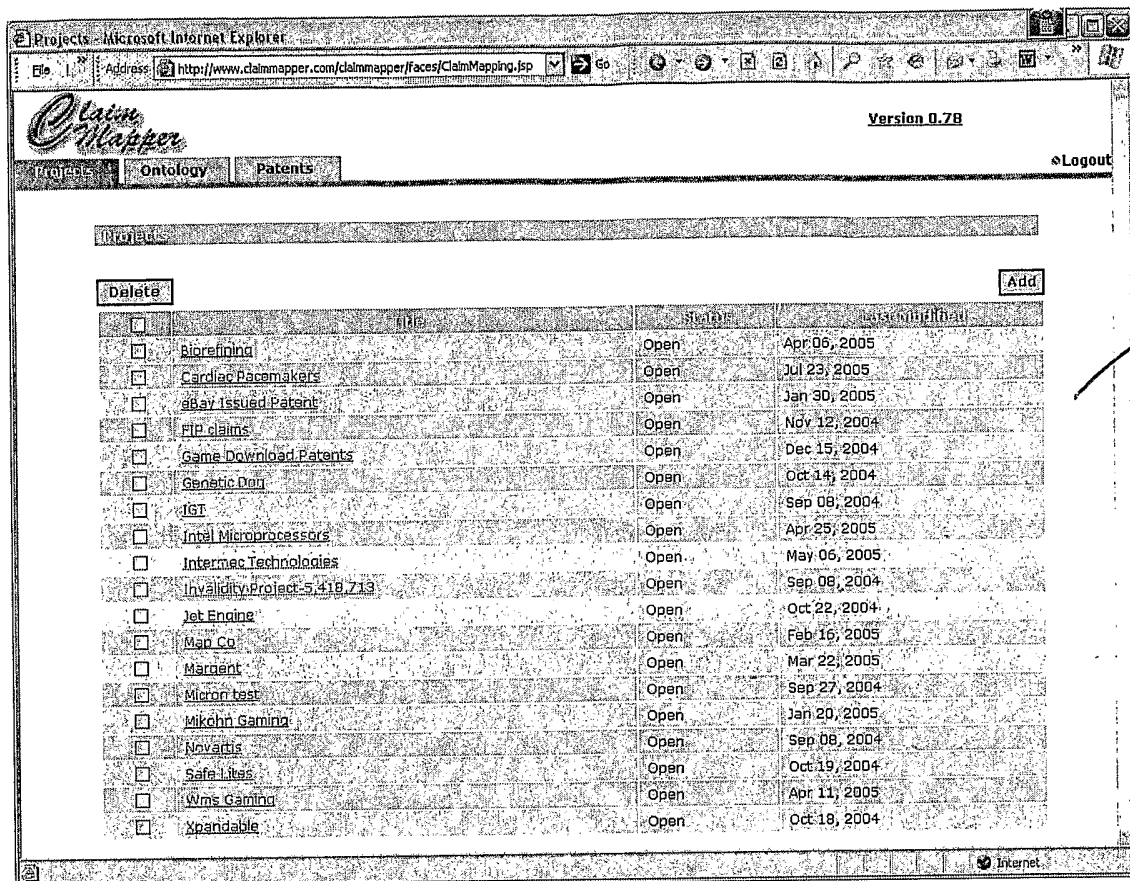


FIG. 7A

Project Details - Microsoft Internet Explorer

Address: http://www.daimmapper.com/daimmapper/faces/ProjectsListing.jsp

Version 0.7B

Projects | **Ontology** | Patents | Mining

Wms Gaming

Logout

Project Details

Project [Edit Details](#) [Patents](#) [Patent Rankings](#) [Projects List](#)

Title: Wms Gaming
 Status: Open
 Last Modified: Apr 11, 2005

Patents

Show 10 patents per page. Go to Page

Delete: [First](#) [Previous](#) Patent 1 to 10 of 69 [Next](#) [Last](#)

Patent ID	Title	Rankings
<input type="checkbox"/> 20,030,190,030	375652 Gaming machine with video mode payoff multiplier	View/Change
<input type="checkbox"/> 20,040,219,969		View/Change
<input type="checkbox"/> 20,050,054,423		View/Change
<input type="checkbox"/> 20,050,054,440		View/Change
<input type="checkbox"/> 5,995,903	Coin fill and delivery system for gaming machines	View/Change
<input type="checkbox"/> 5,401,024	Keno type video gaming device	View/Change
<input type="checkbox"/> 5,415,404	Multi-pay video poker machine	View/Change
<input type="checkbox"/> 5,423,541	Fractional branching reel-type slot machine	View/Change
<input type="checkbox"/> 5,449,173	Reel-type slot machine with supplemental payoff	View/Change
<input type="checkbox"/> 5,456,465	Method for determining payoffs in reel-type slot machines	View/Change

Internet

FIG. 7B

Claims List - Microsoft Internet Explorer
Address: http://www.daimmapper.com/daimmapper_staging/faces/PatentCrossReference.jsp#

Claim Mapper Version 0.93_06
Patents Mining Wms Gaming Logout

Patent [Edit Details](#) [Claims Summary](#) [Index](#) [Cross Reference](#) [Rankings](#) [Patents List](#) [Go To USPTO Patent Families](#)

Patent #	5,986,903	Title	Coin fill and delivery system for gaming machines
Mapping Status	No mapping has been done for this patent.	Family	none

Claims Summary Index Cross Reference Rankings Patents List Go To USPTO Patent Families

Claim	Claim Text	Unpublished	Action
<input type="checkbox"/> 1	A gaming machine, comprising: a) a game cabinet s...opper with a quantity of coins quickly and easily;	<input checked="" type="checkbox"/>	Edit
<input type="checkbox"/> 2	The gaming machine according to claim 1, further ...g removed from said chute when the door is opened.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 3	The gaming machine according to claim 1, wherein said opening is located in the top of the cabinet.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 4	The gaming machine according to claim 1, wherein the coins fall by gravity through the chute to said hopper.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 5	The gaming machine according to claim 1, wherein said means for delivering includes a coin escalator.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 6	The gaming machine according to claim 5, wherein ... and coin escalator are mounted on a movable sled.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 7	The system according to claim 6, wherein said sled is removably supported on an inclined ramp.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 8	The gaming machine according to claim 1, wherein ...oval of said hopper and said means for delivering.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 9	The system according to claim 8, wherein said mea...g removal includes a door located in said cabinet.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 10	The system according to claim 8, wherein said mea...ng removal includes a removable payout receptacle.	<input type="checkbox"/>	Edit
<input type="checkbox"/> 11	A gaming machine comprising: a) a game cabinet; ...ng removed from the chute when the door is opened.	<input checked="" type="checkbox"/>	Edit
<input type="checkbox"/> 12	A coin fill and delivery system for a gaming mach... sled that is removably supported in said cabinet.	<input checked="" type="checkbox"/>	Edit

720

FIG. 7C

Patent Summary - Microsoft Internet Explorer
Address: http://www.claimmapper.com/claimmapper_staging/faces/ClaimList.jspx
Version 0.93_06
Logout

Projects Patents Mining Wms Gaming

Patent Summary

Patent Edit Details Claims Summary Index Cross Reference Rankings Patents List Go To USPTO Patent Families

Patent #	5,396,903	Title	Coin fill and delivery system for gaming machines
Mapping Status	No mapping has been done for this patent.	Family	none

Details Claims Drawing Status Summary Index Cross Reference Rankings

Claim Number	Depends on	Claim Text	Comments	Original
1	N/A (Independent)	Gaming Machine		
2	1			
3	1			
4	1			
5	1			
6	5			
7	6			
8	7			
9	8			
10	8			
11	N/A (Independent)	Cabinet		
12	N/A (Independent)	Cabinet		

730

Internet

FIG. 7D

Patent CrossReference - Microsoft Internet Explorer
Address: http://www.claimmapper.com/claimmapper/faces/PatentCrossReferer

Claim Mapper Version 0.78
Protocols | Ontology | Patents | Mining | [New Patent](#) | [Wms Gaming](#) | [Add Patent](#) | [Logout](#)

Patent [Edit](#) [Details](#) [Claims](#) [Summary](#) [Index](#) [Cross Reference](#) [Rankings](#) [Patents List](#) [Go To USPTO](#)

Title: coin fill and delivery system for gaming machines.
Patent #: 5,966,903
Mapping Status: No mapping has been done for this patent.

[Details](#) | [Claim](#) | [Drawing Sheet](#) | [Summary](#) | [Index](#) | [Cross reference](#) | [Rankings](#)

Show: Independent Claims Only Dependent Claims Only Both

Limitation Concepts [Add Patent Concept](#) [Edit Mapping](#)

Limitation Concepts	claim 1	claim 2	claim 3
<input checked="" type="checkbox"/> Cabinet		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
hasLimitation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Gaming Machine	<input checked="" type="checkbox"/>		
hasLimitation	<input checked="" type="checkbox"/>		
hasLimitation	<input checked="" type="checkbox"/>		
hasLimitation	<input checked="" type="checkbox"/>		
hasLimitation	<input checked="" type="checkbox"/>		

Done Internet

740

FIG. 7E

The screenshot shows a web browser window titled "Patent CrossReference - Microsoft Internet Explorer". The address bar shows "http://www.daimmapper.com/daimmapper_staging/faces/PatentCross...". The page header includes the "Claim Mapper" logo and "Version 0.93_06". Navigation tabs include "Patents" and "Mining".

The main content area features a "Patent" section with the following details:

Patent #	5,986,903	Title	Coin fill and delivery system for gaming machines
Mapping	No mapping has been done for this patent.		
Status	none		

Below this is a "Cross reference" section with radio buttons for "Independent Claims Only", "Dependent Claims Only", and "Both". There are also checkboxes for "Concept", "Component", and "Constraint".

The "Limitation Concepts" section includes an "Add Patent Concept" and "Add Patent Component" button, and an "Edit Mapping" button.

The mapping table below shows the following data:

Limitation Concepts	1	2	3	4	5	6	7	8	9	10	11	12
Gaming Machine	<input checked="" type="checkbox"/>											
Cabinet										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Handwritten annotations include "750" pointing to the "Cross reference" section, "752" pointing to the "Gaming Machine" row, and "752 752" pointing to the "Cabinet" row.

FIG. 7F

Patent Claim - Microsoft Internet Explorer
Address: http://www.claimapper.com/claimmapper/faces/ClaimMapping.jsp

Claim Mapper Version 0.78

Ontology Patents Mining

Patent Edit Details Claims Summary Index Cross Reference Rankings Patents List Go To USPTO

Title: Coin fill and delivery system for gaming machines
Patent #: 5,986,903
Mapping Status: No mapping has been done for this patent.

Claim Details Map

Claim No: 1
Independent Claim: true
Notes:
Mapping Status: Partial

Claim Class: Gaming Machine
Mapping Status: Partial Save Delete Select Claim Class Add Limitation

Claim	Limitation	Value	Mapping
<input type="checkbox"/> Gaming Machine			Browse
<input type="checkbox"/> hasLimitation	Game Display		Browse Details Edit Remove
<input type="checkbox"/> hasLimitation	Cabinet		Browse Details Edit Remove
<input type="checkbox"/> hasLimitation	Payout Receptacle		Browse Details Edit Remove
<input type="checkbox"/> hasLimitation	Coin Hopper		Browse Details Edit Remove
<input type="checkbox"/> hasLimitation	Chute		Browse Details Edit Remove
<input type="checkbox"/> hasLimitation	The coin hopper and an opening in the cabinet are sized to allow coins to be easily poured into the hopper.		Browse Details Edit Remove

A gaming machine, comprising: a) a game cabinet supporting a game display and a payout receptacle; b) a coin hopper located in said cabinet for storing a quantity of coins; c) means for delivering coins from the hopper to the payout receptacle; and d) means for communicating the hopper with the exterior of the cabinet to allow the hopper to be filled with coins including an opening located in the cabinet and a chute connecting said opening with the hopper, said opening and said hopper being dimensioned to allow a quantity of coins to be poured therein, whereby the game operator can supply the hopper with a quantity of coins quickly and easily.

FIG. 7G

The screenshot shows the ClaimMapper web application interface. At the top, there is a navigation bar with tabs for 'Projects', 'Ontology', 'Patents', and 'Mining'. The 'Ontology' tab is active. Below the navigation bar, there is a search area with a 'Search:' label and an input field. A 'Show 20 Claim Concepts per page' button and a 'Refresh' button are also present. The main content area displays a table of claim concepts. The table has two columns: 'Claim Name' and 'Description'. The first row is 'Gaming Machine' with a description of 'Class created for Claim by ClaimMapper'. The second row is 'wagering game system' with a description of 'Class created for Claim by ClaimMapper'. The third row is 'CPU remote from gaming machine' with a description of 'Class created for Claim by ClaimMapper'. The fourth row is 'Patent 69940127945: Claim 1' with a description of 'Class created for Claim by ClaimMapper'. The fifth row is 'Patent 6990961: Claim 1' with a description of 'Class created for Claim by ClaimMapper'. The sixth row is 'Instruction Execution in a Microprocessor' with a description of 'Class created for Claim by ClaimMapper'. The seventh row is 'Patent 69920080969: Claim 1' with a description of 'Class created for Claim by ClaimMapper'. The eighth row is 'Physical Electronic Digital Key' with a description of 'Class created for Patent by ClaimMapper'. The ninth row is 'Security Electronic Key' with a description of 'Class created for Patent by ClaimMapper'. The tenth row is 'Physical Electronic Digital Key' with a description of 'Class created for Patent by ClaimMapper'. The eleventh row is 'key for acquiring and playing digital content' with a description of 'Class created for Patent by ClaimMapper'. The twelfth row is 'key obtained from key provider' with a description of 'Class created for Patent by ClaimMapper'. The thirteenth row is 'digital content marked with unlock code' with a description of 'Class created for Patent by ClaimMapper'. The fourteenth row is 'key associated with key code' with a description of 'Class created for Patent by ClaimMapper'. The fifteenth row is 'playing device operable with physical electronic digital key' with a description of 'Class created for Patent by ClaimMapper'. The sixteenth row is 'playing device unlocked if key code is associated with unlock code' with a description of 'Class created for Patent by ClaimMapper'. Handwritten annotations '802' and '804' are present on the image. '802' is written near the search area, and '804' is written near the 'Gaming Machine' entry in the table.

FIG. 8A

The screenshot shows a web browser window titled 'Ontology - Microsoft Internet Explorer' with the address 'http://www.claimmapper.com/claimmapper/faces/OntologyPage.jsp'. The application header includes the 'Claim Mapper' logo, navigation tabs for 'Projects', 'Ontology', 'Patents', and 'Mining', and a 'Logout' link. The main content area displays the 'Ontology' for 'Gaming Machine'. It includes fields for 'Name' (Gaming Machine) and 'Description'. Below this is a table of subclasses with columns for 'Concept Name' and 'Description'. The subclasses listed are: 'Money Handler', 'cabinet', 'Game Display', 'payout', 'game', and several patent claims (e.g., 'Patent 6394612, Claim 13'). Handwritten annotations '804' and '810' are present near the 'Gaming Machine' name and the 'Money Handler' entry, respectively. The 'Money Handler' entry has a handwritten '812' next to it. The browser status bar at the bottom shows 'Done' and 'Internet'.

Concept Name	Description
<input type="checkbox"/> Money Handler	
<input type="checkbox"/> cabinet	
<input type="checkbox"/> Game Display	
<input type="checkbox"/> payout	
<input type="checkbox"/> game	
<input type="checkbox"/> Patent 6394612, Claim 13	Class created for Claim by ClaimMapper.
<input type="checkbox"/> Patent 5472197, Claim 1	Class created for Claim by ClaimMapper.
<input type="checkbox"/> CPU remote from gaming machine	
<input type="checkbox"/> Patent 4811325, Claim 1	Class created for Claim by ClaimMapper.
<input type="checkbox"/> Patent 4022227, Claim 1	Class created for Claim by ClaimMapper.
<input type="checkbox"/> Patent 20030130030, Claim 1	Class created for Claim by ClaimMapper.

FIG. 8B

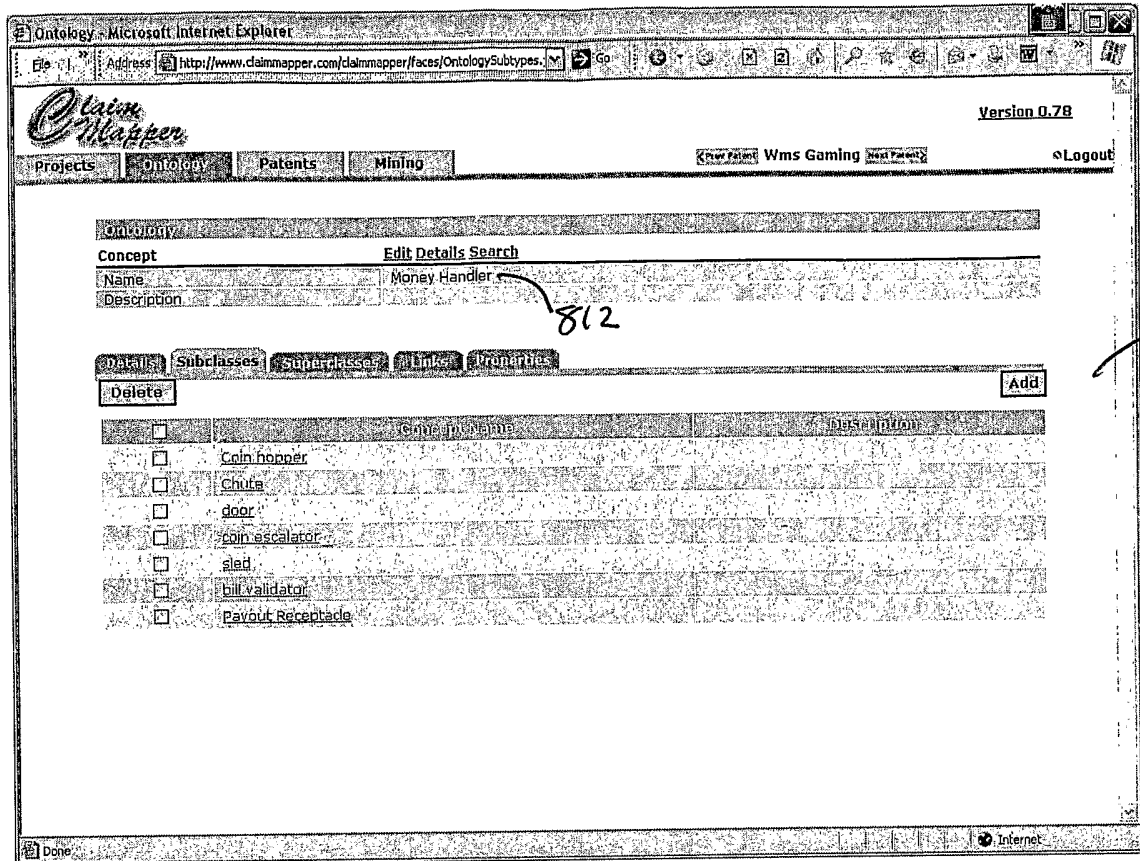


FIG. 8C

The screenshot shows the Claim Mapper web application. At the top, the browser title is "Mining - Microsoft Internet Explorer" and the address bar shows "http://www.claimmapper.com/claimmapper_staging/faces/MiningRed...". The application header includes the "Claim Mapper" logo, "Version 0.93_06", and navigation tabs for "Projects", "Patents", and "Mining". A user is logged in as "Wms Gaming".

The main content area displays a project overview for "Wms Gaming" with details: Title: Wms Gaming, Status: Open, Last Modified: Apr 11, 2005. Below this are tabs for "Concepts", "Components", "Constraints", and "Patents". A message states "Unresolved 22 Claim(s) in 7 Patent(s)" with an "Update" button. A table lists these claims with descriptions and "Include/Exclude" options.

Handwritten annotations include "907", "908", "909", "900", "904", and "902" with arrows pointing to specific elements in the interface.

Name	Include	Exclude
A coin handling device that includes a hopper and an escalator for receiving coins from the hopper, extending upwardly from the hopper, wherein at least part of the escalator is downwardly foldable toward the hopper to reduce height of the device.	<input type="radio"/>	<input type="radio"/>
A device for counting coins as they are dispensed from a coin escalator in a gaming machine that includes a cover plate having two positions corresponding to two diameters of coins wherein the cover plate includes switch means and coin guides for direction.	<input type="radio"/>	<input type="radio"/>
A device for counting coins as they are dispensed from a coin escalator in a gaming machine that includes a roller arm contacting coins the roller arm positioned as a function of coin diameter to insure accurate counting of coins dispensed.	<input type="radio"/>	<input type="radio"/>
A device for detecting reel position on a slot machine that includes a drive gear and a driven gear having a gear ratio relative to the drive gear enabling signalling of the home position of the reel and intermediate reel position.	<input type="radio"/>	<input type="radio"/>
A docking assembly in a gaming machine that includes a gaming control board including a memory storing instructions for randomly selecting at least one game outcome in response to a wager and a docking mechanism for releasably interconnecting the gaming board.	<input type="radio"/>	<input type="radio"/>
A door monitoring system for a gaming device that includes a low power oscillator coupled to a set input of an S/R latch and a switch connected to ground at one end and electrically coupled between the oscillator and set input at a second end.	<input type="radio"/>	<input type="radio"/>
A game of chance for a gaming machine that includes a maze-based bonus game, including an indicator and consumable elements wherein the indicator consumes the elements in response to manual control by a player.	<input type="radio"/>	<input type="radio"/>
A game of chance for a gaming machine that includes a maze-based bonus game, including an indicator and consumable elements wherein the indicator consumes the elements wherein the processor entirely determines movement of the bonus generating indicator.	<input type="radio"/>	<input type="radio"/>

FIG 9A

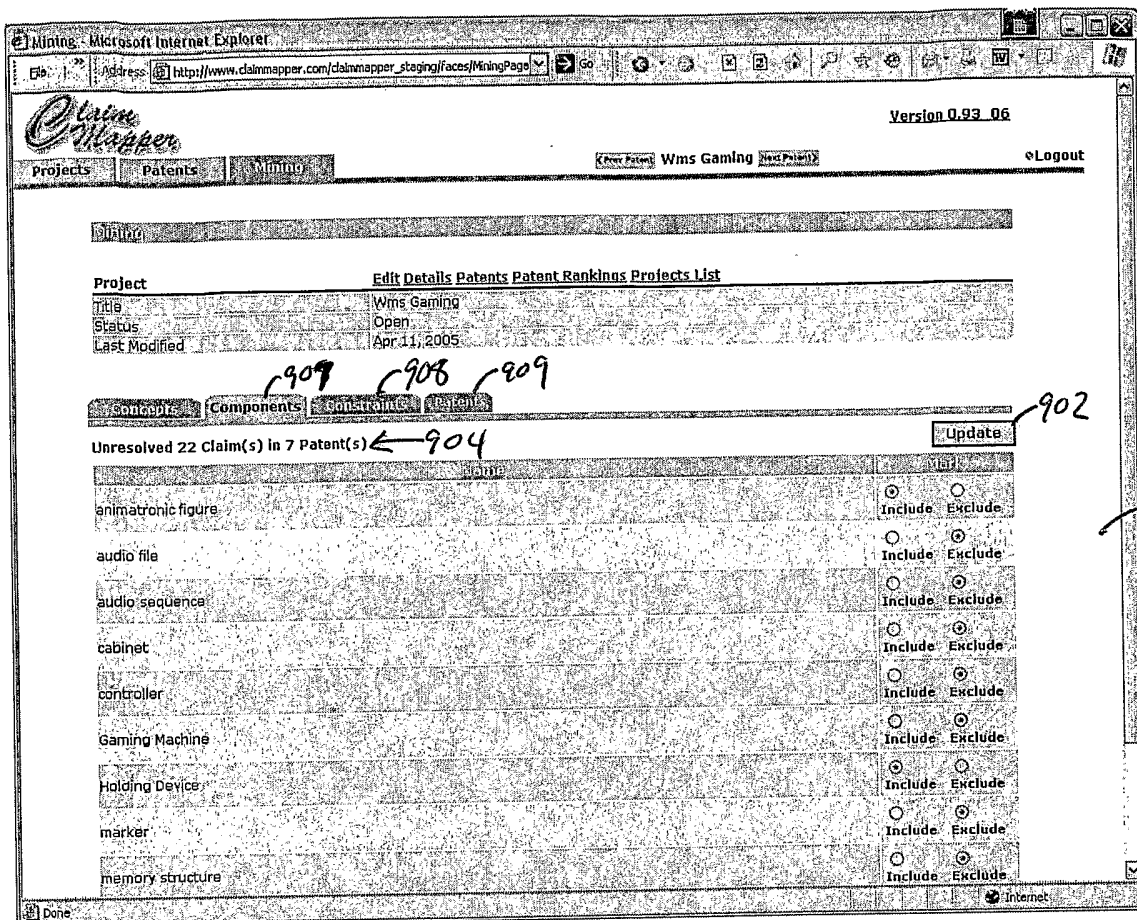


FIG. 9B

Claim Mapper Version 0.93_06

Projects Patents Mining Wms Gaming Logout

Project [Edit Details](#) [Patents](#) [Patent Rankings](#) [Projects List](#)

Title: Wms Gaming
 Status: Open
 Last Modified: Apr 11, 2005

Patent Number	Quantity	Description
5386903	1	Gaming Machine
5401024	4	Gaming Machine for Playing Keno
5472497	1	Gaming Machine; Holding Device
6203428	1	Video gaming machine with display of game board
	7	Video gaming machine with display of game board
	8	Video gaming machine with display of game board
	13	Video gaming machine with display of game board
	17	Video gaming machine with display of game board
	18	Video gaming machine with display of game board
	19	Video gaming machine with display of game board
	46	Video gaming machine with display of game board
6722979	5	A hybrid slot machine having a wagering game that includes a basic game and a bonus game with the bonus game being triggered by a start-bonus outcome in the basic game
6786818	1	Slot Machine with a game and simulated reels
6800027	9	wagering game system

920

http://www.claimmapper.com/claimmapper_staging/faces/MiningPage.jspx# Internet

F16.9C

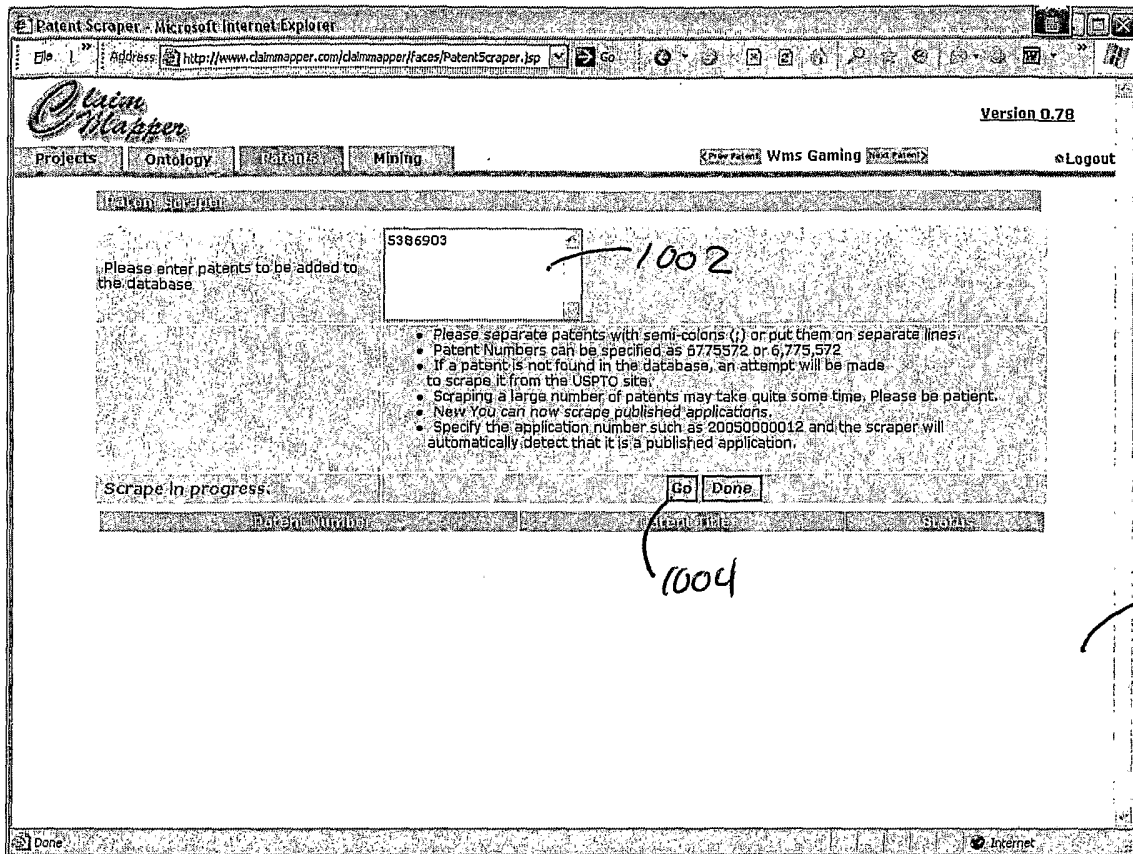
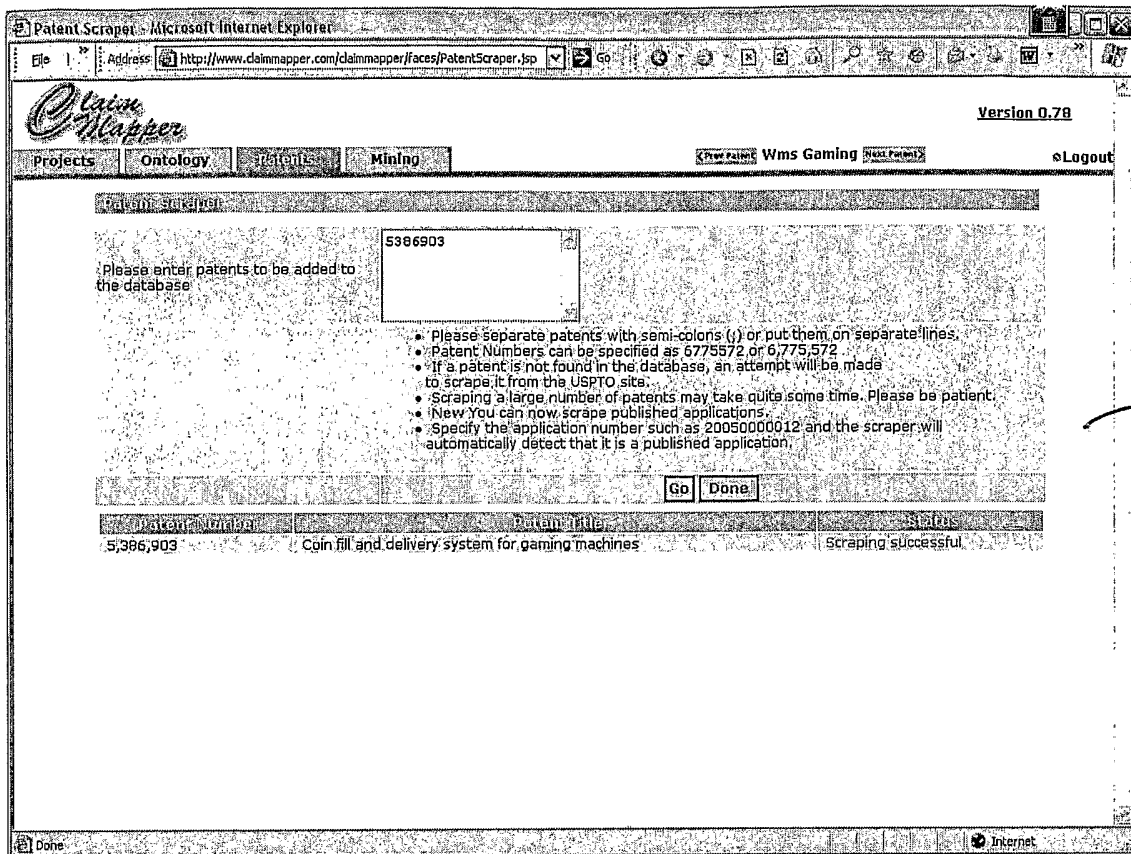


FIG. 10A



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FIG. 10 B