

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
2 October 2003 (02.10.2003)

PCT

(10) International Publication Number
WO 03/081387 A2

(51) International Patent Classification⁷: **G06F**

(21) International Application Number: PCT/US03/08221

(22) International Filing Date: 18 March 2003 (18.03.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/364,743 18 March 2002 (18.03.2002) US

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(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMPUTER ASSISTED AND/OR IMPLEMENTED PROCESS AND SYSTEM FOR MANAGING AND/OR PROVIDING A MEDICAL INFORMATION PORTAL FOR HEALTHCARE PROVIDERS

(57) Abstract: The invention provides a method, system, and computer program device for a medical information portal, providing a key to medical content on the internet. The invention may include one or more of the following sets of tools, in which various resources are organized in a manner which is intuitive for a healthcare professional: diagnostic tools for research of diseases, learning tools for professional development, patient tools for patient resources, technology tools on using health technology, news and updates tools, quick-reference tools, and/or electronic assistant tools. According to an aspect of the present invention, healthcare resources may be accessed via the Internet. Optionally, the system includes user registration data for each user, and certain resources may be restricted to appropriate users. The system advantageously provides, utilizing the sets of tools, a unified and organized access to a wide variety of a large number of resources that would otherwise be too confusing and/or unwieldy to access, especially in its entirety.



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COMPUTER ASSISTED AND/OR IMPLEMENTED PROCESS AND SYSTEM FOR MANAGING AND/OR PROVIDING A MEDICAL INFORMATION PORTAL FOR HEALTHCARE PROVIDERS

RELATED APPLICATIONS

5 This application claims priority to U.S. Patent Application No. 60/364,743, "Computer Implemented and/or Assisted Process and System for MerckMedicus" filed March 18, 2002, incorporated herein by reference.

 This application is related to the following U.S. Patent applications: Attorney docket numbers 105456.123, 105456.124, 105456.125, 105456.126, and 105456.127, to the same inventors, and all of
10 which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

 The present invention is directed to computer related and/or assisted systems, methods, and
15 computer program devices for unified access to professional resources in the medical field. More particularly, it relates to methods and systems for managing and/or providing unified access to professional healthcare resources for healthcare professional users, e.g., physicians and other healthcare providers, including where access to some resources may be restricted to certain types of healthcare professional users.

Description of the Related Art

 In the healthcare field, healthcare professionals conventionally may obtain information from medical publishers, with most of this information being just in print. On the other hand, academic institutions have considerable libraries, which unfortunately are not universally available to physicians. Hence, paper resources with healthcare information may be considerable but difficult to
25 access.

 In an attempt to provide information electronically, early websites with limited information were sponsored by a variety of commercial entities, academic institutions, or medical associations. There was, nevertheless, a lack of awareness among physicians of the web as a resource for providing information and/or other resources needed by physicians. Premium resources might be provided on
30 some of these sites, nevertheless, there was limited exposure and/or access to these premium resources for physicians and other healthcare professionals.

 These conventional means of providing information and other healthcare professional resources resulted in an uneven playing field for healthcare providers. In addition, there are a number of other hurdles facing office-based, rural and non-institutional healthcare professionals.

35 Physicians and other healthcare providers are presently adapted to the current situation. They are unlikely to change their current habits. Although there is a much greater degree of information

available, unfortunately it will not find its way into the hands of physicians and healthcare providers, and ultimately will not result in improved healthcare. Nevertheless, the ability to save time and/or money is one of the primary motivators for physicians or healthcare professionals to change their habits.

Conventionally, the information and/or information gathering process is difficult and awkward for healthcare providers. The information might not be provided in one convenient place. Moreover, the information itself might be inconvenient. For example, if the information is provided by subscription, it is typically expensive to obtain multiple subscriptions. On the other hand information in textbooks might not be up-to-date. Further, textbooks, journals and libraries are not at all suited to physicians' nomadic working style, which typically includes travel between an office and a hospital. Information which might be provided over the web may be jumbled or confused, with multiple places, passwords, formats, browsers and search engines provided for a variety of information. Ultimately, physicians and other providers have entirely too many subscriptions, accounts, ID's and passwords, making the information awkward.

With regard to utilizing the Internet, the physicians might suspect the quality of information or services provided online. Moreover, such information and services might be biased, for example as a result of a sponsor of a particular product, unbeknownst to the users. Where information in sites is searchable, the search engines that are provided might not retrieve search results that are most relevant to the physicians' query.

In some situations, the access to information or services might be tied to a specific license or specialized access technology. For example, in order to obtain certain information or services, the physician might be required to use a specific computer or install certain technology.

In addition, sites that are provided by pharmaceutical companies do not tend to focus on physicians. These sites are product driven and patient oriented. They fail to provide for the needs of the physician as a customer. In short, it is difficult to obtain information or services via conventional methods.

One specific example of a website directed to physicians is Medscape/WebMD. Unbeknownst to physicians, however, Medscape/WebMD is commercially sponsored and exhibits a bias. As another example, this site gives physicians limited access to premium resources, such as the best journals and text, because there is no financial incentive to make this information available. Moreover, typical of these types of sites, Medscape/WebMD does not have access to the premium resources sufficient to place them online.

Meanwhile, physicians are facing an increasing number of pressures. These pressures on healthcare practitioners include an increase in time pressures, perhaps caused by busy practices and overwhelming paperwork. At the same time, healthcare practitioners face decreasing practice revenues. They also face information overload, with a decreasing amount of time to sort through the relevant information.

The inventors have determined that physicians or other healthcare professionals engage in a number of online activities, including literature searches, reading medical news in the professional press, reading professional journals, finding patient educational materials, using drug reference databases, researching upcoming meetings, engaging in online continuing medical education (CE),
 5 reading medical news in the lay press, communicating with colleagues, finding out about clinical trials, learning about medical devices, reading medical text, and/or participating in MD chat rooms. It is estimated by the inventors that online CE is engaged in by 58% and 51% of primary care providers and physician specialists, respectively.

The inventors have determined that physicians refer to medical information sites primarily to
 10 find news and reference materials. In one study by the inventors in responding to a question about the three most important factors a physician uses in determining which medical information sites to use, the following responses were provided:

Description	Percent
Medline Literature Search	64%
Medical News Updates and Alerts	53%
Medical Journals	47%
Drug Reference Database	34%
Medical Textbooks	30%
Continuing Education Online Courses	29%
Patient Relationship Information and Guides	20%
Clinical Trial Information and Links	15%
Listing of Medical Organizations and Meetings	7%
Financial and World News	5%
Community and Messages Boards	4%

The inventors performed extensive research with physicians about website features and
 15 functionality, including advisory boards, one-on-ones and online user ability testing. The above table highlights the findings of the online usability test of 154 physician respondents.

According to the Online Physician Market Dynamics Study (ZIMENT), February/March
 2001, (Q9), quality, credibility and ease of use are the most important features to physicians in an
 online service. The following are attributes that are important to specialists and primary care
 20 physicians:

- Provides credible information
- Provides quality information
- Is easy to use*
- Provides up-to-date health and medical information*
- 25 • Enables effective research of usual cases or conditions

- Is comprehensive
- Offers premium medical resources not easily accessible elsewhere
- Helps physicians communicate better with patients
- Is available to doctors only and not general consumers
- 5 • Offers ability to customize site based on preferences or specialty
- Has a professional look and feel
- Is unique from other sites

(* These attributes are less important to specialists than primary care physicians.)

Certain aspects of conventional systems for providing healthcare information are illustrated
 10 by way of example in Figure 1, also described in U.S. Patent 6,482,156, Iliff, incorporated herein by
 reference. Iliff concerns a computerized medical diagnostic and treatment advice system including
 network access. Figure 1 is a block diagram illustrating a conceptual view of the database files and
 processes according to Iliff. A patient login process 150 is used to identify previously registered
 patients. An assistant login process 172 is used to identify previously registered assistants. An
 15 assisted patient login process 176 is used to identify previously registered patients. A patient
 registration process 152 is used to register new or first-time patients, and an assistant registration
 process 174 is used to register new or first-time assistants. If the patient is not already registered, an
 assisted patient registration process 178 is used to register the patient. Once logged in or registered,
 the system provides an evaluation process 154 that performs a patient diagnosis, and/or a treatment
 20 table process 156 to obtain current treatment information for a disease or diagnosis. Associated with
 these processes are a patient and assistant enrollment database 160, a consultation history database
 162, a patient response database 164, a medical history objects database 166, a patient medical history
 database 168, a pending database 169, and a patient medication database 170.

Other aspects of conventional systems are illustrated by way of example in Figure 2, also
 25 described in U.S. Patent 6,505,196, Drucker et al., incorporated herein by reference. Drucker
 discloses a method and apparatus for improving access to literature. Figure 2 illustrates an example
 interface for querying the MEDLINE database. There are a row of action buttons 200-204, each
 action button performing a different function. Below the action buttons 200-204 is a section 210 for
 entering query terms, with three text boxes 211-213.. Whatever is entered into the text boxes 211-213
 30 may be used for searching using three methods. The method is selected using pull-down boxes 214-
 216. Box 214, for example, contains the options subject, author name, or title word. Once a query is
 entered, the search may be performed. Once a query is submitted all the records that match the
 parameters are retrieved. If the search results are excessive, section 220 may be utilized to limit the
 search, and contains a number of limit boxes 221-228 each allowing the user to place limits on the
 35 search. For example, limits are provided for begin date/end date, articles written in a particular
 language, articles containing human/animal result data, age group, gender, number of articles,
 journals, publication types, and/or type of articles.

Unfortunately, conventional systems including those referred to above failed to meet these needs of physicians. Moreover, none of these conventional systems specifically provide an online unified method for a professional, e.g., a physician, healthcare practitioner, or medical student, to access healthcare resources, e.g., information and/or services. Moreover, using conventional systems, it is not possible to rapidly search for and/or locate content which is relevant to the healthcare professional's practice, for example, diagnosing illnesses, learning and advancing professional development both formally and informally, accessing resources appropriate for patients, obtaining information on healthcare technology, reviewing medical news, and/or accessing an electronic library of basic medical resources. There remains a need for such assistance for physicians and other healthcare practitioners.

The above prior art references, however, fail to meet the needs of today's medical community. For example, we have determined that physicians and healthcare professionals would prefer a website with cutting edge tools and resources, available in a single portal, as a key to the medical Internet. We have determined that physicians and other healthcare providers would prefer that such a site is ethical, credible, insightful, unbranded and objective. We have further determined that such a site should be for physicians and healthcare professionals, and provide access to premium medical resources.

BRIEF SUMMARY OF THE INVENTION

The present invention alleviates the deficiencies of conventional techniques and systems described above. The invention enables information provision to physicians and other healthcare providers that is more targeted, more efficient and may be permission-based. The invention provides assistance to help physicians to obtain timely and appropriate information to help them practice better medicine. The system, according to one or more aspects of the invention, provides the right information in an appropriate format. It also provides for appropriate filtering of information. Another enduring value which the invention provides to physicians is an aggregation of resources in one place. The present invention provides a fairly easy way of distributing information targeted to certain physicians, and allowing those physicians to expose themselves more readily to new information. The present invention fosters the best practice of medicine, which creates simultaneous benefits for physicians, and patients.

In at least one embodiment, the present invention brings together a vast collection of resources available to physicians. The invention provides a content library unmatched in its breadth. It optionally provides a search engine appropriate for perusing, e.g., Harrison's Online, Cecil's Textbook of Medicine, Praxis.md, the Merck Manual and many others. In addition, it provides one or more links to searches such as MD Consult that offer their own extremely comprehensive library. All told, these many resources cover primary care and just about every specialty imaginable. Users may utilize a global view or personalize their experience by choosing a specialty view, each of which may

be a portal in itself. An optional folder feature allows physicians to document their visits with extensive bookmarking to track their progress (e.g., previously conducted searches, research links). The invention includes a comprehensive professional development area with board review questions, a medical meeting calendar with unique content from many meetings and the ability to earn CME credit through a partner site. The patient resource area exceeds that of most physician web portals, and optionally includes access to an immense collection of patient handouts that physicians may easily print. Other resources may include coverage of what patients are seeing in the media, color illustrations and easy-to-read descriptions for numerous medical procedures, and resources to help locate clinical trials for patients. Clinical workflow tools optionally include clinical calculators, an ICD-9 search engine, drug interaction checking, and/or expert systems that assist with antibiotic choices (TheraDoc™) and difficult differential diagnoses (Dxplain™). Optionally, an electronic assistant provides quick links to relevant news and journals, career information and clinical decision support tools that may optionally be downloaded to a physician's handheld computer. A number of unique and powerful features may be provided, such as free access to subscription sites (e.g., Harrison's Online, Praxis.md, MD Consult). Another optional resource is a lectures and presentations builder, allowing users to prepare custom slides for incorporation into, e.g., PowerPoint documents, and including, e.g., public speaking advice.

Accordingly, one or more embodiments of the invention provides a system and/or method to permit rapidly searching for and/or locating content or services, such as in a unified user interface. Further, the present invention provides that the resources, e.g., content, information, and/or services, are correlated to the relevant segments of a healthcare professional's practice, for example, diagnosing illnesses, learning and advancing professional development both formally and informally, accessing resources appropriate for patients, obtaining information on healthcare technology, reviewing medical news, and/or accessing an electronic library of basic medical resources. Such a system and/or method facilitates a physician's nomadic working style and provides ready access to resources. Moreover, according to one or more embodiments of the present invention, access to certain premium resources is restricted, such as to users with professional licensure, medical students, and/or licensed physicians.

According to one or more embodiments of the present invention, there is provided a single online destination to provide a "front door" into online services for a physician or healthcare practitioner, to enhance customer convenience, improve efficiency of information delivery, and enhance data gathering and targeting. Further, one or more embodiments of the present invention provide a user with customizable, personalized healthcare information and state-of-the-art set of tools and resources, to help physicians or other healthcare providers efficiently practice medicine, integrate technology, and stay current. Content may include professional references, medical news, physician education, search engines, practice management information, and/or links to other resources. Resources may include disease education resources, professional development resources, practice management and technology, and patient resources. Other tools may be offered.

The invention provides a method, system and computer program device for providing healthcare resources such as information and services, to users, a medical information portal system and/or method for users including physicians and healthcare providers, implemented by a computer system. According to one or more embodiments of the present invention, the medical information portal system and/or method includes a diagnostic tool, managing at least one or disease diagnosis and research resources, including at least one of: a disease research assistance resource, a disease diagnosis assistance resource, treatment guidelines, medical references, and disease modules each having disease information regarding a disease. There is also provided a learning tool, managing professional development resources, including at least one of: online continuing medical education (CME) resources, links to connect the users to professional societies, links to connect users to medical school computer sites, downloadable lecture materials and slide kits, review information concerning preparing for board review, a calendar of medical meetings, and a meeting reporter. Also provided is a patient tool, managing patient resources, including media information on what patients are seeing in the media, patient handouts having information for patients, links to connect the users to patient support groups, clinical trial information, and at least one health guide.

Optionally, one or more embodiments of the present invention include a healthcare technology tool, managing healthcare technology resources, including at least one of: product reviews and/or selected articles on healthcare technology, a glossary of technical terms, and queryable information on technical terms.

Optionally, one or more embodiments of the present invention include a news tool managing medical news, including at least one of: selected items from medical journals for a current time period, selected recent medical findings, breaking news in the medical industry, news relating to selected medical specialties, and customized news relating to a personal preference indicated by the user

Optionally, the present invention includes a toolbar, including at least one of: (i) a search tool having at least one of a user-definable computer site search capability and predetermined computer site search capability; (ii) a folder, specific to the user, for storing documents, links, and personal preferences for the user; (iii) a grouping of references to basic medical resources, including one or more of at least one medical textbook, medical journals, at least one drug reference text, articles on evidence-based medicine; (iv) access to online continuing medical education (CME) services, online clinical decision support services, medical trivia; and (v) at least one medical dictionary. One of the resources in one or more tools is restricted to users with professional licensure. The invention may include a user registration component collecting user registration information including professional licensure information, a validation component for validating professional licensing information, a restriction component identifying whether the user has a professional licensure required for at least one restricted resources and restricting access to restricted resources. The unrestricted resources are selected from a group comprising: at least a portion of resources in the news tool, at least a portion of

resources in the patient tool, a Merck Manual, a Best Practices manual, one or more medical textbooks, one or more medical dictionaries, at least a portion of resources in the healthcare technology tool, the disease modules, the calendar of medical meetings, the meeting reporter, the links to professional societies, the links to medical school sites, information on residency and/or fellowship opportunities, clinical trial information, and information on alternative medicine. Optionally, the restricted resource is restricted to users identified as healthcare professionals or medical students, and the restricted resources are selected from a group comprising: the folder, at least one clinical tool, at least one medical textbook, at least one drug reference text, online CME services, lecture materials, and slide kits. Optionally, at least a portion of the at least one restricted resource is restricted to licensed physicians.

According to one or more optional embodiments of the present invention, the selected items from medical journals for a current time period are provided on a periodical basis from third-party providers. Also optionally, the disease modules include information searchable on signs and symptoms.

The invention optionally includes an electronic assistant tool, managing healthcare practice assistance resources, including at least one of: at least one clinical calculator, clinical evidence resources, selected news and medical literature articles, at least one medical residency and career resource, and selected patient resources.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

As such, those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

Further, the purpose of the foregoing abstract is to enable the U.S. Patent and Trademark Office and the public generally, and especially the scientists, engineers and practitioners in the art who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory

inspection the nature and essence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application, which is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way. These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

The above-mentioned and other advantages and features of the present invention will be better understood from the following detailed description of the invention with reference to the accompanying drawings, in which:

Figure 1 is a software conceptual diagram of a prior art diagnostic treatment and advice system.

Figure 2 illustrates an example user search interface for a prior art medical publication search system.

Figure 3 is a functional block diagram illustrating an example of a medical information portal for providing healthcare resources to users, according to one or more embodiments of the present invention.

Figure 4 is a functional block diagram illustrating an example of diagnostic tools for one or more embodiments of the medical information portal of the present invention.

Figure 5 is a functional block diagram illustrating an example of learning tools for one or more embodiments of the medical information portal of the present invention.

Figure 6 is a functional block diagram illustrating an example of patient tools for one or more embodiments of the medical information portal of the present invention.

Figure 7 is a functional block diagram illustrating an example of healthcare technology tools for one or more embodiments of the medical information portal of the present invention.

Figure 8 is a functional block diagram illustrating an example of medical news tools for one or more embodiments of the medical information portal of the present invention.

Figure 9 is a functional block diagram of the electronic assistants for one or more embodiments of the medical information portal of the present invention.

Figure 10 is a functional block diagram of the tool bar for one or more embodiments of the medical information portal of the present invention.

Figure 11 is an exemplary user interface illustrating a home page, including optional medical news tools, for one or more embodiments of the medical information portal of the present invention.

Figure 12 is an exemplary user interface for current medical periodical literature, for one or more embodiments of the medical news tools.

Figure 13 is an exemplary user interface for breaking news, for one or more embodiments of the medical news tools.

5 Figure 14 is an exemplary user interface for medical news, for one or more embodiments of the medical news tools.

Figure 15 is an exemplary user interface for specialized news, for one or more embodiments of the medical news tools.

10 Figure 16 is an exemplary user interface for consumer news, for one or more embodiments of the medical news tools.

Figure 17 is an exemplary user interface for diagnostic tools, for one or more embodiments of the medical information portal of the present invention.

Figure 18 is an exemplary user interface for a medical reference for user in connection with the diagnostic tools of Figure 17.

15 Figure 19 is an exemplary user interface for a disease diagnosis service, for use in connection with the diagnostic tools of Figure 17.

Figure 20 is another page of the exemplary user interface for the disease diagnosis service of Figure 19.

20 Figure 21 is a further page of the exemplary user interface for the disease diagnosis service of Figure 19.

Figure 22 is an exemplary user interface for a clinical practice guidelines clearinghouse, for use in connection with the diagnostic tools of Figure 17.

Figure 23 is an exemplary user interface for another medical reference, for use in connection with the diagnostic tools of Figure 17.

25 Figure 24 is an exemplary user interface for a medical textbook, for use in connection with the diagnostic tools of Figure 17.

Figure 25 is an exemplary user interface for a disease module, for use in connection with the diagnostic tools of Figure 17.

30 Figure 26 is an exemplary user interface for a set of medical references, for use in connection with the diagnostic tools of Figure 17.

Figure 27 is an exemplary user interface for a library of medical websites, for use in connection with the medical references of Figure 26.

Figure 28 is an exemplary user interface for a medical database, for use in connection with the medical references of Figure 26.

35 Figure 29 is an exemplary user interface for learning tools, for one or more embodiments of the medical information portal of the present invention.

Figure 30 is an exemplary user interface for a user profile, for use in connection with the learning tools of Figure 29.

Figure 31 is an exemplary user interface for lecture materials and presentations, for use in connection with the learning tools of Figure 29.

5 Figure 32 is an exemplary user interface for a standard reference of internal medicine slides and diagrams, for use in connection with the lecture materials and presentations of Figure 31.

Figure 33 is an exemplary user interface for a slide image bank, for use in connection with the lecture materials and presentations of Figure 31.

10 Figure 34 is an exemplary user interface for patient tools, for one or more embodiments of the medical information portal of the present invention.

Figure 35 is an exemplary user interface for information on what patients are seeing in the media, for use in connection with the patient tools of Figure 34.

Figure 36 is an exemplary user interface for another example of information on what patients are seeing in the media, for use in connection with the patient tools of Figure 34.

15 Figure 37 is an exemplary user interface for patient handouts, for use in connection with the patient tools of Figure 34.

Figure 38 is an exemplary user interface for clinical trial information, for use in connection with the patient tools of Figure 34.

20 Figure 39 is an exemplary user interface for healthcare technology tools, for use in one or more embodiments of the medical information portal of the present invention.

Figure 40 is an exemplary user interface for a healthcare technology query service, for use in connection with the technology tools of Figure 39.

Figure 41 is an exemplary user interface for a healthcare technology assessment service, for use in connection with the technology tools of Figure 39.

25 Figure 42 is an exemplary user interface for electronic assistant tools, for use in connection with one or more embodiments of the medical information portal of the present invention.

Figure 43 is an exemplary user interface for access to online shopping for medical technology, for use in connection with the electronic assistant tools of Figure 42.

30 Figure 44 is an exemplary user interface for access to an online and/or PDA-enabled resource, for use in connection with the electronic assistant tools of Figure 42.

Figure 45 is an exemplary user interface for illustrative search results for a predetermined site search for use in connection with, e.g., a toolbar, of one or more embodiments of the present invention.

35 Figure 46 is an exemplary user interface for illustrative search results for a user-defined search for use in connection with, e.g., a toolbar, of one or more embodiments of the present invention.

Figure 47 is an exemplary user interface for clinical tools, for use in connection with, e.g., the toolbar of one or more embodiments of the medical information portal of the present invention.

Figure 48 is an exemplary user interface for a decision support software clinical tool, for use in connection with the clinical tools of Figure 47.

5 Figure 49 is an exemplary user interface for an electronic consult service, for use in connection with the clinical tools of Figure 47.

Figure 50 is an exemplary user interface for use in connection with collection user registration and/or personal preference information, for use in connection with one or more embodiments of the medical information portal according to the present invention.

10 Figure 51 is an exemplary user interface for use in connection with completing the user registration of Figure 50.

Figure 52 is an exemplary user interface for use in connection with unregistered users, according to one or more embodiments of the medical information portal of the present invention.

15 Figure 53 is an exemplary block diagram of a network architecture for use in connection with one or more embodiments of the medical information portal of the present invention.

Figure 54 is a flow chart illustrating an example flow of control generally for tool access, according to one or more embodiments of the medical information portal of the present invention.

Figure 55 is a flow chart illustrating an example flow of control generally for tools display, according to one or more embodiments of the medical information portal of the present invention.

20 Figure 56 is a flow chart illustrating an example flow of control for user registration, according to one or more embodiments of the medical information portal of the present invention.

Figure 57 is a flow chart illustrating an example flow cascade for validating a registered user, according to one or more embodiments of the medical information portal of the present invention.

25 Figure 58 is a flow chart illustrating an example flow cascade for a user attempting to access a restricted resource, according to one or more embodiments of the medical information portal of the present invention.

Figure 59 is a block diagram of a computer used for implementing one or more embodiments of the medical information portal system, in accordance with a computer implemented embodiment of the present invention.

30 Figure 60 illustrates a block diagram of the internal hardware of the computer of Figure 59.

Figure 61 illustrates a block diagram of an alternative computer of a type suitable for carrying out the present invention.

DETAILED DESCRIPTION OF THE INVENTION

35 The following detailed description includes many specific details. The inclusion of such details is for the purpose of illustration only and should not be understood to limit the invention. Throughout this discussion, similar elements are referred to by similar numbers in the various figures

for ease of reference. In addition, features in one embodiment may be combined with features in other embodiments of the invention.

The present invention provides for an online destination site from which a library of healthcare resources may be accessed in a manner that is interactive and convenient specifically for healthcare professionals. The content provided on the site in accordance with the invention is intended to be comprehensive. The site in accordance with one or more embodiments of the invention is intended to be robust, easier to use, and better aligned with the needs of physicians, other healthcare professionals, and professionals in training. The invention is intended to provide access to a broad and deep array of high quality and credible information tools and resources to assist with the practice of medicine. The site in accordance with one or more embodiments of the invention is intuitively organized, and may be free from visual clutter. Content accessed in connection with use of the invention may be made available from the site provider and/or from third party sources. Optionally, access to certain tools and/or customization features may be provided subsequent to appropriate user registration, and/or access to certain tools may be restricted.

The present invention may provide a system and method for bringing together the vast array of resources available to physicians. Hence, according to one or more embodiments, the invention provides a content library unmatched in its breadth. It optionally provides a search engine appropriate for perusing content, such as, Harrison's Online, Cecil's Textbook of Medicine, Praxis.md, the Merck Manual and many others. In addition, it provides one or more links to searches such as MD Consult that offer their own extremely comprehensive library. All told, these many resources made accessible via one or more embodiments of the invention may cover primary care and/or any specialty. Optionally, users may utilize a global view or personalize their experience by choosing a specialty view, each of which may appear to be a medical portal in itself. An optional folder feature may allow physicians to, for example, document their visits with extensive bookmarking to track their progress (e.g., previously conducted searches, research links). The invention optionally may include a comprehensive professional development area, e.g., with board review questions; an optional medical meeting calendar with access to content from many meetings; and optionally the ability to earn/access CME credit through a partner site. The optional patient resource area may exceed that of most physician web portals, and optionally may include access to an immense collection of patient handouts that physicians may easily print.

Other resources may include coverage of what patients are seeing in the media, color illustrations and easy-to-read descriptions for numerous medical procedures, and resources to help locate clinical trials for patients. Clinical workflow tools optionally may include clinical calculators, an ICD-9 search engine, drug interaction checking, and one or more expert systems that assist with antibiotic choices (TheraDoc™) and difficult differential diagnoses (Dxplain™). Optionally, an electronic assistant provides quick links to relevant news and journals, career information and clinical decision support tools that may optionally be downloaded to a physician's handheld computer or

PDA. A number of unique and powerful features may be provided, such as free access to subscription sites (e.g., Harrison's Online, Praxis.md, MD Consult). Another option is a lectures and presentations builder, allowing users to prepare custom slides for incorporation into, e.g., PowerPoint documents, and including, e.g., public speaking advice.

5 One or more aspects of the invention provide access to healthcare and medical resources. The term "resources" used herein is intended to encompass, e.g., information, services, content, applications, and anything else available electronically. Accordingly, in one or more embodiments of the present invention, medical information resources include, for example, one or more of reference books and/or databases; several outstanding and/or definitive medical information resources may be
10 accessed electronically, including:

- National Library of Medicine databases: MEDLINE, AIDSLINE, Bioethics Line, CANCERLIT,
- Harrison's Principles of Medicine,
- Dorland's Medical Dictionary,
- Physicians' Desk Reference (PDR) and PDR Drug Interaction Database,
- 15 • Mosby's GenRx, Patient GenRx and Drug Master Plus (drug interaction database),
- Merck Manual Online,
- Merck Manual Home Edition,
- Cecil Textbook of Medicine, and/or
- Best Practice of Medicine by PraxisMD

20 Optionally, the present invention may provide users with the ability to search some of these resources individually or user a search engine to retrieve relevant content from the collection of resources. Simple and/or advanced search capabilities may be provided.

Another medical information resource is MD Consult, a collection of medical information resources serving the clinical content needs of physicians and other healthcare providers. This is an
25 example of a resource normally available to physicians by subscription only, but may be provided to registered users of the present invention.

According to one or more embodiments of the present invention, resources may include news, such as available from headlines, abstracts, full journal articles from medical journals, e.g., JAMA, NEJM, Lancet, Annals of Internal Medicine, and BMJ. Other news resources may be provided from a
30 newswire service of breaking news stories about medicine, e.g., those that could impact a physician's practice. Resources may also include medial, specialty and/or consumer news. Such articles cover the business of healthcare, consumer medical news, and other health-related news items, and may be obtained from professional and/or lay press resources, e.g., Reuters, FaxWatch, and NewsRX. Optionally, the news directed to the user may be restricted to items of interest to the user, such as
35 matching user registration information.

Another example of medical information resources includes professional development resources and tools, e.g., continuing medical education (CME) information, online CME, a medical

meeting calendar with a list of at least major professional conferences, information and/or review modules regarding board review for various therapeutic areas for Board certification and re-certification, links to professional societies, links to government web sites, links to medical schools, and/or access to clinical trials information.

5 Another type of resource relates to patients, e.g., patient education materials such as leaflets, optionally editable/customizable; patient sheets, e.g., printable articles intended for patients to help them better understand their disease and treatment; patient health news, e.g., an archive of health-related news articles in the popular lay press (off line, online, and/or in print); clinical trial information, e.g., a searchable database of clinical trials such as sponsored by NIH and/or industry; 10 links to support groups serving patients, such as in various disease states; and/or a best health guide, having patient education materials and consumer medical news, that may be customizable, printable, and/or e-mailable.

Yet another type of resource relates to practice technology, including for example, health technology news, including news articles and features about technology issues affecting the practice 15 of medicine; evaluations of health technology vendors, e.g., review/comparison of the latest office technology for physician practices, such as billing and scheduling systems and electronic medical records management; interactive technology services, e.g., e-mail questions and answers, as well as FAQs, from a healthcare technology professor; a technology glossary, e.g., a searchable list of technology terms; and/or a practice technology assessment services, to assess a level of technological 20 sophistication in a doctor's practice.

A further type of resource relates to diagnostic assistance, including for example, disease explanations, to help doctors correctly diagnose, based on physician input of clinical information, and providing possible diagnoses, justifications, suggestions for additional clinical information to obtain, and/or list of specific signs/symptoms for a specific disease; practice guidelines providing evidence- 25 based clinical practice guidelines; and/or disease modules, providing overviews of many diseases, e.g., major and/or common disease, including e.g., epidemiology, pathophysiology, diagnosis, and treatment.

Optionally, an electronic folder may be provided for each user, in which the user may organize and store articles, patient materials, and/or links for their convenience and future reference.

30 Other types of resources include hospital offerings that address the needs of hospital-based audiences (residents, house staff, hospital physicians). Such resources may include, e.g., medical calculators/information, including medical and non-medical information, calculators and content from various sources that are targeted to the needs of residents and medical students; an organizer for medical content and tables on a PDA to assist users while they work with quick, problem-based 35 solutions to medical questions/clinical issues. Resources intended for hospital physicians include, e.g., reference texts, e.g., culled from core site content as most appropriate for hospital physicians,

PDA-downloadable content culled from the core site and customizable by the user; a programmable medical calculator for important clinical calculations.

Other resources include, for example, clinical support tools that provide evidence based therapies and treatments, dosage recommendations, based on patient-specific data; an online ICD-9 Code reference for patient education; PDA software; a web-enabled version of well-respected texts, e.g., Brunwald's Atlas of Internal Medicine, including disease images, charts, and tables, which are optionally downloadable for incorporation into, e.g., medical lectures; and a meeting reporter having news, analysis, posters, and lecture summaries from major medical meetings.

Figure 3 provides a block diagram of one or more embodiments of the medical information portal, according to the present invention. Preferably, the medical information portal is implemented on a computer system 301, which may be accessed by one or more users 303. The users may communicate, e.g., sign-in, register, and access resources, with the system in any usual manner, such as a portal over the Internet 333.

The system according to the present invention may include one or more of the following sets of tools, in which various resources are organized in a manner which is intuitive for a healthcare professional: diagnostic tools for research of diseases 305, learning tools for professional development 307, patient tools for patient resources 309, technology tools on using health technology 311, news and updates tools 313, quick-reference tools 315, and/or electronic assistant tools 317. One or more resources may be included in more than one set of tools, if appropriate, e.g., a glossary of medical terms. Various indexes, summaries, abstracts, etc., 335, 337 may be provided for resources or collections of resources, e.g., journal articles.

According to one or more aspects of the present invention, local healthcare resources 319 may be included and accessed directly by the system, e.g., a proprietary text. According to an aspect of the present invention, healthcare resources 323, 325, 327, 329 may be accessed via the Internet 333.

Resources may include, e.g., a journal 323, a medical school 325, a restricted access resource 327 for which a user must be certain criteria to obtain access, and/or patient-oriented resources 329.

Optionally, the system includes user registration data 331 for each user, indicating, e.g., user name and contact info and licensure information. The system may receive news also via one or more medical newswire services 321. The system advantageously provides, utilizing the sets of tools, a unified and organized access to a wide variety of a large number of resources that would otherwise be too confusing and/or unwieldy to access, especially in its entirety.

Figures 4-10 illustrate examples of sets of tools for use in connection with the present invention. One or more embodiments of the invention may include all, or a portion of, these sets of tools. Further, examples are provided of resources included with the tools, for illustration purposes. Hence, one or more embodiments of the present invention may include, omit, augment, and/or combine various resources. If appropriate, a resource may be included in more than one set of tools.

Moreover, resources may be proprietary to the operator of the system, or may be obtained from other parties, and may be located anywhere that is electronically accessible.

Reference is now made to Figure 4, illustrating an example of diagnostic tools 305 for one or more embodiments of the medical information portal of the present invention. The diagnostic tools 305 include, for example, disease research assistance 401, disease diagnosis assistance 403, treatment guidelines and “best practices” 405, medical references 407, and/or several disease modules 409 with professional explanations of diseases. In this example, the disease modules are optionally stored locally in the system. The system provides access to one or more disease research resources 413, one or more disease diagnosis resources (which is optionally restricted) 411, and/or one or more medical references (optionally restricted) 415, 417. Access may be provided locally and/or via a network, e.g., the Internet 333. In this way, resources directed to medical diagnosis that are accessed over the Internet may be made available to the user in a convenient grouping in a set of diagnostic tools, further meeting the healthcare professionals’ intuitive categorization of certain resources as directed to diagnosis.

Reference is now made to Figure 5, illustrating an example of learning tools 307 for one or more embodiments of the medical information portal of the present invention. The learning tools 307 include, for example, online continuing medical education (CME) 501 (information and/or providers); references (e.g., links, lists) to professional societies 503; references to medical schools 505; lecture materials 507 and portions thereof, e.g., libraries of slides, presentations, lecture outlines, etc.; medical board review information 509, e.g., board review materials, information on boards, etc.; and/or medical meetings calendar and medical meetings reporter 511. Some of these resources may be conveniently local to the system, for example, the meetings calendar 525, medical board information 523, and/or lecture materials 521. Other resources may be accessed via the Internet 333. Resources appropriate to learning tools include, e.g., CME providers 513, medical school sites 515, professional societies 517, and/or medical board sites 519. Access to resources may be provided locally and/or via a network, e.g., the Internet 333. In this way, resources directed to medical learning that are accessed over the Internet may be made available to the user in a convenient grouping in a set of learning tools, further meeting the healthcare professionals’ intuitive categorization of certain resources as directed to learning.

Reference is now made to Figure 6, illustrating an example of patient tools 309 for one or more embodiments of the medical information portal of the present invention. The patient tools 309 include, for example, one or more of: patient-oriented media references 601, patient handouts 603, patient support groups 605, clinical trials 607, and/or health guides. The system may include, as in this example, a database of patient handouts 611, and/or index and summaries to provide better access to, e.g., media references for patients 613, patient support groups 615, and/or clinical trials 617. Other resources may include articles appearing in the lay media 619, patient support group sites 621, and/or clinical trial sites 623. Access may be provided locally and/or via a network, e.g., the Internet 333. In

this way, resources directed to patients that are accessed over the Internet may be made available to the user in a convenient grouping in a set of patient tools, further meeting the healthcare professionals' intuitive categorization of certain resources as directed to patients.

Reference is now made to Figure 7, illustrating an example of healthcare technology tools for one or more embodiments of the medical information portal of the present invention. The healthcare technology tools 311 include, for example, product reviews 701, features healthcare technology articles 703, glossary of technical terms 705, and/or query-able information on technical terms or technology products. Some of these resources may be stored locally, e.g., healthcare technology articles 709. Access may be provided locally and/or via a network, e.g., the Internet 333. If appropriate or desirable, such as where the resources are sufficiently scattered, the system may include an index and summary of the resources, e.g., for product reviews 711. Resources may include in the illustrated embodiment, e.g., product reviews 713, and healthcare technology articles, 715. In this way, resources directed to healthcare technology that are accessed over the Internet may be made available to the user in a convenient grouping in a set of healthcare technology tools, further meeting the healthcare professionals' intuitive categorization of certain resources as directed to healthcare technology.

Reference is now made to Figure 8, illustrating an example of medical news tools 313 for one or more embodiments of the medical information portal of the present invention. The medical news tools 305 include, for example, selected current medical literature 801, latest medical findings 803, breaking medical news 805, medical specialty news 807, and/or customized medical news 809. Medical news resources may include, for example, medical journals 819, medical news 821, and/or one or more newswires of medical news 823. Appropriate and/or desirable indexes to resources may be provided, e.g., an index and summary to selected medical literature 811, to latest medical findings, and to breaking medical news 815. The medical news resources may be "selected" for a resource by any appropriate method, e.g., latest may be determined to be today's articles. Alternatively, the medical news resources may be "selected" and provided by a third party. Each user may, if desired, furnish preferences for customized medical news 817, which may be used to filter news into customized medical news 809. Access may be provided locally and/or via a network, e.g., the Internet 333. In this way, resources directed to medical news that are accessed over the Internet may be made available to the user in a convenient grouping in a set of medical news tools, further meeting the healthcare professionals' intuitive categorization of certain resources as directed to medical news.

Reference is now made to Figure 9, illustrating an example of electronic assistants tools 317 for one or more embodiments of the medical information portal of the present invention. The electronic assistants tools 317 include, for example, clinical calculators 901, references to selected news and medical literature articles 903, selected patient resources 905, clinical evidence resources 907, and/or medical residency and career resources 909. Optionally, resources provided by the electronic assistants tool are appropriate for downloading to user's electronic tool, especially where

the tool is portable, e.g., a PDA of a user 911, a handheld computer of a user 913, or other remote device 927. The system may provide a variety of patient handouts 925, medical calculators 929, medical guidelines 931, medical journals 819, patient-oriented articles 933, one or more residency gateways 935, and one or more medical career opportunities 937. Where appropriate or desirable, indexes, summaries, or links to selected resources may be provided, e.g., links to selected articles 915, to selected patient resources 917, to calculators and decision support 919, to clinical evidence resources 921, and/or to medical career resources 923. Access may be provided locally and/or via a network, e.g., the Internet 333. In this way, resources appropriate for the electronic assistants tool that are accessed over the Internet may be made available to the user in a convenient grouping in a set of electronic assistants tools, further meeting the healthcare professionals' intuitive categorization of certain resources as appropriate for an electronic assistant.

Reference is now made to Figure 10, illustrating an example of a toolbar 315 for one or more embodiments of the medical information portal of the present invention. The toolbar is intended to persist on the user's interface while accessing the site, in order to provide even easier access to the most commonly used resources. "Most commonly used" may be determined, e.g., by those a physician expects to have immediately at hand in their practice; these may include resources that are (or are not) provided in connection with another set of tools. The toolbar 315 includes, for example, clinical tools 1001, one or more search engines 1003, and/or commonly used medical resources 1005. Resources in the illustrated example include one or more clinical calculators 1021, medical textbooks 1023, medical journals 1025, drug reference texts 1027, medical articles 1029, medical dictionaries 1019, and/or CME providers 1031. Access may be provided locally and/or via a network, e.g., the Internet 333. Indexes may be provided where appropriate and/or desirable, e.g., to various clinical calculators 1011, to medical textbooks 1013, to selected journal articles and medical articles 1015, and/or to CME providers. Some resources may be provided locally, e.g., a site search engine 1007. Optionally, the system may include a folder for each registered user 1009 in which the user may store links and/or user-selected resources. In this way, resources appropriate for a toolbar that are accessed over the Internet may be made available to the user in a convenient grouping in a toolbar, further meeting the healthcare professionals' intuitive categorization of certain resources as those that should be immediately at hand.

Figure 11 is an exemplary user interface illustrating a home page 1100, including sets of tools, e.g., optional disease research tools 1101, professional development tools 1105, patient resource tools 1103, healthcare technology tools 1107, electronic assistant tools, medical news tools 1111, and/or toolbar 1113, for one or more embodiments of the medical information portal of the present invention. A user may select a set of tools (or a resource listed therein), or tab to the tools, and be presented with an appropriate user interface.

The toolbar 1113 may include a search; in the illustrated example, the tool bar includes a site search 1115, and a search of a particular resource, e.g., Medline 1117. The toolbar 1113 may

optionally include access to the user's folder 1121. The toolbar may include a set of clinical tools 1121; and a set of other resources 1123, a further explained herein. Optionally, the toolbar 1113 is displayed on every page whilst the user is at the portal according to the present invention.

The news and updates tools 1111 may include a variety of sets of resources, logically grouped. In the illustrated example, the news tools 1111 include selected current medical literature 1125 from journals; breaking news 1127; general medical news 1129; specialty news 1131; and/or selected consumer news 1133. News included in any or all of these resources may be provided by a third party provider. This is advantageous particularly where resources require an appropriate license. As an alternative, the site may provide the selection of the news included in one or more resources, e.g., "current medical literature" may be for a specified number of days, e.g., 30 most recent days, from e.g., the ten most prestigious medical journals.

Figure 12 is an exemplary user interface for current medical periodical literature, for one or more embodiments of the medical news tools. In this example, the resource is provided by an independent third-party source, and a pop-up screen 1201 displays the third-party site. Alternatively, the third-party site could be displayed with a frame. Here, the third party has independently selected the provided articles and opinions

Figure 13 illustrates an example of a user interface for breaking news, for one or more embodiments of the medical news tools. In this example, the breaking news is provided by a third party, which has selected the articles independently, based on those that are expected to have immediate implications for the professional's practice. The resource is presented in this example in a pop-up screen 1301.

Reference is made to Figure 14, illustrating an example user interface for general medical news, for one or more embodiments of the medical news tools. In this example, the general medical news is provided by a third party resource. Accessing this resource causes the user interface to display a screen 1401 of medical news. Note that the toolbar 1113 optionally remains on the user interface in this example.

Reference is now made to Figure 15, illustrating an example user interface for specialized news, for one or more embodiments of the medical news tools. In this example, the specialty medical news is selected and provided by a third party resource. The specialty news corresponds to one or more specialties indicated by the user whilst registering. Accessing this resource causes the user interface to display a screen 1501 of selected specialty medical news. Again, note that the toolbar 1113 optionally remains on the user interface in this example.

Figure 16 is an example of a user interface for consumer news, for one or more embodiments of the medical news tools. In this example, the consumer medical news is provided by a third party resource, and advantageously is selected from news resources typically accessed by lay people, e.g., the New York Times. Accessing the consumer news resource in this example causes the user

interface to display a screen 1601 of consumer medical news. Again, note that the toolbar 1113 optionally remains on the user interface in this example.

Reference is now made to Figure 17, illustrating an example of a user interface for diagnostic tools, for one or more embodiments of the medical information portal of the present invention. The diagnostic tools may include a variety of sets of resources. The diagnostic resources themselves may be presented to the user individually and/or may be further logically grouped. In the illustrated example, the diagnostic tools include a one or more medical references, e.g., “Best Practice of Medicine” 1701; one or more diagnosis service, e.g., DxPlain (tm) 1703; a list of national treatment guidelines 1705; one or more general medical texts, e.g., the Merck Manual 1707; one or more medical textbooks, e.g., Cecil 1709; disease modules containing concise disease information, e.g., disease definition, epidemiology, pathophysiology, diagnosis and/or treatment guidelines; and/or other medical references 1713. In the present example, the toolbar 1113 remains on the user interface.

Reference is now made to Figure 18, illustrating an example user interface for a physician reference resource provided in connection with the diagnostic tools. In this example, the physician reference resource “Best Practice of Medicine” is provided by a third party, as may be typical for a standard reference text. The resource is presented in this example in a pop-up screen 1801.

Reference is now made to Figure 19, illustrating an example user interface for a disease diagnosis service, a resource accessed via the diagnostic tools, according to one or more embodiments of the present invention. In this example, the disease diagnosis resource is a service provided by a third party. The resource is presented in this example in a pop-up screen 1901.

Figure 20 is another page 2001 of the exemplary user interface for the disease diagnosis service of Figure 19. The present invention allows for interactive resources to interact with the user. In this case, the user is prompted for inputs to the diagnosis service. Figure 21 is a further page 2101 of the exemplary user interface for the disease diagnosis service of Figure 19, showing the case findings returned in response to the user inputs. The user may be interactively prompted for further inputs by a resource, such as shown in this example.

Reference is now made to Figure 22, illustrating an example user interface for a clinical practice guidelines resource, for use in connection with the diagnostic tools. In this example, the resource “National Guideline Clearinghouse” (tm) is provided by a third party. The resource is presented in this example in a pop-up screen 2201.

Reference is now made to Figure 23, illustrating an example user interface for another medical reference, for use in connection with the diagnostic tools of Figure 17. In this example, the medical reference, “The Merck Manual” is a standard publication that is provided by the site operator by obtaining any necessary permission. The resource is presented in this example in a pop-up screen 2301.

Figure 24 illustrates a user interface for a medical textbook as an example for use in connection with the diagnostic tools of Figure 17. In this example, the medical textbook is provided

by a third party provider. The resource is presented in this example in a pop-up screen 2401, and the toolbar 1113 optionally remains on the user interface.

Reference is now made to Figure 25, an example of a user interface for disease modules, for use in connection with the diagnostic tools. In this example, the disease modules are provided by the system operator. The disease modules are intended to provide a consistent level of information about each of various diseases. Hence, in this example, a disease module includes definition & classification information, epidemiology, pathophysiology, diagnosis information, and treatment guidelines. The resource is presented in this example in a pop-up screen 2501.

Reference is now made to Figure 26, an exemplary user interface for a set of medical references, for use in connection with the diagnostic tools of Figure 17. The medical references “resource” 2601 contains a further set of resources, in this example including a library of consult medical websites 2603, e.g., MD Consult (TM); a medical database 2605, e.g., Harrison’s Online; a standard medical text 2607, e.g., The Merck Manual; a medical textbook 2609, e.g., Cecil Textbook; a point-of-care reference 2611, e.g., Best Practice of Medicine; and/or a medical dictionary 2613, e.g., Dorland’s Medical Dictionary.

Reference is made to Figure 27, an example of a user interface for a library of medical websites, for use in connection with the medical references tools. In this example, the reference, MDConsult (TM) is a collection of other resources, including summaries and abstracts to assist the user. This example illustrates that a resource itself may provide yet another layer of intuitive groupings to the user, and may still be references by the present invention. The resource is presented in this example in a pop-up screen 2701.

Reference is now made to Figure 28, illustrating an exemplary user interface for a medical database, for use in connection with the medical reference tools. In this example, the medical database is provided by a third party, and is itself indexed, provides summaries, and is itself searchable. The resource is presented in this example in a pop-up screen 2801.

Figure 29 is an exemplary user interface for learning tools, for one or more embodiments of the medical information portal of the present invention. The learning tools “resource” 2901 contains a further set of resources, in this example including continuing education resources 2903; lecture presentation resources 2905; medical meeting calendar and meeting reporter 2907; board review preparation resources 2909; clinical trial information 2911; and/or professional society links and medical school links 2913. In the present example, the page includes the toolbar 1113.

Reference is made to Figure 30, an exemplary user interface for a user profile, for use in connection with the learning tools. In the present example, the user profile 3001 provides for collection of information relevant to commencing an online CME service.

Figure 31 illustrates an example of a user interface for lecture materials and presentations 3101, for use in connection with the learning tools. The resources collected in this set of tools include, e.g., visuals, such as from an Atlas of Internal Medicine, slides, illustrating medical concepts,

and/or text for conveying concepts. The resources may be photographs, drawings, charts, tables, statistics, text, etc. Individual visuals may be printed, or groupings (such as by topic) may be selected. In the present example, the toolbar 1113 is included.

5 Reference is now made to Figure 32, illustrating an exemplary user interface 3201 for a standard reference of internal medicine slides and diagrams, for use in connection with the lecture materials and presentations of Figure 31. In this example, the reference, the Braunwald Atlas of Internal Medicine Online is standard, and may be provided by a third party provider. The resource is presented in this example in a pop-up screen 3201.

10 Figure 33 provides an example of a user interface for a slide image bank, for use in connection with the lecture materials and presentations of Figure 31. In this example, the slide image bank may be proprietary, or may be provided by a third party provider. The slide image bank lists disease areas for which it provides visuals illustrating medical concepts. In this example, the resource is searchable. The resource is presented in this example in a pop-up screen 3301, and the toolbar 1113 optionally remains on the user interface.

15 Reference is now made to Figure 34, providing an example of a user interface for patient tools, for one or more embodiments of the medical information portal of the present invention. The patient tools 3401 may include a variety of sets of resources. The patient resources themselves may be presented to the user individually and/or may be further logically grouped. In the illustrated example, the patient tools 3401 include a one or more resources for what patients are seeing in the media 3403, e.g., TV shows, magazines, medical websites, newspapers, and by category, e.g., men's health, women's health, senior health, teen health, and children's health; a best health guide resource (itself containing further patient resources) 3405; a standard consumer medical text 3407, e.g., The Merck Manual of Medical Information, Home Edition; a collection of patient education handouts and/or sheets 3409; information on clinical studies 3411; and/or references to patient support groups 25 3413. In the present example, the toolbar 1113 remains on the user interface.

Reference is now made to Figure 35, an exemplary user interface for information on what patients are seeing in the media, for use in connection with the patient tools. In this example, the reference, the resources on what patients are seeing in the media may be provided by a third party provider, and may be a compilation of medical news appearing in the general media. The resource is presented in this example in a pop-up screen 3501. In this example, the toolbar 1113 is included in the user interface.

Figure 36 is an exemplary user interface for another example of information on what patients are seeing in the media. In this example, the reference, the news may be provided by a third party provider, e.g., the American Heart Association. The resource is presented in this example in a pop-up screen 3601.

Figure 37 is an exemplary user interface for patient handouts, for use in connection with the patient tools of Figure 34. In this example, numerous handouts appropriate for providing to patients

are accessible, and may be provided by a third party provider. Advantageously, the patient handouts may be personalized (e.g., by adding physician and/or patient information), printed, and/or e-mailed. The resource is presented in this example in a pop-up screen 3701. In the illustrated example, the toolbar 1113 remains on the user interface.

5 Figure 38 is an exemplary user interface for clinical trial information, for use in connection with the patient tools. In this example, the reference, the Center Watch, is a clinical trials listing service provided a third party provider. The resource is presented in this example in a pop-up screen 3801.

10 Figure 39 is an exemplary user interface for healthcare technology tools, for use in one or more embodiments of the medical information portal of the present invention. The healthcare technology tools 3901 may include a variety of sets of resources. The healthcare technology resources themselves may be presented to the user individually and/or may be further logically grouped. In the illustrated example, the healthcare technology tools 3901 include one or more resources for news about healthcare technology 3903; featured technology articles 3905; evaluations
15 of healthcare technology vendors 3907; a glossary/dictionary of technology terms 3909; a service for answering technology related questions 3911; and/or an online technology assessment of the user's office. In the present example, the toolbar 1113 remains on the user interface.

 Reference is now made to Figure 40, illustrating an exemplary user interface for a healthcare technology query service, for use in connection with the technology tools. In this example, the
20 technology query service, e.g., "Ask the Tech Professor", may be provided by a third party provider. The resource is presented in this example in a pop-up screen 3201; also in this example, the toolbar 1113 remains on the site.

 Reference is now made to Figure 41, illustrating an exemplary user interface for a healthcare technology assessment service, for use in connection with the technology tools. In this example, the
25 user is queried to obtain appropriate information characterizing the technology in the user's office. This resource may be provided by a third party provider. The resource in this example interacts with the user via a pop-up screen 4101. This example illustrates a portion of the toolbar 1113.

 Reference is made Figure 42, illustrating one example of a user interface for electronic assistant tools, for use in connection with one or more embodiments of the medical information portal.
30 The electronic assistant tools 4201 may include a variety of sets of resources. The electronic assistant resources themselves may be presented to the user individually and/or may be further logically grouped. In the illustrated example, the electronic assistant tools 4201 include a one or more clinical calculators 4203; a selection of news 4205; a collection of clinical evidence resources 4207; a collection of residency and career resources 4209; and/or a collection of patient resources. In the
35 present example, the toolbar 1113 remains on the user interface.

 Figure 43 is an exemplary user interface for access to online shopping for medical technology, for use in connection with the electronic assistant tools. Optionally, the invention may

include a menu 4301 providing the ability to shop a selection of online stores for healthcare technology. This example also illustrates another medical technology resource, concerning PDAs used in medical practice 4303.

Figure 44 is an exemplary user interface for access to an online and/or PDA-enabled resource, for use in connection with the electronic assistant tools. In this example, the reference, the ePocrates Rx (tm), is a program exclusively for handheld PDAs. Such reference may be proprietary or it may be provided by a third party provider. The resource is presented in this example in a pop-up screen 4401.

Reference is now made to Figure 45, illustrating an example user interface 4501 for illustrative search results for a predetermined site search for use in connection with, e.g., the toolbar, of one or more embodiments of the present invention. In this example, the search searched both the system's site and any sites of third party providers specified by the user. A predetermined search term may be selected by the user, or the user may input their selected search term. The resource is presented in this example in a pop-up screen 4501. The display presents the search results 4503. In the present example, the search results 4503 are grouped by resource type, to assist the user in efficiently identifying the information they need.

Figure 46 is an exemplary user interface for illustrative search results for another user-defined search for use in connection with, e.g., a toolbar, of one or more embodiments of the present invention. In this example, the search is of a standard reference, e.g., PubMed provided by the National Library of Medicine, and may be provided a third party provider. The resource is presented in this example in a pop-up screen 4601. The search results 4603 are presented as provided by the search engine.

Reference is made to Figure 47, providing an exemplary user interface for clinical tools, for use in connection with, e.g., the toolbar for the medical information portal. In this example, the clinical tools provides additional resources, e.g., a resource service to which signs and symptoms may be submitted to receive a differential diagnosis 4703; and a therapeutic decision support software for clinicians 4705. The resource is presented in this example in a pop-up screen 3801. In the present example, the toolbar 1113 is included in the user interface.

Reference is now made to Figure 48, an exemplary user interface for a decision support software clinical tool, for use in connection with the clinical tools. In this example, the reference, Antibiotic Assistant, is an example of an interactive program for obtaining relevant information about a patient, and providing an antibiotic recommendation tailored to the needs of the patient. It may be provided a third party provider. The resource is presented in this example in a pop-up screen 4801.

Figure 49 is an exemplary user interface for an electronic consult service, for use in connection with the clinical tools of Figure 47. In this example, the resource, MD Consult, provides an electronic "consult" for the physician, and is provided by a third party provider. The resource is

presented in this example in a pop-up screen 4901. Also in this example, the toolbar 1113 remains displayed.

Reference is now made to Figure 50, illustrating an exemplary user interface for use in connection with collecting user registration and/or personal preference information, for use in connection with an optional registration according to one or more embodiments of the present invention. In this example, the registration process collects various contact information 5001; professional information 5003 for the user, e.g., professional designation, practice type, specialty, and licensure jurisdiction and license number; and establishes sign-in information 5005, e.g., user name, password, hint, and/or greeting. The professional information, or a portion thereof, may be used as the user's personal preferences.

Reference is made to Figure 51, illustrating an exemplary user interface 5101 for use in connection with completing the user registration of Figure 50. Various user interfaces with a variety of appropriate messages may be provided, to convey successful registration and/or validation to the user. Here, the user interface indicates that the user successfully registered 5103, that the user failed validation 5105, options for re-trying validation 5107, and/or any other messages from the system to the user 5109.

Figure 52 illustrates one example of a user interface for use in connection with unregistered users, according to one or more embodiments of the medical information portal of the present invention. This user interface includes a message 5201 regarding registration and restriction, which may be required for particular resources. As illustrated, some resources may be restricted, for example by license requirements from the third party provider. The restrictions may reflect the third party provider requirements, and the system may be flexible to accommodate various types of restrictions, e.g., residency and/or licensure requirements.

Figure 53 is an exemplary block diagram of a network architecture for use in connection with one or more embodiments of the medical information portal of the present invention. This example illustrates one embodiment for providing news, such as from external partner sites 5303 and an Akamai network 5301, via the internet 5305, to users 5307, and providing optional search engines 5309. The computer system according to the illustrated example embodiment of the invention includes a DMZ network 5329, one or more .com healthcare internet pages 5315, a server 5317, a News JSP 5319, optional web logs 5321, an optional firewall 5311, optional load balance 5313, 5325, and/or optional SQL proxy. A distributed database is provided via a network 5331, including an oracle database 5333, another optional SQL Proxy 5335, a user profile 5337, a catalog listing of doctors 5337, news database 5341, and/or applications database 5343.

Here, the user 5307 has accessed the home page of the site according to the present invention. The News JSP 5319 communicates with the Java Beans on the server 5317, which in turn obtain the user's customized preferences from the user's profile 5337. If customizations exist, an appropriate header, e.g., "News Links" and associated "See More" links are displayed, otherwise, the defaults

“News Links” and associated “See More” links are displayed. When the user 5307 clicks on the “News Links”, the JSP 5319 retrieves the appropriate news from the news database 5341. When the user clicks on the “See More” link, the JSP 5319 communicates with the Java Bean, which uses URL parameters to retrieve the “News Links” from the database.

5 According to one or more embodiments, the example architecture obtains news by a News Retrieval Workstation 5345 contacting a partner network 5347 to poll a screaming media 5351 server over the Internet 5349 for the latest news articles. The news articles are downloaded, such as via the partner network 5347 to the News Retrieval Workstation 5345, where they are loaded into the news database 5341.

10 In connection with a user making a request, the user’s profile is checked. In the example architecture of Figure 53, the user 5307 makes a request. If this is a new session and the user’s station does not include a remember_me cookie identifying the user, a default profile is loaded in, otherwise, the remember_me cookie is utilized to load user customizations. The JSP applications read/store the user information from the profile 5337.

15 Figure 54 is a flow chart illustrating an example flow of control generally for tool access, according to one or more embodiments of the medical information portal of the present invention. General tool access 5401 loops until it determines that the user requested to access a tool, block 5403. Then, the system determines whether the requested tool is restricted, block 5405. If so, it determines the type of user restriction, for example, the resource might be restricted to users that are physicians (M.D., D.O.) block 5407. If the user is not of the type allowed access to the selected resource, block 20 5409, the access ends, block 5419. On the other hand, if the user should be allowed access, the system determines whether the requested tool requires a special key, identifier, an installed program, or other additional resource in order to execute, block 5411. If so, at block 5413, the system automatically determines the required special key, program, etc., and installs or otherwise provides the necessary additional resource. Then, at block 5415, the system performs or accesses the requested 25 tool or resource, for example locally or via the Internet. At block 5417, the general tool access then ends.

Reference is now made to Figure 55, showing an example flow chart generally for tools display 5501, according to one or more embodiments of the medical information portal of the present invention. Once a set of tools needs to display its components, at block 5503 the system determines 30 whether the current tool is a specialty tool. If so, then the system determines whether the tool has a specialty and if it corresponds to any user specialty, such as by checking the user profile, at block 5505. If the tool is a specialty tool but does not correspond to any user specialty, then the tool is not displayed and the system proceeds to check whether there is another tool in the set of tools, block 35 5517, get the next tool in the tool set, block 5519, and loop back to the top. On the other hand, if the tool is to be displayed, the system checks whether the tool is referred to by a system index, block 5507. If so, at block 5509, the system obtains the tool reference (e.g., link) and any summary or

abstract for the tool which may be contained or accessible via the index. At block 5511, the system displays the tool reference, such as a link, and any summary or abstract for the tool. At block 5513, the system checks whether access to the tool is restricted. If so, the system displays an indication to the user that access to the tool is restricted, block 5515. Then, the system determines whether there is another tool in the current tool group, block 5517, and if so, gets the next tool in the tool group, block 5519, and loops back to the top. Otherwise, the general tools display ends, block 5521.

Figure 56 is a flow chart illustrating an example flow of control for user registration, according to one or more embodiments of the medical information portal of the present invention. When a user selects a registration link 5601, the registration link JSP 5607 is initiated. The system checks whether the user is logged in 5603. If not, the system proceeds to registration 5605, displays a registration page 5611, and initiates a registration JSP 5613. If the user is not a new registered new user 5619, the system checks whether the user registration is validated 5623. If not, a registration retry page 5629 is displayed, and a registration retry JSP is initiated 5633. If the user is logged in, the system updates the user's profile 5609 and launches the update profile JSPs 5615. If the registered user is validated, or if the user is logged in already, the system displays the update profile page 5617. At block 5625, the system updates the profile and stores the information in a database 5621, e.g., an Oracle database. If the new user profile validates at block 5627, the user is returned to the registration link display 5601, otherwise, the update profile and retry page 5631 is displayed and the user may again attempt to update the profile 5625.

Figure 57 is a flow chart illustrating an example flow cascade 5701 for validating a registered user, according to one or more embodiments of the medical information portal of the present invention. In order to register and validate, the system checks the user profile as to whether the user is an MD/DO, 5703. If not, at block 5705, the system displays an appropriate "Thank You" (#1), and the user may begin using and return to the home page, block 5711, or may further customize their profile, block 5709. If the user is an MD or a DO, the system checks whether the user validates 5707. If so, the system displays an appropriate "Thank You", e.g., noting that the user is registered and validated, block 5715. The user may then begin using the system and return to the home page, block 5723; alternatively, the user may further customize their profile, block 5739. If the MD/DO user does not validate, then the system displays an appropriate "Thank You", e.g., noting that the user is registered but not validated, block 5713. The user may validate later and return to the home page, block 5757, further customize their profile, block 5719, or re-enter the information and further attempt validation, block 5721. If the re-entered information validates the user, an appropriate "Thank You" is displayed block 5729, and the user may either begin using the system and return to the home page, block 5735, or further customize their profile, block 5739. If the re-entered information still does not validate the user after a second try, the user is informed, block 5727, and may validate later and return to the home page 5733, or re-enter and validate a third time, block 5731. If the user validates the third time, block 5737, an appropriate "Thank You" noting that the user is validated is displayed, block

5743, and the user may customize (block 5739) or return to the home page (5747). If the user fails to validate the third time, block 5741, the user is informed that the system cannot validate them, and the user may either begin using the system block 5745, or customize their profile 5739.

Figure 58 is a flow chart illustrating an example flow cascade 5801 for a user attempting to
5 access a restricted resource, according to one or more embodiments of the medical information portal of the present invention. At block 5803, if the user attempts to access a restricted resource, they system checks whether the user is signed in, block 5805. If not, the user is instructed to sign in or complete registration. If they are signed in, the system checks whether the user is accessing a resource at a first restriction level, e.g., Harrison's, block 5809. If so, the system checks whether the
10 user's information meets the requirements of the first restriction level, e.g., medical student, RN, LPN, Nurse Practitioner, block 5813. If they do meet the restriction, they are provided access to the resource, block 5819, otherwise, an error page is displayed 5821.

The system checks whether the user is accessing a resource at a second restriction level, e.g., physician level resources, block 5811. If the user is not a physician (MD or DO), block 5817, then the
15 unrestricted resources are listed 5823. If the user is a physician, the system checks whether they are validated, block 5825. If the user is not a physician, block 5817, then an appropriate message is displayed block 5823. If the user attempting to access a physician restricted resource is not validated, the system provides an appropriate display 5827, and the user may either validate later and return to the home page 5831, or enter licensure information, block 5833.

20 According to the illustrated embodiment, up to two attempts are made to enter (or re-enter), blocks 5833, 5843 and validate 5835, 5847 the licensure information. If the user does not validate, an appropriate message is displayed 5849 and the user is returned to the home page 5853. If the user validates, an appropriate "Thank You" display 5839, 5851 is displayed, and access is provided to the requested restricted resource 5845, 5855. If the user is not accessing, e.g., Harrison's nor a physician
25 restricted resource, the resource is displayed, block 5815.

It should be understood that the invention is described in connection with logical groupings of functions or resources. One or more of these logical groupings may be omitted from one or more embodiments, and still remain within the scope of the present invention. Likewise, functions may be grouped differently, combined, or augmented without parting from the scope of the invention.

30 Similarly the present description may describe various databases or collections of data and information. One or more groupings of the data or information may be omitted, distributed, combined, or augmented, or provided locally and/or remotely without departing from the scope of the invention.

The user may be a physician or other healthcare professional or student of in the medical
35 field. Some of these users may be licensed for a specific practice, and the licensure may be verifiable. The system may provide the user with expanded online access to high quality healthcare resources. The system may respond to the shifting needs of healthcare professionals, who are constrained to find

practical ways to access information and services relevant to their practices, despite their business schedules and geographic constraints. Further, the present invention is intended to provide seamless access to such information.

Figure 59 is an illustration of a computer 58 used for implementing the computer processing in accordance with a computer-implemented embodiment of the present invention. The procedures described above may be presented in terms of program procedures executed on, for example, a computer or network of computers.

Viewed externally in Figure 59, computer 58 has a central processing unit (CPU) 68 having disk drives 69, 70. Disk drives 69, 70 are merely symbolic of a number of disk drives that might be accommodated by computer 58. Typically, these might be one or more of the following: a floppy disk drive 69, a hard disk drive (not shown), and a CD ROM or digital video disk, as indicated by the slot at 70. The number and type of drives varies, typically with different computer configurations. Disk drives 69, 70 are, in fact, options, and for space considerations, may be omitted from the computer system used in conjunction with the processes described herein.

Computer 58 also has a display 71 upon which information may be displayed. The display is optional for the computer used in conjunction with the system described herein. A keyboard 72 and/or a pointing device 73, such as a mouse 73, may be provided as input devices to interface with central processing unit 68. To increase input efficiency, keyboard 72 may be supplemented or replaced with a scanner, card reader, or other data input device. The pointing device 73 may be a mouse, touch pad control device, track ball device, or any other type of pointing device.

Alternatively, referring to Figure 61, computer 58 may also include a CD ROM reader 95 and CD recorder 96, which are interconnected by a bus 97 along with other peripheral devices 98 supported by the bus structure and protocol. Bus 97 serves as the main information highway interconnecting other components of the computer. It is connected via an interface 99 to the computer 58.

Figure 60 illustrates a block diagram of the internal hardware of the computer of Figure 59. CPU 75 is the central processing unit of the system, performing calculations and logic operations required to execute a program. Read only memory (ROM) 76 and random access memory (RAM) 77 constitute the main memory of the computer. Disk controller 78 interfaces one or more disk drives to the system bus 74. These disk drives may be floppy disk drives such as 79, or CD ROM or DVD (digital video/versatile disk) drives, as at 80, or internal or external hard drives 81. As previously indicated these various disk drives and disk controllers are optional devices.

A display interface 82 permits information from bus 74 to be displayed on the display 83. Again, as indicated, the display 83 is an optional accessory for a central or remote computer in the communication network, as are infrared receiver 88 and transmitter 89. Communication with external devices occurs using communications port 84.

In addition to the standard components of the computer, the computer may also include an interface 85, which allows for data input through the keyboard 86 or pointing device, such as a mouse 87.

The foregoing detailed description includes many specific details. The inclusion of such
5 detail is for the purpose of illustration only and should not be understood to limit the invention. In addition, features in one embodiment may be combined with features in other embodiments of the invention. Various changes may be made without departing from the scope of the invention as defined in the following claims.

As one example, the medical information portal system may include a general purpose
10 computer, or a specially programmed special purpose computer. The user may interact with the medical information portal system via e.g., a personal computer or over PDA, e.g., the Internet an Intranet, etc. Either of these may be implemented as a distributed computer system rather than a single computer. Similarly, the communications link may be a dedicated link, a modem over a POTS line, and/or any other method of communicating between computers and/or users. Moreover, the
15 processing could be controlled by a software program on one or more computer systems or processors, or could even be partially or wholly implemented in hardware.

The user interfaces may be developed in connection with an HTML display format. Although HTML is utilized in the illustrated examples, it is possible to utilize alternative technology for displaying information, obtaining user instructions and for providing user interfaces. The invention
20 has been discussed in connection with particular examples. However, the principles apply equally to other examples and/or realizations. Naturally, the relevant data may differ, as appropriate.

Further, this invention has been discussed in certain examples as if it is made available to a single user. The invention may be used by numerous users, if preferred. The medical information portal system used in connection with the invention may rely on the integration of various
25 components including, as appropriate and/or if desired, hardware and software servers, database engines, and/or CE content providers. The configuration may be, preferably, network-based and uses the Internet as a primary interface with the user.

The medical information portal system may store collected information and/or indexes to information in a database. An appropriate database may be on a standard server, for example, a small
30 Sun™ Sparc™ or other remote location. The information may, for example, optionally be stored on a platform that may, for example, be UNIX-based. The various databases maybe in, for example, a UNIX format, but other standard data formats may be used.

Although the computer system in Figure 3 is illustrated as having a single computer, the medical information portal system is optionally suitably equipped with a multitude or combination of
35 processors or storage devices. For example, the computer may be replaced by, or combined with, any suitable processing system operative in accordance with the principles of embodiments of the present invention, including sophisticated calculators, hand held, laptop/notebook, mini, mainframe and super

computers, as well as processing system network combinations of the same. Further, portions of the system may be provided in any appropriate electronic format, including, for example, provided over a communication line as electronic signals, provided on floppy disk, provided on CD Rom, provided on optical disk memory, etc.

5 Any presently available or future developed computer software language and/or hardware components can be employed in such embodiments of the present invention. For example, at least some of the functionality mentioned above could be implemented using Visual Basic, C, C++ or any assembly language appropriate in view of the processor being used. It could also be written in an interpretive environment such as Java and transported to multiple destinations to various users.

10 The many features and advantages of the embodiments of the present invention are apparent from the detail specification, and thus, it is intended by the appended claims to cover all such features and advantages of the invention that fall within the true spirit and scope of the invention. Further, since numerous modifications and variations were readily occurred to those skilled in the art, it is not desired to limit the invention to the exact construction and operation illustrated and described, and
15 accordingly, all suitable modifications and equivalents maybe resorted to, falling within the scope of the invention.

WHAT IS CLAIMED IS:

1. In a computer-based system for providing healthcare resources such as information and services, to users, a medical information portal system for users including physicians and healthcare providers, implemented by a computer system, said medical information portal system comprising:

5 (A) a diagnostic tool, managing at least one or disease diagnosis and research resources, including at least one of: a disease research assistance resource, a disease diagnosis assistance resource, treatment guidelines, medical references, and a plurality of disease modules each having disease information regarding a disease;

10 (B) a learning tool, managing professional development resources, including at least one of: online continuing medical education (CME) resources, links to connect the users to professional societies, links to connect users to medical school computer sites, downloadable lecture materials and slide kits, review information concerning preparing for board review, a calendar of medical meetings, and a meeting reporter; and

15 (C) a patient tool, managing patient resources, including media information on what patients are seeing in the media, a plurality of patient handouts having information for patients, a plurality of links to connect the users to patient support groups, clinical trial information, and at least one health guide.

2. The medical information portal system of claim 1, further comprising a healthcare technology tool, managing healthcare technology resources, including at least one of: a plurality of product
20 reviews and/or selected articles on healthcare technology, a glossary of technical terms, and queryable information on technical terms.

3. The medical information portal system of claim 1, further comprising a news tool managing medical news, including at least one of: selected items from medical journals for a current time period, selected recent medical findings, breaking news in the medical industry, news relating to
25 selected medical specialties, and customized news relating to a personal preference indicated by the user.

4. The medical information portal system of claim 1, further comprising a toolbar, including at least one of: (i) a search tool having at least one of a user-definable computer site search capability and predetermined computer site search capability; (ii) a folder, specific to the user, for storing
30 documents, links, and personal preferences for the user; (iii) a grouping of references to basic medical resources, including one or more of at least one medical textbook, medical journals, at least one drug reference text, articles on evidence-based medicine; (iv) access to online continuing medical education (CME) services, online clinical decision support services, medical trivia; and (v) at least one medical dictionary.

5. The medical information portal system of claim 1, wherein at least one of said resources in said tools is restricted to users with professional licensure; and further comprising a user registration component collecting user registration information including professional licensure information, a validation component for validating professional licensing information, a restriction component
5 identifying whether the user has a professional licensure required for at least one restricted resources of said at least one resource and restricting access to said restricted at least one of said resources.

6. The medical information portal system of claim 5, wherein the unrestricted resources are selected from a group comprising: at least a portion of resources in said news tool, at least a portion of resources in said patient tool, a Merck Manual, a Best Practices manual, one or more medical
10 textbooks, one or more medical dictionaries, at least a portion of resources in said healthcare technology tool, the plurality of disease modules, the calendar of medical meetings, the meeting reporter, the links to professional societies, the links to medical school sites, information on residency and/r fellowship opportunities, clinical trial information, and information on alternative medicine.

7. The medical information portal system according to claim 5, wherein the at least one
15 restricted resource is restricted to users identified as healthcare professionals or medical students, and wherein the restricted resources are selected from a group comprising: the folder, at least one clinical tool, at least one medical textbook, at least one drug reference text, online CME services, lecture materials, and slide kits.

8. The medical information portal system according to claim 5, wherein at least a portion of the
20 at least one restricted resource is restricted to licensed physicians.

9. The medical information portal system according to claim 1, wherein the selected items from medical journals for a current time period are provided on a periodical basis from third-party providers.

10. The medical information portal system according to claim 1, wherein the plurality of disease
25 modules include information searchable on signs and symptoms.

11. The medical information portal system according to claim 1, further comprising an electronic assistant tool, managing healthcare practice assistance resources, including at least one of: at least one clinical calculator, a plurality of clinical evidence resources, a plurality of selected news and medical literature articles, at least one medical residency and career resource, and a plurality of selected
30 patient resources.

12. In a computer-based system for providing healthcare resources such as information and services, to users, a medical information portal system for users including physicians and healthcare providers, implemented by a computer system, said medical information portal system comprising:

(A) a diagnostic tool, managing at least one or disease diagnosis and research resources, including at least one of: a disease research assistance resource, a disease diagnosis assistance resource, treatment guidelines, medical references, and a plurality of disease modules each having disease information regarding a disease; wherein the plurality of disease modules include information searchable on signs and symptoms;

(B) a learning tool, managing professional development resources, including at least one of: online continuing medical education (CME) resources, links to connect the users to professional societies, links to connect users to medical school computer sites, downloadable lecture materials and slide kits, review information concerning preparing for board review, a calendar of medical meetings, and a meeting reporter;

(C) a patient tool, managing patient resources, including media information on what patients are seeing in the media, a plurality of patient handouts having information for patients, a plurality of links to connect the users to patient support groups, clinical trial information, and at least one health guide;

(D) a healthcare technology tool, managing healthcare technology resources, including at least one of: a plurality of product reviews and/or selected articles on healthcare technology, a glossary of technical terms, and queryable information on technical terms;

(E) a news tool managing medical news, including at least one of: selected items from medical journals for a current time period, selected recent medical findings, breaking news in the medical industry, news relating to selected medical specialties, and customized news relating to a personal preference indicated by the user; wherein the selected items from medical journals for a current time period are provided on a periodical basis from third-party providers;

(F) a toolbar, including at least one of: (i) a search tool having at least one of a user-definable computer site search capability and predetermined computer site search capability; (ii) a folder, specific to the user, for storing documents, links, and personal preferences for the user; (iii) a grouping of references to basic medical resources, including one or more of at least one medical textbook, medical journals, at least one drug reference text, articles on evidence-based medicine; (iv) access to online continuing medical education (CME) services, online clinical decision support services, medical trivia; and (v) at least one medical dictionary;

(G) wherein at least one of said resources in said tools is restricted to users with professional licensure; and further comprising a user registration component collecting user registration information including professional licensure information, a validation component for validating professional licensing information, a restriction component identifying whether the user has a professional licensure required for at least one restricted resources of said at

least one resource and restricting access to said restricted at least one of said resources; wherein the unrestricted resources are selected from a group comprising: at least a portion of resources in said news tool, at least a portion of resources in said patient tool, a Merck Manual, a Best Practices manual, one or more medical textbooks, one or more medical dictionaries, at least a portion of resources in said healthcare technology tool, the plurality of disease modules, the calendar of medical meetings, the meeting reporter, the links to professional societies, the links to medical school sites, information on residency and/or fellowship opportunities, clinical trial information, and information on alternative medicine; wherein the at least one restricted resource is restricted to users identified as healthcare professionals or medical students, and wherein the restricted resources are selected from a group comprising: the folder, at least one clinical tool, at least one medical textbook, at least one drug reference text, online CME services, lecture materials, and slide kits; wherein at least a portion of the at least one restricted resource is restricted to licensed physicians; and

(H) an electronic assistant tool, managing healthcare practice assistance resources, including at least one of: at least one clinical calculator, a plurality of clinical evidence resources, a plurality of selected news and medical literature articles, at least one medical residency and career resource, and a plurality of selected patient resources.

13. A computer-based method for providing healthcare resources such as information and services, to users, in a medical information portal method for users including physicians and healthcare providers, implemented by a computer system, said medical information portal method comprising the steps of:

(A) managing, in a diagnostic tool, at least one or disease diagnosis and research resources, including at least one of: a disease research assistance resource, a disease diagnosis assistance resource, treatment guidelines, medical references, and a plurality of disease modules each having disease information regarding a disease;

(B) managing, in a learning tool, professional development resources, including at least one of: online continuing medical education (CME) resources, links to connect the users to professional societies, links to connect users to medical school computer sites, downloadable lecture materials and slide kits, review information concerning preparing for board review, a calendar of medical meetings, and a meeting reporter; and

(C) managing, in a patient tool, patient resources, including media information on what patients are seeing in the media, a plurality of patient handouts having information for patients, a plurality of links to connect the users to patient support groups, clinical trial information, and at least one health guide.

14. The medical information portal method of claim 13, further comprising the step of managing,

in a healthcare technology tool, healthcare technology resources, including at least one of: a plurality of product reviews and/or selected articles on healthcare technology, a glossary of technical terms, and queryable information on technical terms.

15. The medical information portal method of claim 13, further comprising the step of managing,
5 in a news tool, medical news, including at least one of: selected items from medical journals for a current time period, selected recent medical findings, breaking news in the medical industry, news relating to selected medical specialties, and customized news relating to a personal preference indicated by the user.

16. The medical information portal method of claim 13, further comprising the step of providing
10 a toolbar, including at least one of: (i) a search tool having at least one of a user-definable computer site search capability and predetermined computer site search capability; (ii) a folder, specific to the user, for storing documents, links, and personal preferences for the user; (iii) a grouping of references to basic medical resources, including one or more of at least one medical textbook, medical journals, at least one drug reference text, articles on evidence-based medicine; (iv) access to online continuing
15 medical education (CME) services, online clinical decision support services, medical trivia; and (v) at least one medical dictionary.

17. The medical information portal method of claim 13, further comprising the step of restricting
at least one of said resources in said tools to users with professional licensure; and further comprising a step of registering the user including collecting user registration information including professional
20 licensure information, validating professional licensing information of the user, identifying whether the user has a professional licensure required for at least one restricted resources of said at least one resource and restricting access to said restricted at least one of said resources.

18. The medical information portal method of claim 17, wherein the unrestricted resources are
selected from a group comprising: at least a portion of resources in said news tool, at least a portion of
25 resources in said patient tool, a Merck Manual, a Best Practices manual, one or more medical textbooks, one or more medical dictionaries, at least a portion of resources in said healthcare technology tool, the plurality of disease modules, the calendar of medical meetings, the meeting reporter, the links to professional societies, the links to medical school sites, information on residency and/r fellowship opportunities, clinical trial information, and information on alternative medicine.

19. The medical information portal method according to claim 17, wherein the at least one
30 restricted resource is restricted to users identified as healthcare professionals or medical students, and wherein the restricted resources are selected from a group comprising: the folder, at least one clinical tool, at least one medical textbook, at least one drug reference text, online CME services, lecture materials, and slide kits.

20. The medical information portal method according to claim 17, wherein at least a portion of the at least one restricted resource is restricted to licensed physicians.

21. The medical information portal method according to claim 13, further comprising the step of receiving the selected items from medical journals for a current time period on a periodical basis from third-party providers.

22. The medical information portal method according to claim 13, wherein the plurality of disease modules include information searchable on signs and symptoms.

23. The medical information portal method according to claim 13, further comprising the step of managing, in an electronic assistant tool, healthcare practice assistance resources, including at least one of: at least one clinical calculator, a plurality of clinical evidence resources, a plurality of selected news and medical literature articles, at least one medical residency and career resource, and a plurality of selected patient resources.

24. A computer-based method for providing healthcare resources such as information and services, to users, in a medical information portal method for users including physicians and healthcare providers, implemented by a computer system, said medical information portal method comprising the steps of:

(A) managing, in a diagnostic tool, at least one or disease diagnosis and research resources, including at least one of: a disease research assistance resource, a disease diagnosis assistance resource, treatment guidelines, medical references, and a plurality of disease modules each having disease information regarding a disease; wherein the plurality of disease modules include information searchable on signs and symptoms;

(B) managing, in a learning tool, professional development resources, including at least one of: online continuing medical education (CME) resources, links to connect the users to professional societies, links to connect users to medical school computer sites, downloadable lecture materials and slide kits, review information concerning preparing for board review, a calendar of medical meetings, and a meeting reporter;

(C) managing, in a patient tool, patient resources, including media information on what patients are seeing in the media, a plurality of patient handouts having information for patients, a plurality of links to connect the users to patient support groups, clinical trial information, and at least one health guide;

(D) managing, in a healthcare technology tool, healthcare technology resources, including at least one of: a plurality of product reviews and/or selected articles on healthcare technology, a glossary of technical terms, and queryable information on technical terms;

(E) managing, in a news tool, medical news, including at least one of: selected items from medical journals for a current time period, selected recent medical findings, breaking news in

the medical industry, news relating to selected medical specialties, and customized news relating to a personal preference indicated by the user; wherein the selected items from medical journals for a current time period are received on a periodical basis from third-party providers;

5 (F) providing a toolbar, including at least one of: (i) a search tool having at least one of a user-definable computer site search capability and predetermined computer site search capability; (ii) a folder, specific to the user, for storing documents, links, and personal preferences for the user; (iii) a grouping of references to basic medical resources, including one or more of at least one medical textbook, medical journals, at least one drug reference
10 text, articles on evidence-based medicine; (iv) access to online continuing medical education (CME) services, online clinical decision support services, medical trivia; and (v) at least one medical dictionary;

(G) restricting at least one of said resources in said tools to users with professional licensure; registering the user including collecting user registration information including
15 professional licensure information, validating professional licensing information of the user; identifying whether the user has a professional licensure required for at least one restricted resources of said at least one resource; and restricting access to said restricted at least one of said resources; wherein the unrestricted resources are selected from a group comprising: at least a portion of resources in said news tool, at least a portion of resources in said patient
20 tool, a Merck Manual, a Best Practices manual, one or more medical textbooks, one or more medical dictionaries, at least a portion of resources in said healthcare technology tool, the plurality of disease modules, the calendar of medical meetings, the meeting reporter, the links to professional societies, the links to medical school sites, information on residency and/or fellowship opportunities, clinical trial information, and information on alternative medicine; wherein the at least one restricted resource is restricted to users identified as healthcare
25 professionals or medical students, and wherein the restricted resources are selected from a group comprising: the folder, at least one clinical tool, at least one medical textbook, at least one drug reference text, online CME services, lecture materials, and slide kits; wherein at least a portion of the at least one restricted resource is restricted to licensed physicians; and
30 (H) managing, in an electronic assistant tool, healthcare practice assistance resources, including at least one of: at least one clinical calculator, a plurality of clinical evidence resources, a plurality of selected news and medical literature articles, at least one medical residency and career resource, and a plurality of selected patient resources.

25. In a computer-based system for providing healthcare resources such as information and
35 services, to users, a medical information portal system for users including physicians and healthcare providers, implemented by a computer system, said medical information portal system comprising:

(A) a diagnostic tool means for managing at least one or disease diagnosis and research

resources, including at least one of: a disease research assistance resource, a disease diagnosis assistance resource, treatment guidelines, medical references, and a plurality of disease modules each having disease information regarding a disease;

(B) a learning tool means for managing professional development resources, including at least one of: means for online continuing medical education (CME) resources, means for connecting the users to professional societies, means for connecting users to medical school computer sites, downloadable lecture materials and slide kits, review information concerning preparing for board review, a calendar means for medical meetings, and a meeting reporter means; and

(C) a patient tool means for managing patient resources, including media information on what patients are seeing in the media, a plurality of patient handouts having information for patients, means for connecting the users to patient support groups, clinical trial information, and at least one health guide.

26. The medical information portal system of claim 25, further comprising a healthcare technology means for managing healthcare technology resources, including at least one of: a plurality of product reviews and/or selected articles on healthcare technology, a glossary of technical terms, and queryable information on technical terms.

27. The medical information portal system of claim 25, further comprising a news means for managing medical news, including at least one of: selected items from medical journals for a current time period, selected recent medical findings, breaking news in the medical industry, news relating to selected medical specialties, and customized news relating to a personal preference indicated by the user.

28. The medical information portal system of claim 25, further comprising a toolbar, including at least one of: (i) a search means for electronic searching, having at least one of a user-definable computer site search capability and predetermined computer site search capability; (ii) a folder means, specific to the user, for storing documents, links, and personal preferences for the user; (iii) a grouping of references to basic medical resources, including one or more of at least one medical textbook, medical journals, at least one drug reference text, articles on evidence-based medicine; (iv) means for accessing online continuing medical education (CME) services, online clinical decision support services, and medical trivia; and (v) at least one medical dictionary.

29. The medical information portal system of claim 25, wherein at least one of said resources in said tool means is restricted to users with professional licensure; and further comprising a user registration means for collecting user registration information including professional licensure information, a validation means for validating professional licensing information, a restriction means identifying whether the user has a professional licensure required for at least one restricted resources

of said at least one resource and restricting access to said restricted at least one of said resources.

30. The medical information portal system of claim 29, wherein the unrestricted resources are selected from a group comprising: at least a portion of resources in said news tool, at least a portion of resources in said patient tool, a Merck Manual, a Best Practices manual, one or more medical textbooks, one or more medical dictionaries, at least a portion of resources in said healthcare technology tool, the plurality of disease modules, the calendar of medical meetings, the meeting reporter, the professional societies, the medical school sites, information on residency and/or fellowship opportunities, clinical trial information, and information on alternative medicine.

31. The medical information portal system according to claim 29, wherein the at least one restricted resource is restricted to users identified as healthcare professionals or medical students, and wherein the restricted resources are selected from a group comprising: the folder means, at least one clinical tool, at least one medical textbook, at least one drug reference text, online CME services, lecture materials, and slide kits.

32. The medical information portal system according to claim 29, wherein at least a portion of the at least one restricted resource is restricted to licensed physicians.

33. The medical information portal system according to claim 25, wherein the selected items from medical journals for a current time period are provided on a periodical basis from third-party providers.

34. The medical information portal system according to claim 25, wherein the plurality of disease modules include information searchable on signs and symptoms.

35. The medical information portal system according to claim 25, further comprising an electronic assistant tool means for managing healthcare practice assistance resources, including at least one of: at least one clinical calculator, a plurality of clinical evidence resources, a plurality of selected news and medical literature articles, at least one medical residency and career resource, and a plurality of selected patient resources.

36. In a computer-based system for providing healthcare resources such as information and services, to users, a medical information portal system for users including physicians and healthcare providers, implemented by a computer system, said medical information portal system comprising:

(A) a diagnostic tool means for managing at least one or disease diagnosis and research resources, including at least one of: a disease research assistance resource, a disease diagnosis assistance resource, treatment guidelines, medical references, and a plurality of disease modules each having disease information regarding a disease; wherein the plurality of disease modules include information searchable on signs and symptoms;

(B) a learning tool means for managing professional development resources, including at least one of: online continuing medical education (CME) resources, links to connect the users to professional societies, links to connect users to medical school computer sites, downloadable lecture materials and slide kits, review information concerning preparing for board review, a calendar of medical meetings, and a meeting reporter;

(C) a patient tool means for managing patient resources, including media information on what patients are seeing in the media, a plurality of patient handouts having information for patients, a plurality of links to connect the users to patient support groups, clinical trial information, and at least one health guide;

(D) a healthcare technology tool means for managing healthcare technology resources, including at least one of: a plurality of product reviews and/or selected articles on healthcare technology, a glossary of technical terms, and queryable information on technical terms;

(E) a news tool means for managing medical news, including at least one of: selected items from medical journals for a current time period, selected recent medical findings, breaking news in the medical industry, news relating to selected medical specialties, and customized news relating to a personal preference indicated by the user; wherein the selected items from medical journals for a current time period are provided on a periodical basis from third-party providers;

(F) a toolbar, including at least one of: (i) a search means for searching, having at least one of a user-definable computer site search capability and predetermined computer site search capability; (ii) a folder means, specific to the user, for storing documents, links, and personal preferences for the user; (iii) a grouping of references to basic medical resources, including one or more of at least one medical textbook, medical journals, at least one drug reference text, articles on evidence-based medicine; (iv) means for accessing online continuing medical education (CME) services, online clinical decision support services, medical trivia; and (v) at least one medical dictionary;

(G) wherein at least one of said resources in said tool means is restricted to users with professional licensure; and further comprising a user registration means for collecting user registration information including professional licensure information, a validation means for validating professional licensing information, a restriction means for identifying whether the user has a professional licensure required for at least one restricted resources of said at least one resource and restricting access to said restricted at least one of said resources; wherein the unrestricted resources are selected from a group comprising: at least a portion of resources in said news tool, at least a portion of resources in said patient tool, a Merck Manual, a Best Practices manual, one or more medical textbooks, one or more medical dictionaries, at least a portion of resources in said healthcare technology tool, the plurality of disease modules, the calendar of medical meetings, the meeting reporter, the links to professional societies, the

links to medical school sites, information on residency and/or fellowship opportunities, clinical trial information, and information on alternative medicine; wherein the at least one restricted resource is restricted to users identified as healthcare professionals or medical students, and wherein the restricted resources are selected from a group comprising: the folder means, at least one clinical tool, at least one medical textbook, at least one drug reference text, online CME services, lecture materials, and slide kits; wherein at least a portion of the at least one restricted resource is restricted to licensed physicians; and

(H) an electronic assistant tool means for managing healthcare practice assistance resources, including at least one of: at least one clinical calculator, a plurality of clinical evidence resources, a plurality of selected news and medical literature articles, at least one medical residency and career resource, and a plurality of selected patient resources.

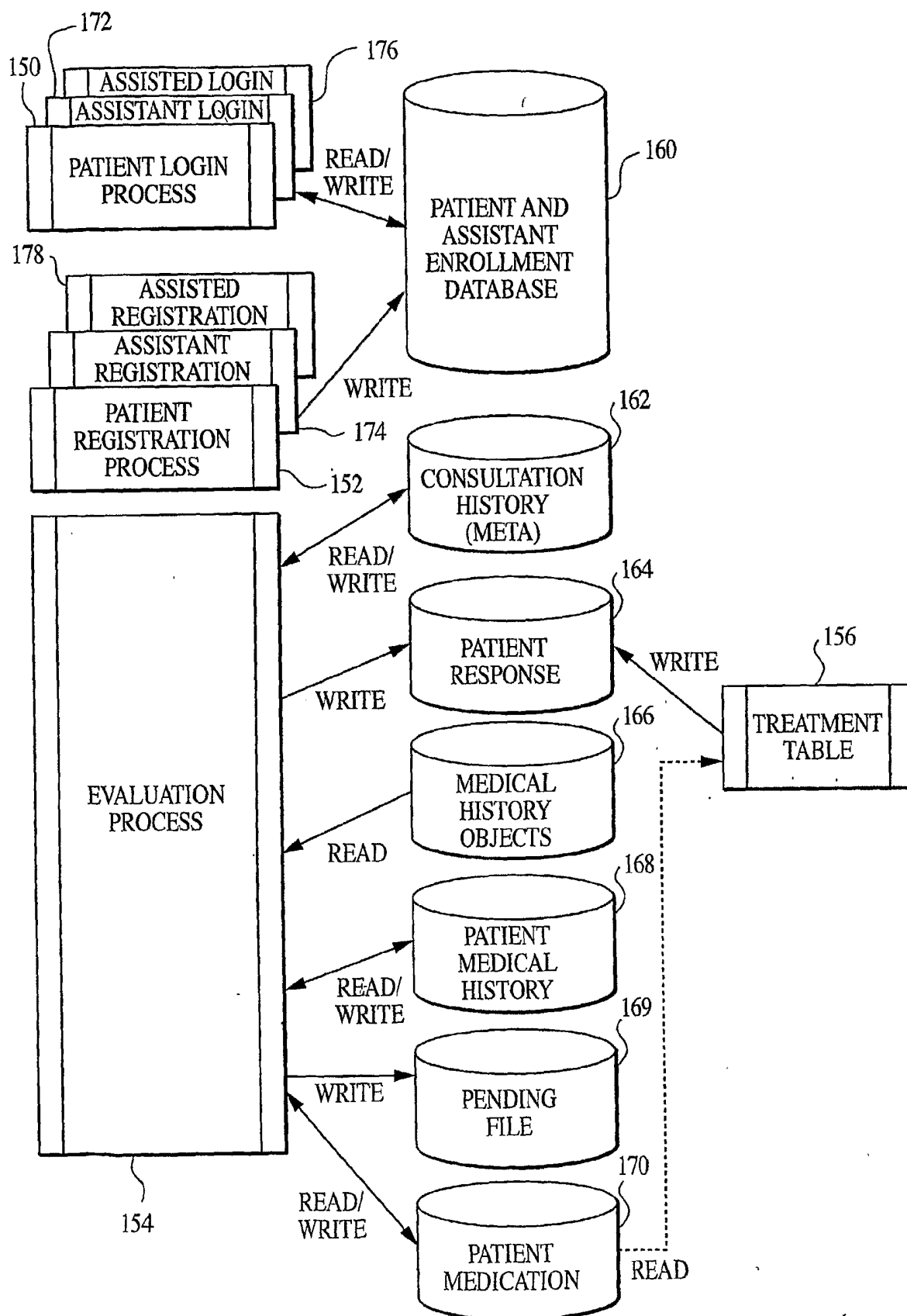


FIG. 1
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FIG. 2
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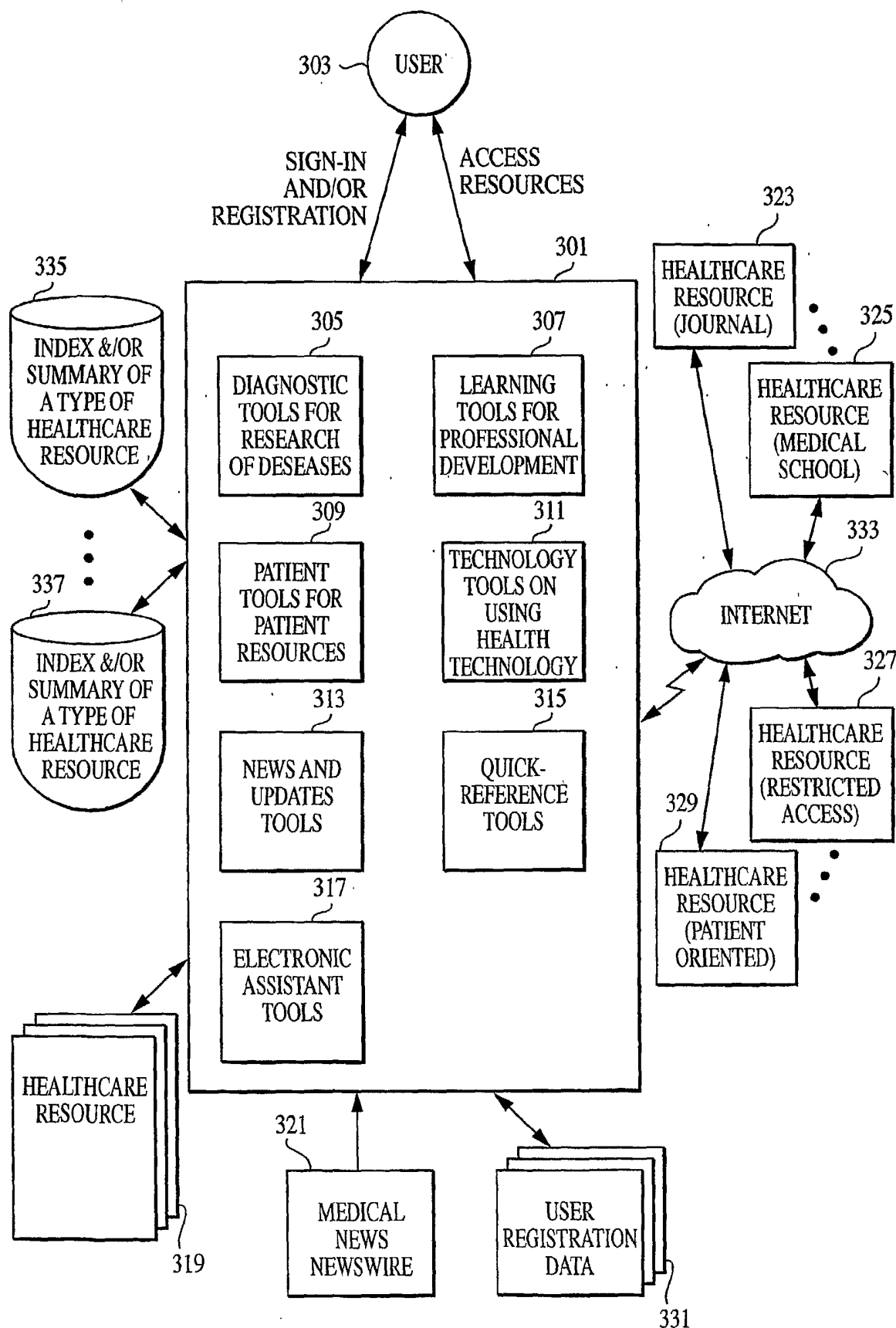


FIG. 3
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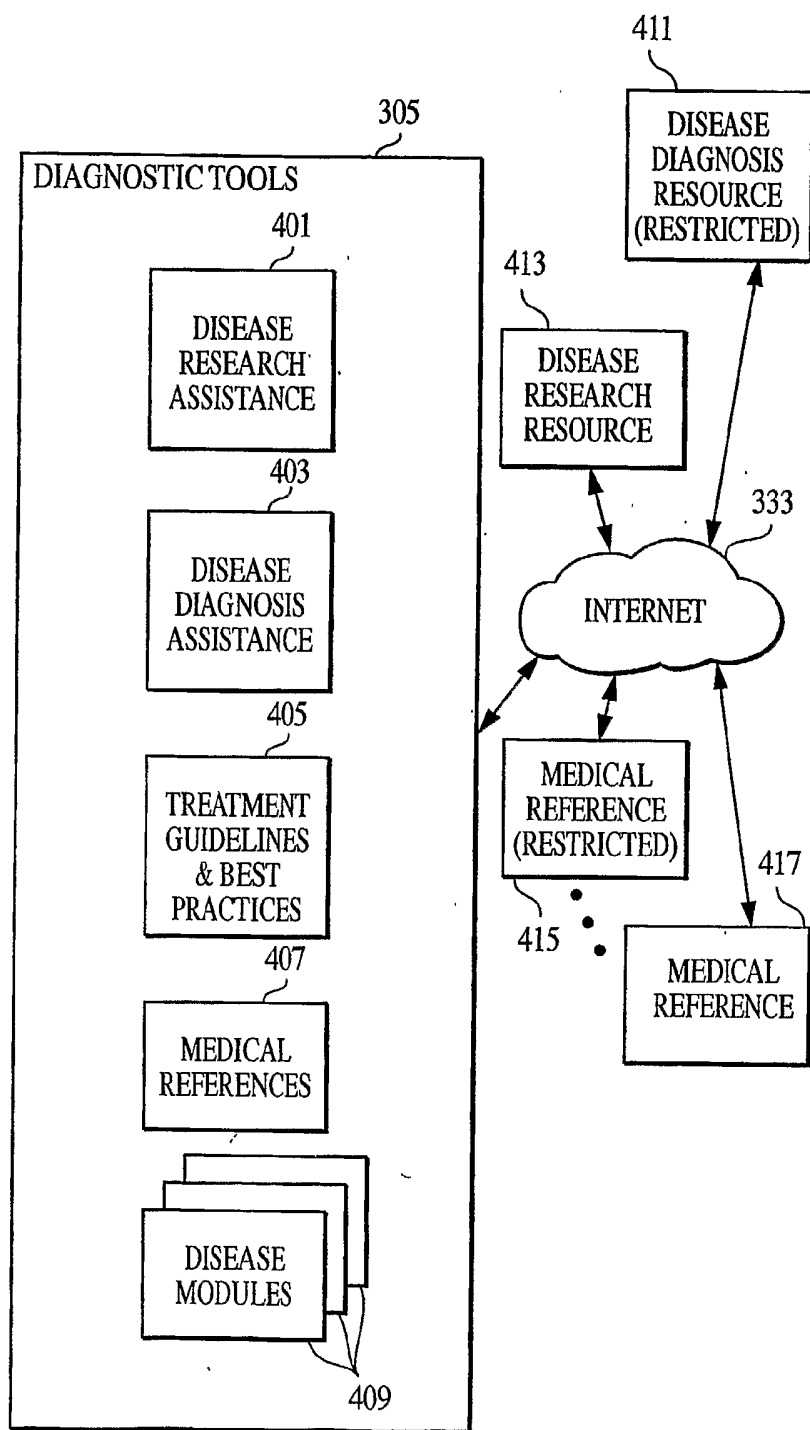


FIG. 4

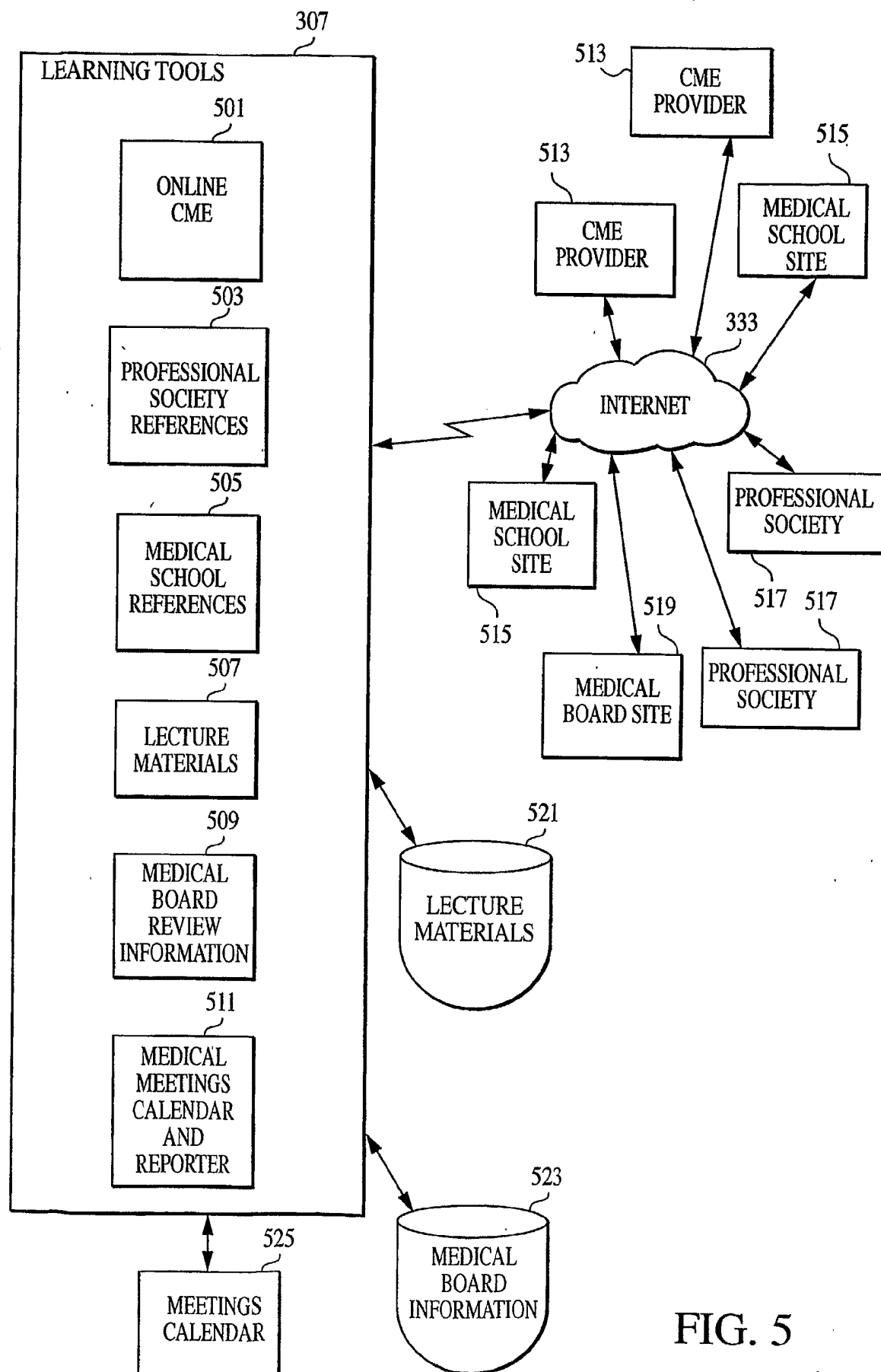


FIG. 5

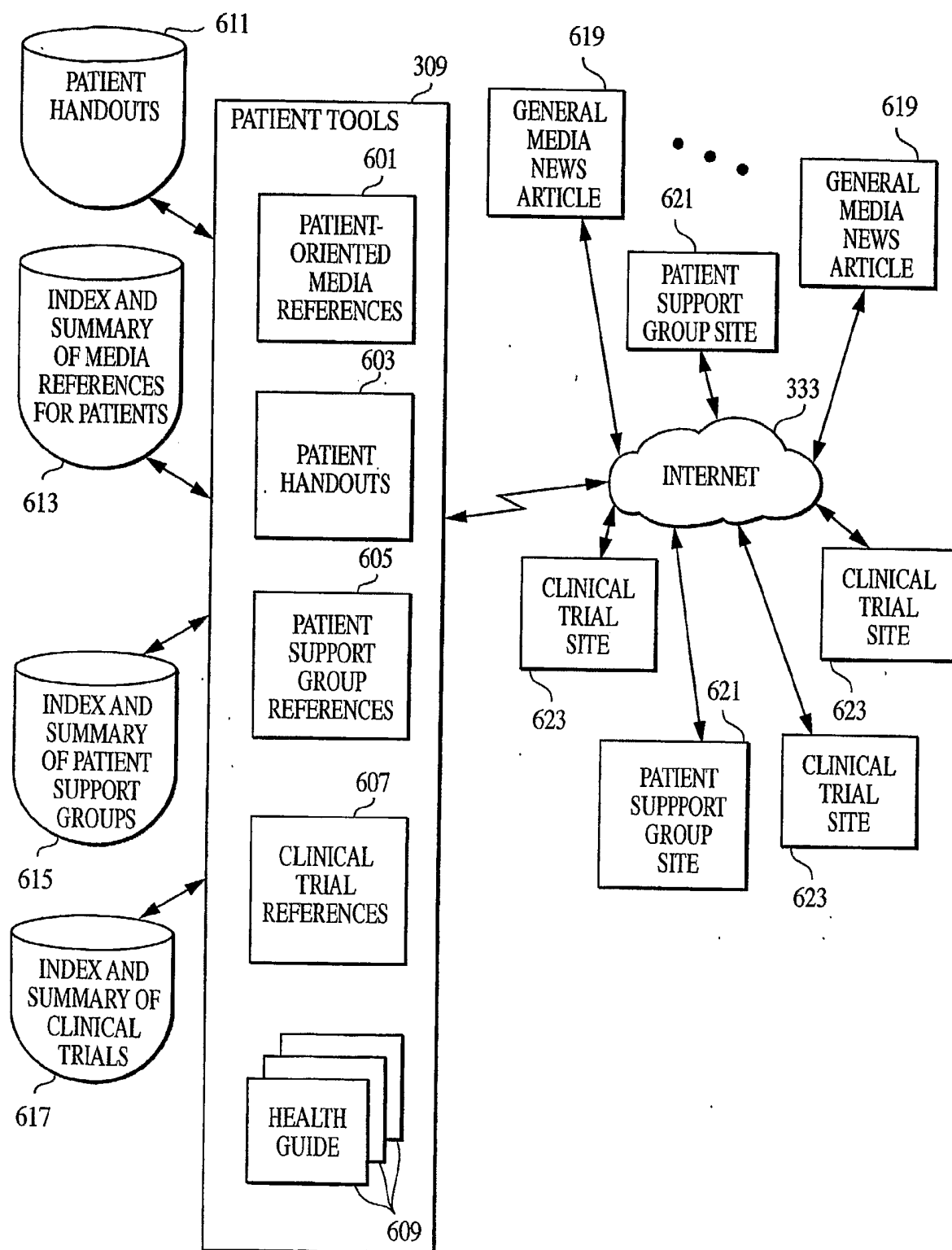


FIG. 6

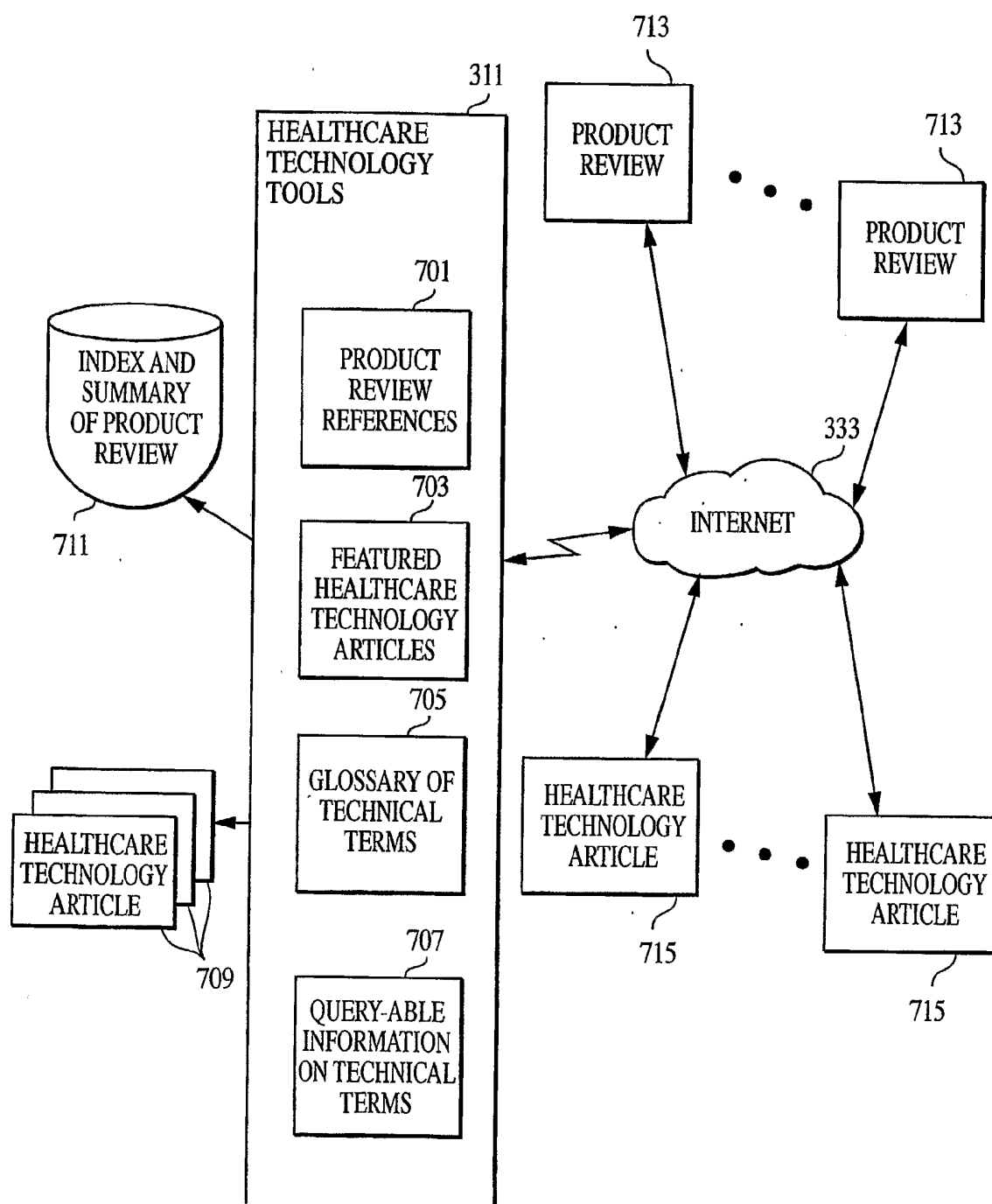


FIG. 7

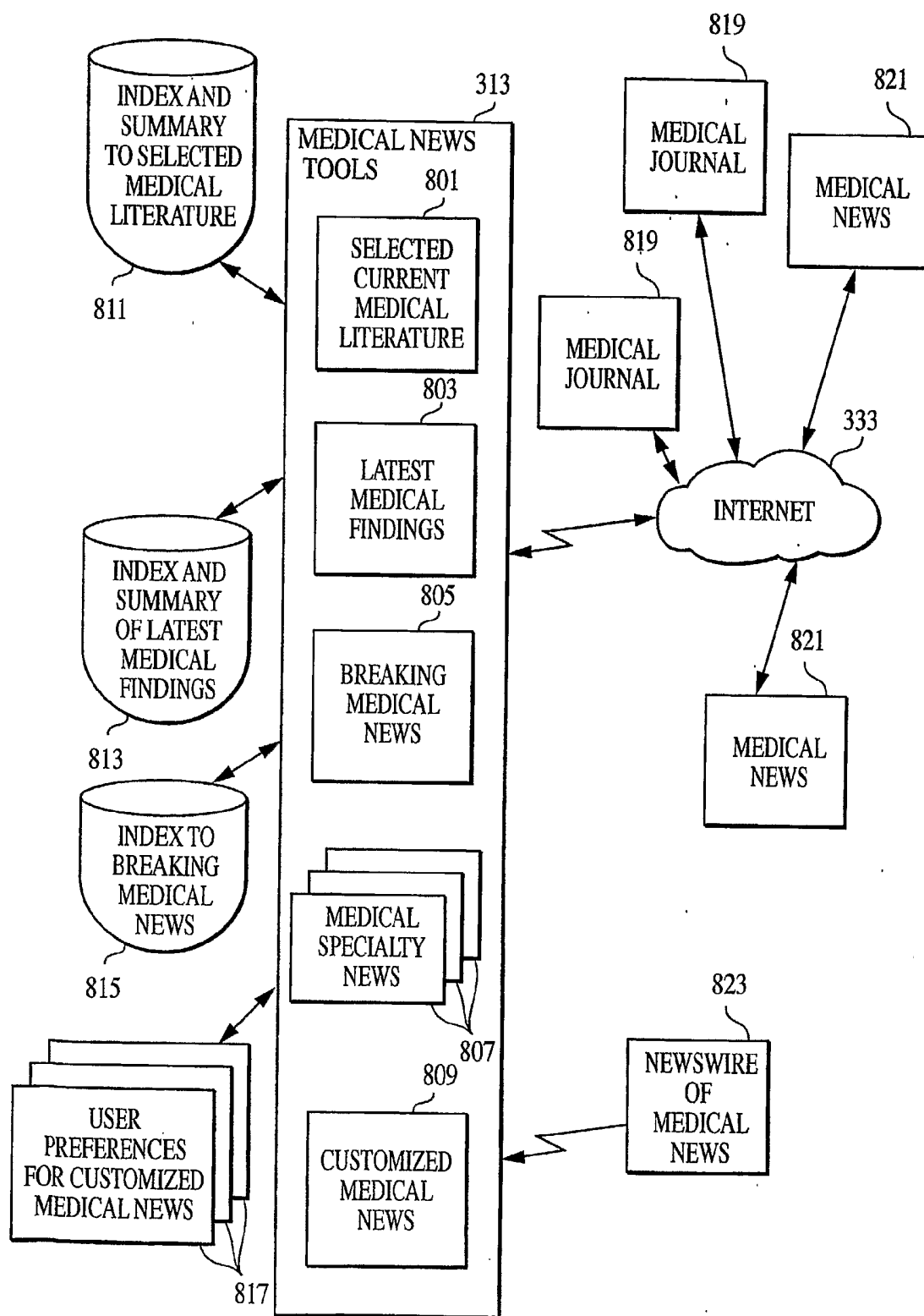


FIG. 8

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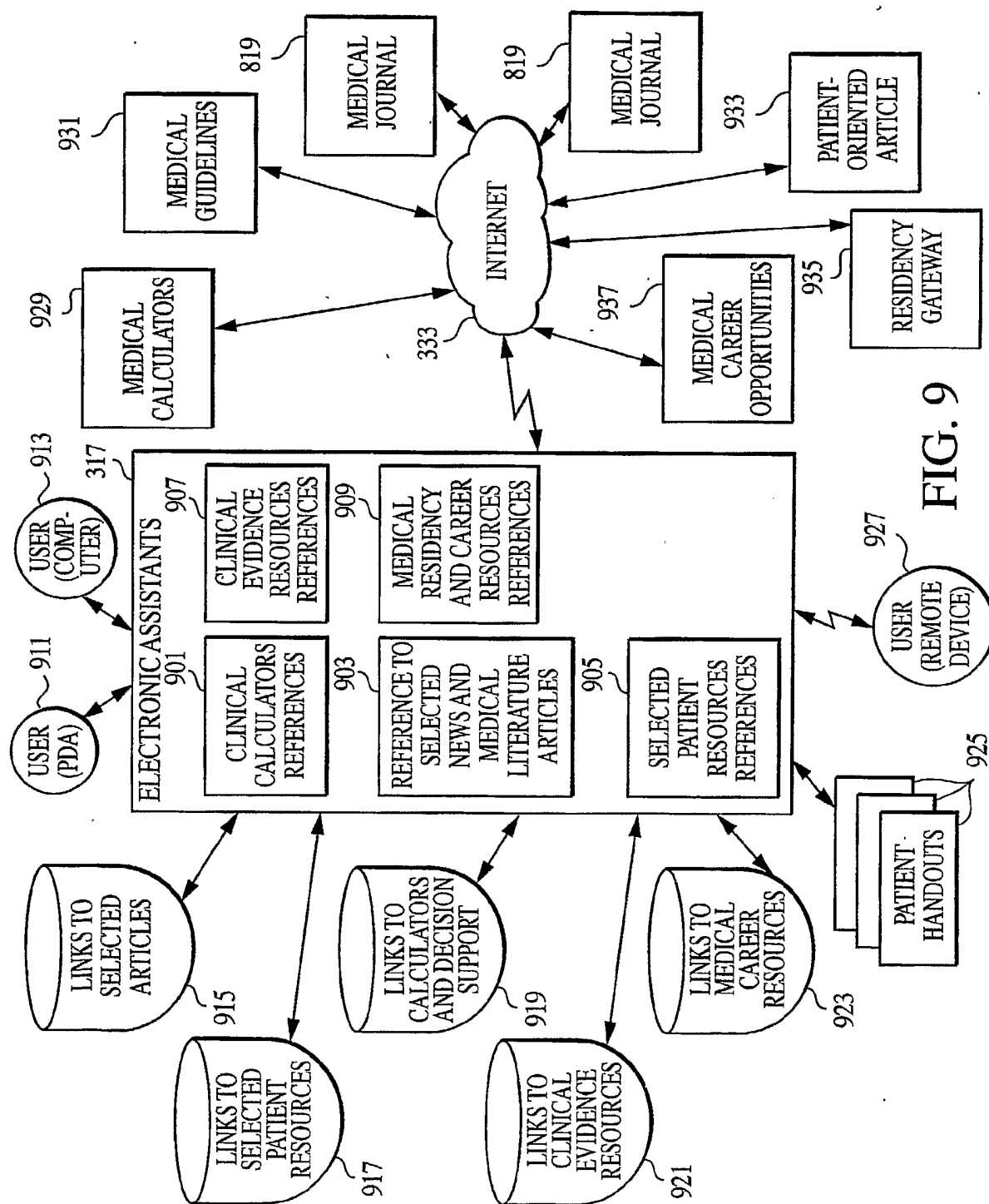


FIG. 9

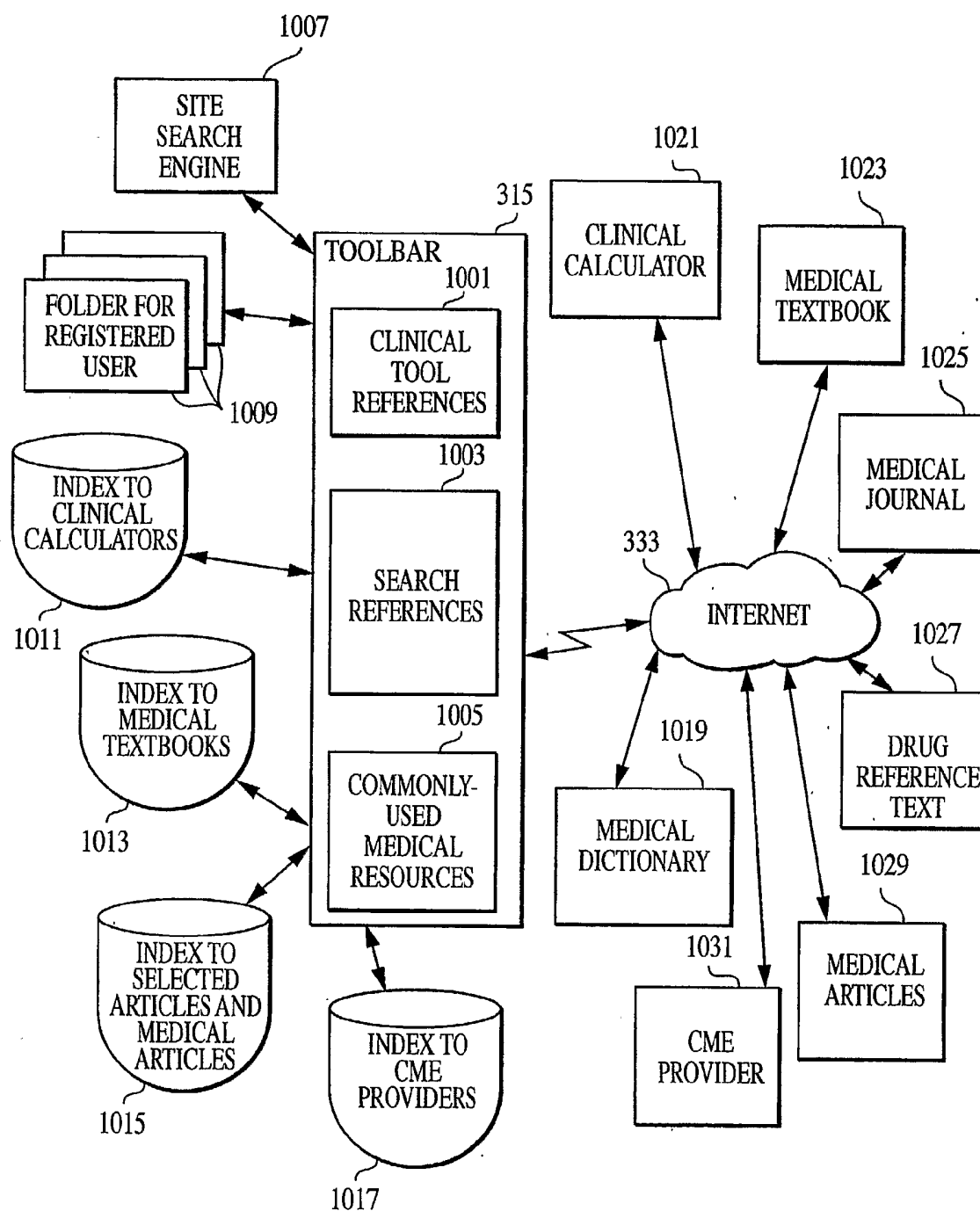


FIG. 10

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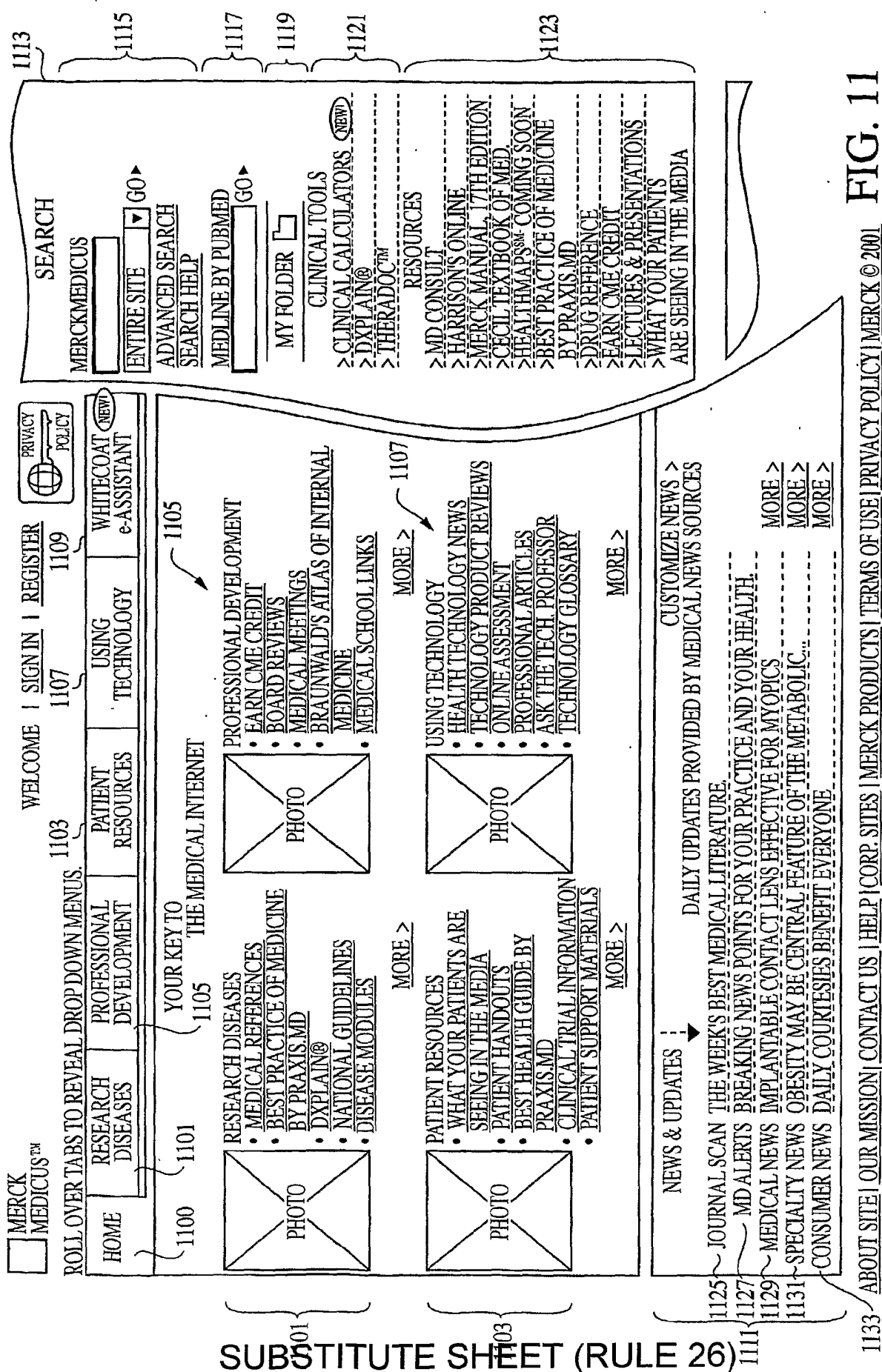


FIG. 11

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JULY 17, 2001 (VOLUME 135, NO. 2)
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- ANGIOTENSIN-CONVERTING ENZYME INHIBITORS AND PROGRESSION OF NONDIABETIC RENAL DISEASE: A META-ANALYSIS OF PATIENT-LEVEL DATA
- EXCLUDING PULMONARY EMBOLISM AT THE BEDSIDE WITHOUT DIAGNOSTIC IMAGING: MANAGEMENT OF PATIENTS WITH SUSPECTED PULMONARY EMBOLISM PRESENTING TO THE EMERGENCY DEPARTMENT BY USING A SIMPLE CLINICAL MODEL AND D-DIMER
- PERFORMANCE OF HELICAL COMPUTED TOMOGRAPHY IN UNSELECTED OUTPATIENTS WITH SUSPECTED PULMONARY EMBOLISM
- THE EFFECT OF ANGIOTENSIN-CONVERTING ENZYME INHIBITORS ON THE PROGRESSION OF NONDIABETIC RENAL DISEASE: A POOLED ANALYSIS OF INDIVIDUAL-PATIENT DATA FROM 11 RANDOMIZED, CONTROLLED TRIALS

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FIG. 12

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☐ HIGH IMPACT PHYSICAL ACTIVITY EVALUATED FOR BONE STRENGTHENING

☐ CHASTEBERRY EFFECTIVE FOR THE TREATMENT OF PREMENSTRUAL SYNDROME

MARCH 26, 2001

HIGH IMPACT PHYSICAL ACTIVITY EVALUATED FOR BONE STRENGTHENING

PRINT → EMAIL ↶ PATIENT VERSION IN BRIEF

A POPULATION-BASED STUDY FINDS THAT ULTRASOUND ATTENUATION BY THE HEEL BONE, INDICATING HIGH BONE DENSITY, IS STRONGLY ASSOCIATED WITH HIGH-IMPACT PHYSICAL ACTIVITY SUCH AS HIGH-IMPACT AEROBICS, RUNNING, AND

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FIG. 13

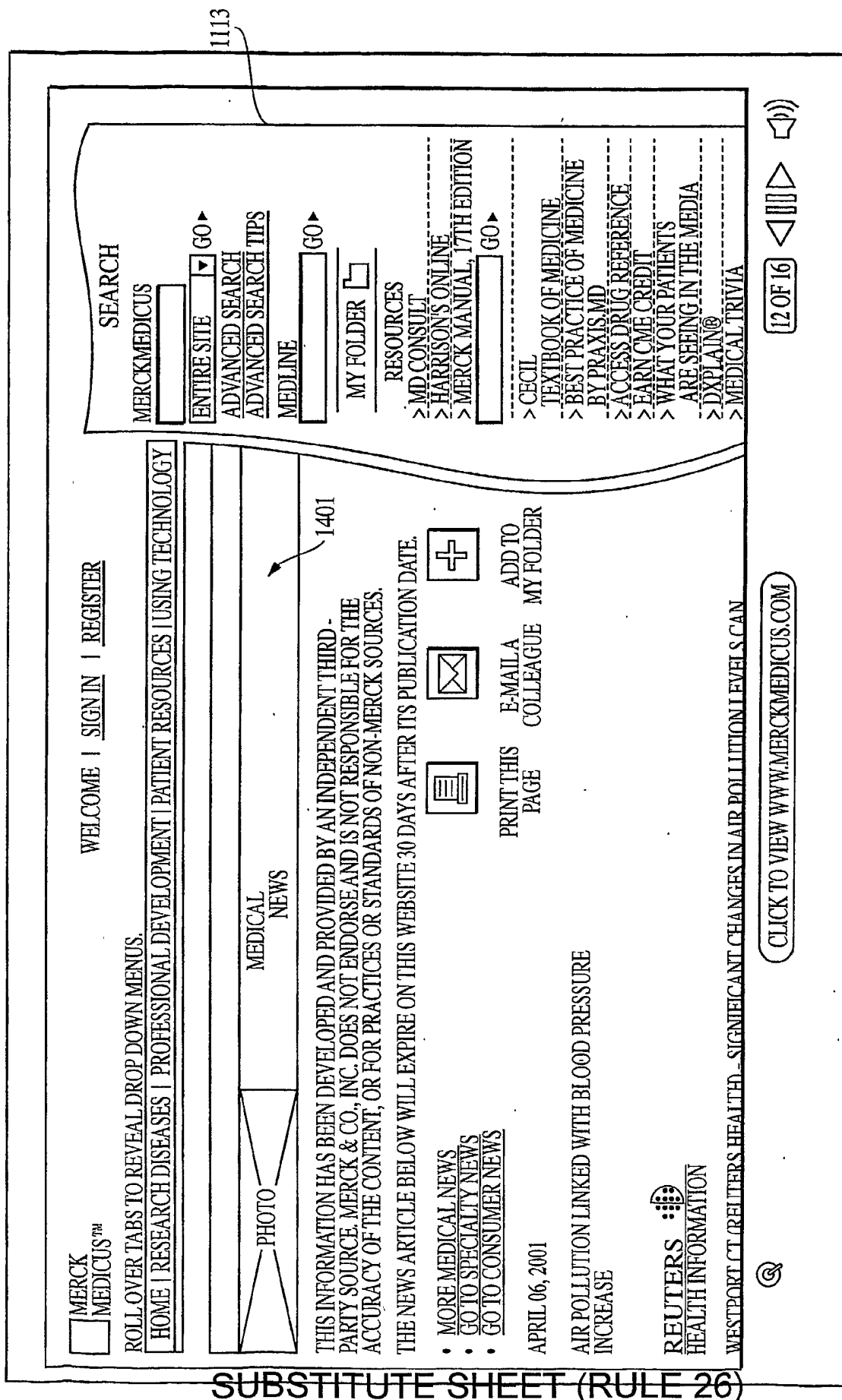


FIG. 14

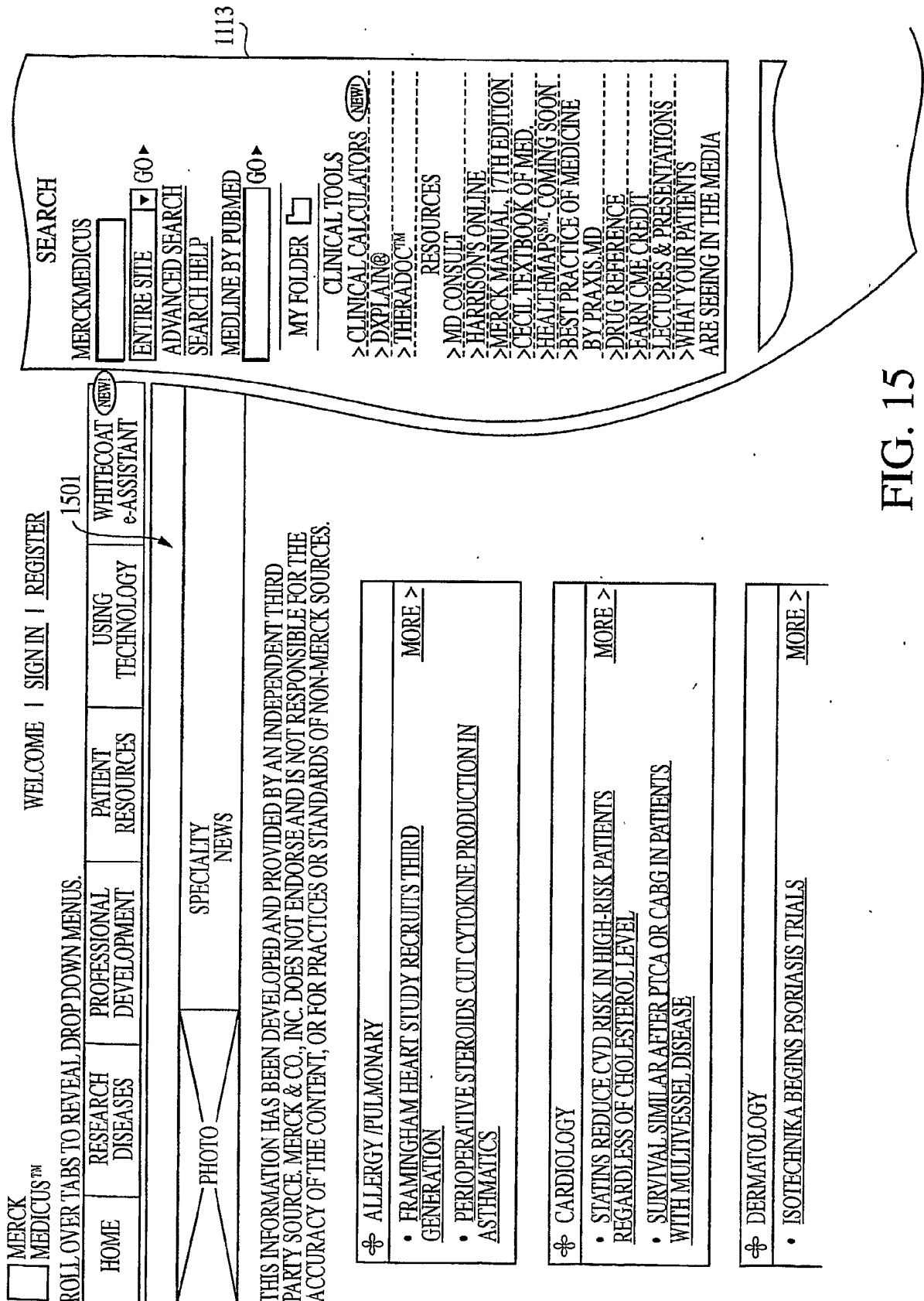


FIG. 15

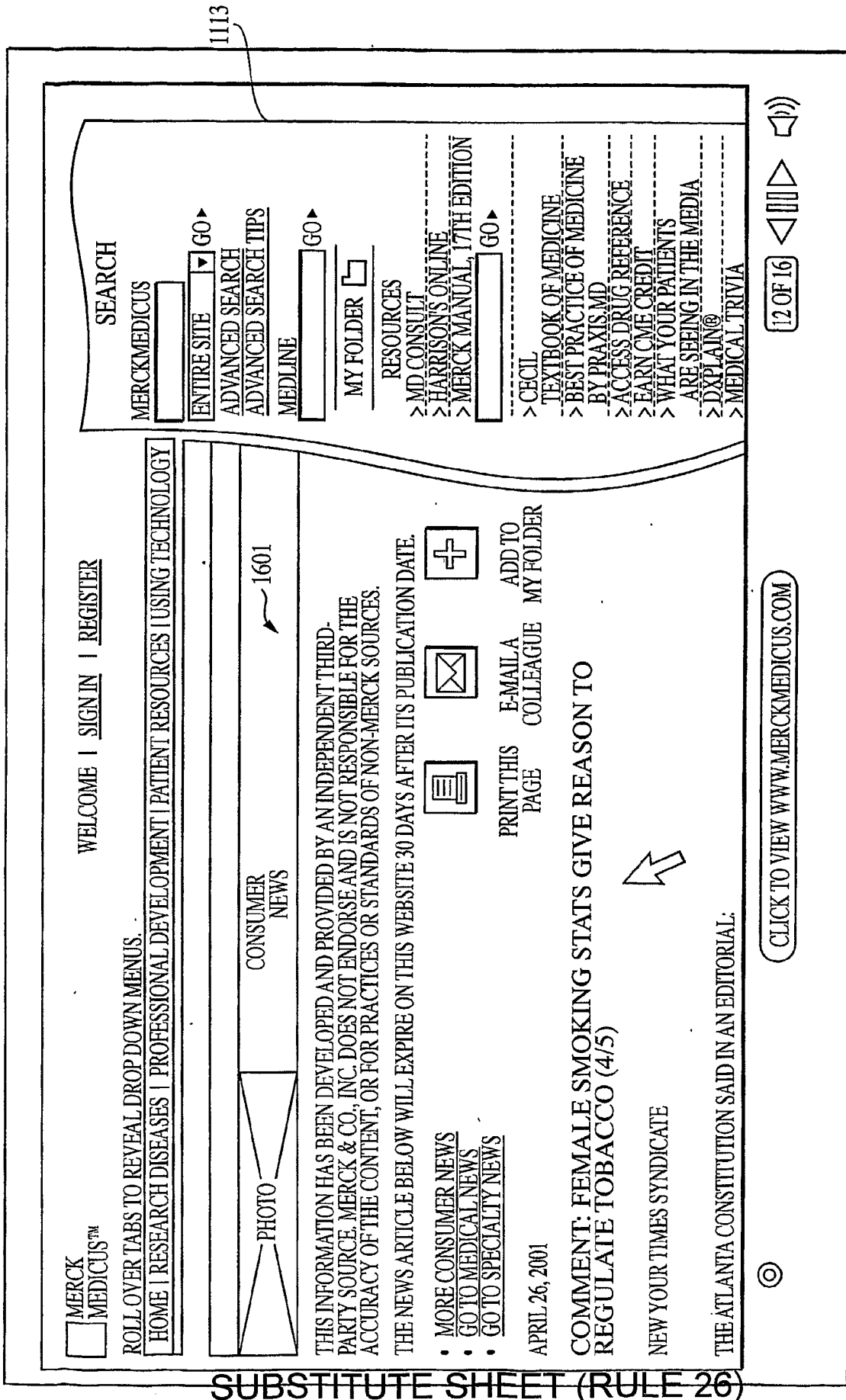


FIG. 16

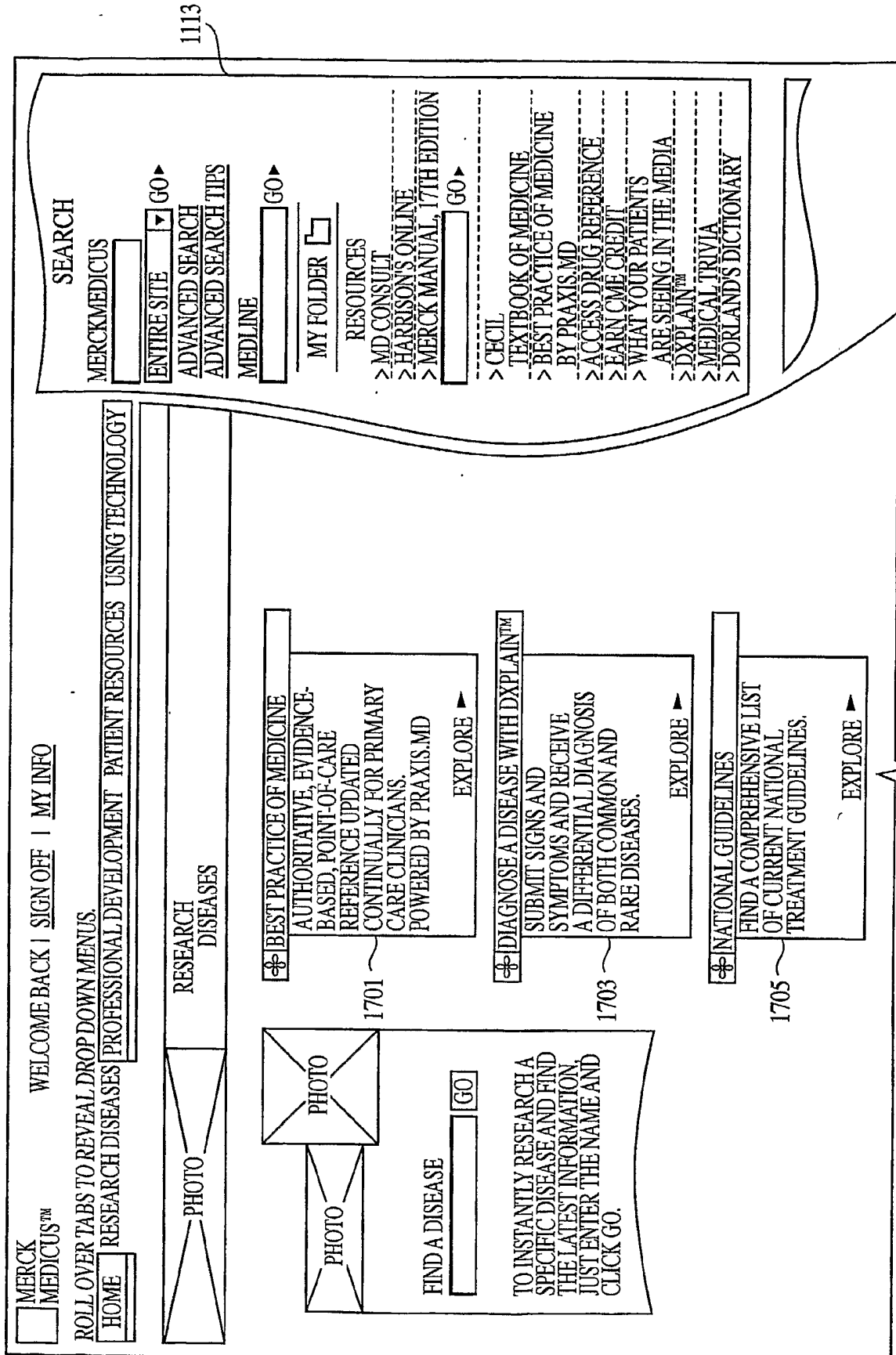


FIG. 17A

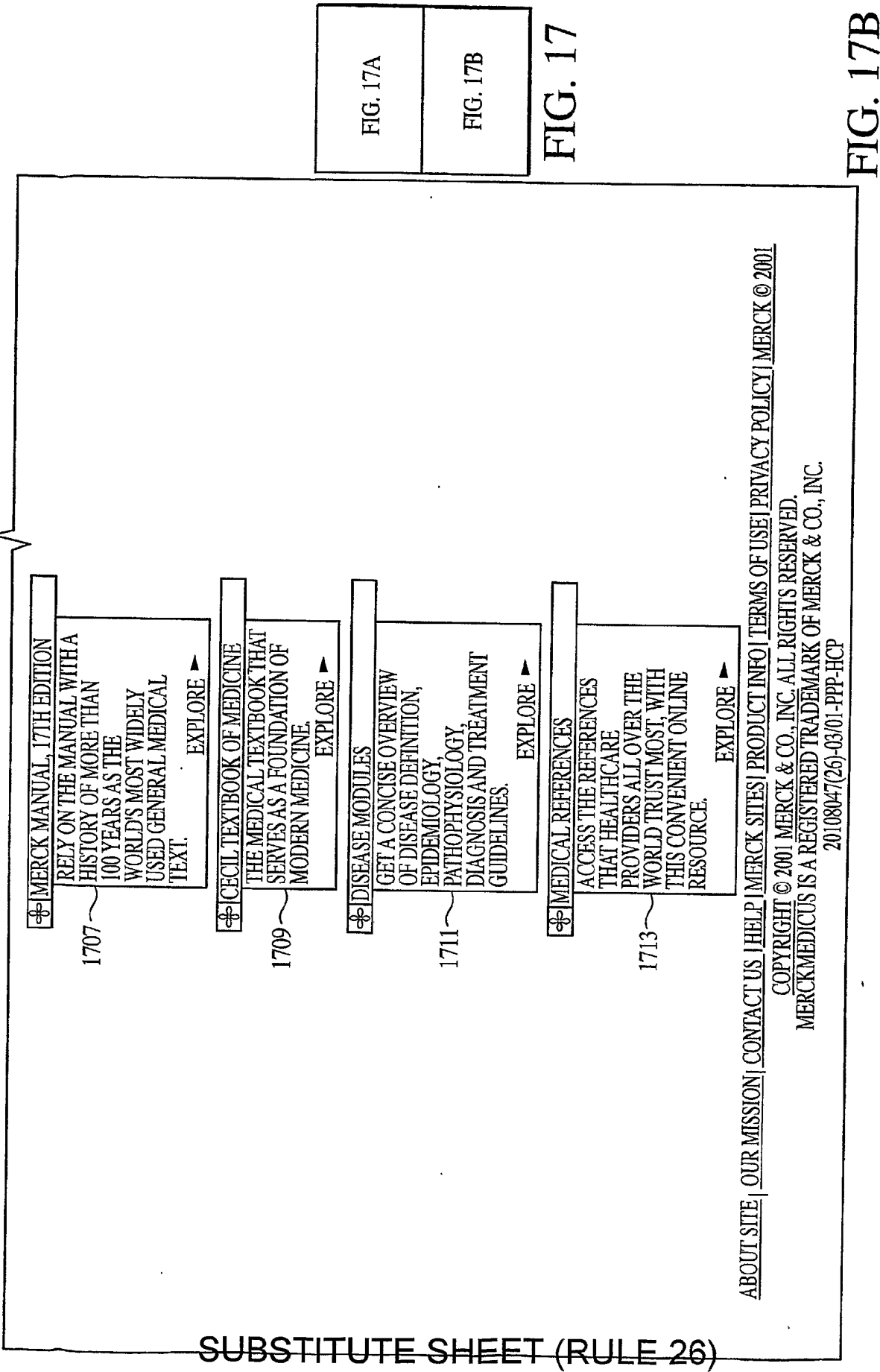


FIG. 17A

FIG. 17B

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FIG. 18


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FIG. 19

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D_XPLAIN®

HOW MANY FINDINGS CAN BE ENTERED?

CLICK BUTTON FOR HINT

HELP

FEEDBACK

EXIT

START NEW CASE

ARE YOU GOING TO ENTER FINDINGS FROM AN ACTUAL PATIENT CASE?

☒ YES ☐ NO

SELECT THE MOST APPROPRIATE ITEM FROM EACH OF THE THREE CATEGORIES.

AGE

NEWBORN (< 2 MO)
INFANT (2 MO TO < 1 YR)
CHILD (1 TO < 12 YRS)
ADOLESCENT(12 TO < 18 YRS)
ADULT, YOUNG (18 TO 40 YRS)
MIDDLE AGE (41 TO 65 YRS)
ELDERLY (> 65 YRS)

GENDER

FEMALE
MALE

DURATION

VERY BRIEF (< 6 HOURS)
BRIEF (6-48 HOURS)
FEW DAYS (2-7 DAYS)
PROLONGED (1-4 WEEKS)
CHRONIC (> 4 WEEKS)

ENTER FINDINGS SEPARATED BY " " OR ";"

SWOLLEN GLANDS

SUBMIT

RESET

ENTER CLINICAL MANIFESTATIONS (SIGNS, SYMPTOMS, LAB FINDINGS) IN THE BOX TO THE LEFT. SEPARATE THE FINDINGS WITH A COMMA OR SEMICOLON. WHEN FINISHED ENTERING, CLICK THE "SUBMIT" BUTTON TO PROCEED.

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FIG. 20

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KEEP THE GENERAL FINDING...

CLICK BUTTON FOR HINT

HELP

FEEDBACK

EXIT

CASE FINDINGS

CURRENT FINDINGS LIST:

- ☐ FEW DAYS (2-7 DAYS)
- ☐ FEMALE
- ☐ ADULT, YOUNG (18 TO 40 YRS)

DXPLAIN MATCHED TO "LYMPH NODE ENLARGEMENT"
YOU MAY CHANGE TO A MORE SPECIFIC FINDING.

LYMPH NODE ENLARGEMENT	
- REGIONAL LYMPH NODE ENLARGEMENT	
-- AXILLARY LYMPH NODE ENLARGEMENT	
--- AXILLARY LYMPH NODE FIRMINESS	
--- AXILLARY LYMPH NODE FIXATION	
-- CERVICAL LYMPH NODE ENLARGEMENT	
--- INGUINAL LYMPH NODE ENLARGEMENT	
--- INGUINAL LYMPH NODE FIRMINESS	
--- INGUINAL LYMPH NODE MATTING	
-- PERIPHERAL LYMPH NODE ENLARGEMENT	

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FIG. 21

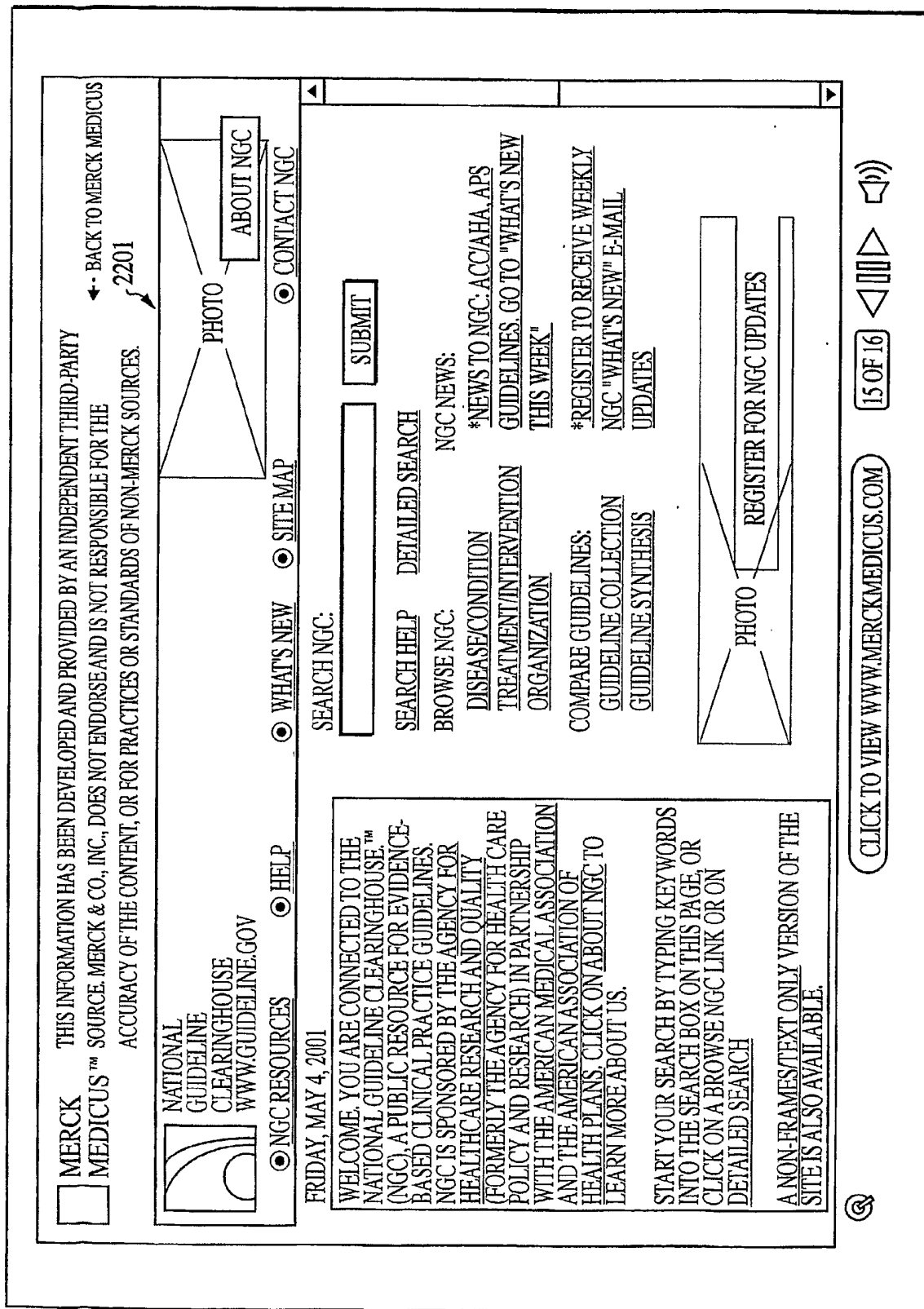


FIG. 22

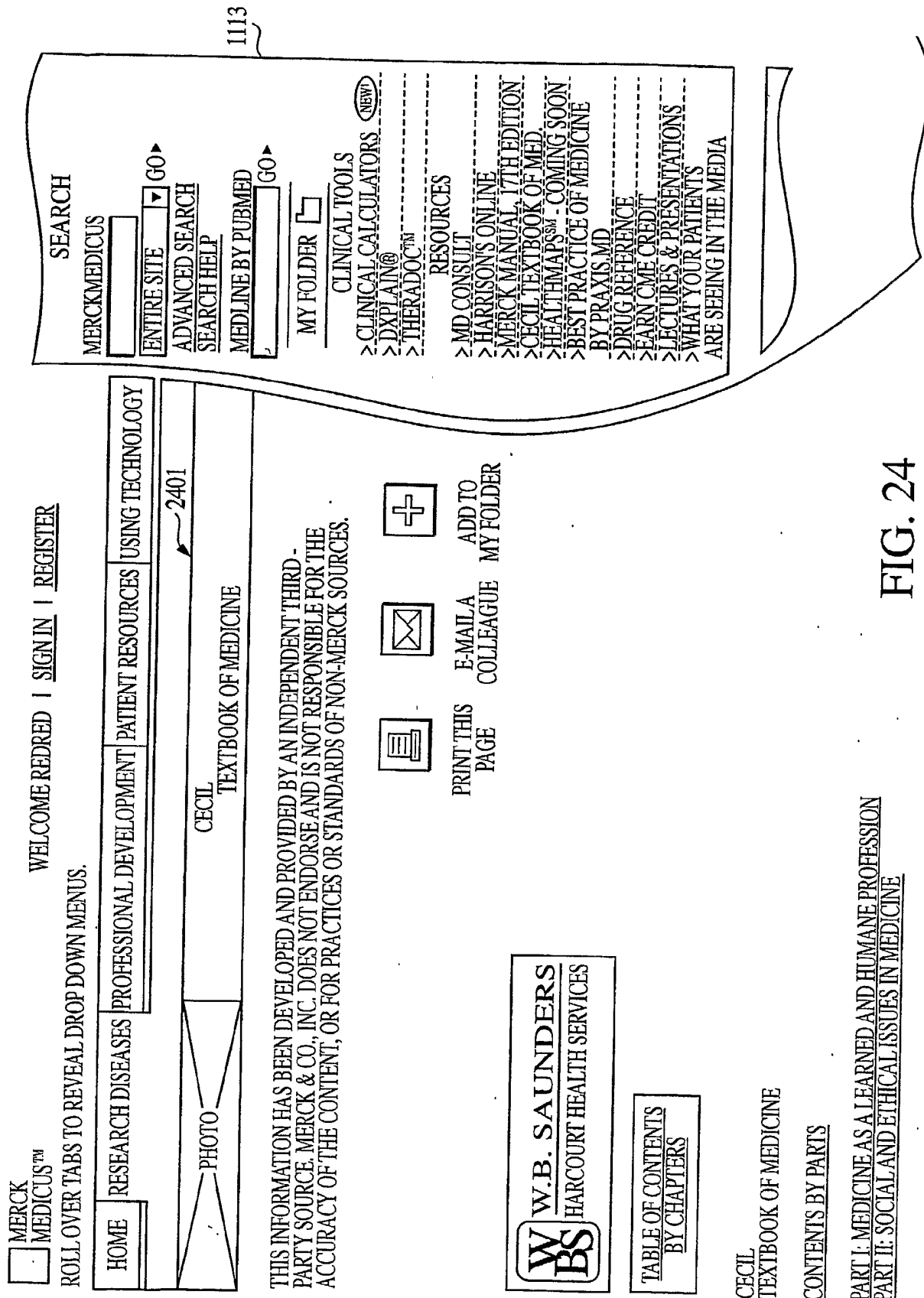


FIG. 24

<input type="checkbox"/> MERCK FOR HEALTHCARE PROVIDERS MEDICUS™		<input checked="" type="button" value="X"/> CLOSE WINDOW											
DISEASE MODULES		SEARCH ALL DISEASE MODULES <input style="width: 100px;" type="text"/> <input type="button" value="SEARCH"/>											
JUMP TO: <div style="border: 1px solid black; padding: 2px; display: inline-block;"> CHOOSE A JUMP TO <input style="width: 20px;" type="button" value="v"/> </div> INTRODUCTION CHOOSE A MODULE: ASTHMA DEFINITION & CLASSIFICATION EPIDEMIOLOGY PATHOPHYSIOLOGY DIAGNOSIS TREATMENT GUIDELINES FUNGAL DISEASES DEFINITION & CLASSIFICATION EPIDEMIOLOGY PATHOPHYSIOLOGY DIAGNOSIS TREATMENT GUIDELINES MIGRAINE DEFINITION & CLASSIFICATION EPIDEMIOLOGY PATHOPHYSIOLOGY DIAGNOSIS TREATMENT GUIDELINES	▲ ▼	<div style="border-bottom: 1px solid black; padding-bottom: 5px;"> OSTEOARTHRITIS 2501 </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 25%; padding: 5px;">DEFINITION & CLASSIFICATION</th> <th style="width: 25%; padding: 5px;">EPIDEMIOLOGY</th> <th style="width: 25%; padding: 5px;">PATHOPHYSIOLOGY</th> <th style="width: 25%; padding: 5px;">DIAGNOSIS</th> <th style="width: 25%; padding: 5px;">TREATMENT GUIDELINES</th> </tr> <tr> <td colspan="5" style="padding: 10px;"> <div style="text-align: center; margin-bottom: 10px;"> ADD TO MY FOLDER PRINT PAGE </div> <div> <p>DEFINITION</p> <p>OSTEOARTHRITIS IS PRIMARILY A NONINFLAMMATORY DISORDER OF MOVABLE JOINTS CHARACTERIZED BY AN IMBALANCE BETWEEN THE SYNTHESIS AND DEGRADATION OF THE ARTICULAR CARTILAGE, LEADING TO THE CLASSIC PATHOLOGIC CHANGES OF WEARIN AWAY AND DESTRUCTION OF CARTILAGE.</p> <p>OSTEOARTHRITIS (OA) IS ONE OF THE OLDEST AND MOST COMMON DISEASES IN HUMANS AND TH COMMON FORM OF JOINT DISEASE IN THE WORLD.</p> <p>THE TERM "OSTEOARTHRITIS" MEANS "JOINT INFLAMMATION." BECAUSE OA DOES NOT PRESENT O AS AN INFLAMMATORY DISORDER, SOME HAVE SUGGESTED THAT THE TERM "OSTEOARTHRITIS," OR DISEASE, "IS MORE APPROPRIATE. ALTHOUGH OA IS CONSIDERED A NONINFLAMMATORY FORM OF ARTHRITIS, THERE CAN BE A SMALL INFLAMMATORY COMPONENT. HOWEVER, THIS INFLAMMATION IS LESS INTENSE THAN THAT SEEN IN RHEUMATOID ARTHRITIS, WHICH IS CONSIDERED AN INFLAMMATO OF ARTHRITIS.</p> <p>IN SOME RESPECTS, OA APPEARS TO BE A NORMAL RESPONSE OF THE JOINT TO CARTILAGE WEAR.</p> </div> </td> </tr> </table>		DEFINITION & CLASSIFICATION	EPIDEMIOLOGY	PATHOPHYSIOLOGY	DIAGNOSIS	TREATMENT GUIDELINES	<div style="text-align: center; margin-bottom: 10px;"> ADD TO MY FOLDER PRINT PAGE </div> <div> <p>DEFINITION</p> <p>OSTEOARTHRITIS IS PRIMARILY A NONINFLAMMATORY DISORDER OF MOVABLE JOINTS CHARACTERIZED BY AN IMBALANCE BETWEEN THE SYNTHESIS AND DEGRADATION OF THE ARTICULAR CARTILAGE, LEADING TO THE CLASSIC PATHOLOGIC CHANGES OF WEARIN AWAY AND DESTRUCTION OF CARTILAGE.</p> <p>OSTEOARTHRITIS (OA) IS ONE OF THE OLDEST AND MOST COMMON DISEASES IN HUMANS AND TH COMMON FORM OF JOINT DISEASE IN THE WORLD.</p> <p>THE TERM "OSTEOARTHRITIS" MEANS "JOINT INFLAMMATION." BECAUSE OA DOES NOT PRESENT O AS AN INFLAMMATORY DISORDER, SOME HAVE SUGGESTED THAT THE TERM "OSTEOARTHRITIS," OR DISEASE, "IS MORE APPROPRIATE. ALTHOUGH OA IS CONSIDERED A NONINFLAMMATORY FORM OF ARTHRITIS, THERE CAN BE A SMALL INFLAMMATORY COMPONENT. HOWEVER, THIS INFLAMMATION IS LESS INTENSE THAN THAT SEEN IN RHEUMATOID ARTHRITIS, WHICH IS CONSIDERED AN INFLAMMATO OF ARTHRITIS.</p> <p>IN SOME RESPECTS, OA APPEARS TO BE A NORMAL RESPONSE OF THE JOINT TO CARTILAGE WEAR.</p> </div>				
DEFINITION & CLASSIFICATION	EPIDEMIOLOGY	PATHOPHYSIOLOGY	DIAGNOSIS	TREATMENT GUIDELINES									
<div style="text-align: center; margin-bottom: 10px;"> ADD TO MY FOLDER PRINT PAGE </div> <div> <p>DEFINITION</p> <p>OSTEOARTHRITIS IS PRIMARILY A NONINFLAMMATORY DISORDER OF MOVABLE JOINTS CHARACTERIZED BY AN IMBALANCE BETWEEN THE SYNTHESIS AND DEGRADATION OF THE ARTICULAR CARTILAGE, LEADING TO THE CLASSIC PATHOLOGIC CHANGES OF WEARIN AWAY AND DESTRUCTION OF CARTILAGE.</p> <p>OSTEOARTHRITIS (OA) IS ONE OF THE OLDEST AND MOST COMMON DISEASES IN HUMANS AND TH COMMON FORM OF JOINT DISEASE IN THE WORLD.</p> <p>THE TERM "OSTEOARTHRITIS" MEANS "JOINT INFLAMMATION." BECAUSE OA DOES NOT PRESENT O AS AN INFLAMMATORY DISORDER, SOME HAVE SUGGESTED THAT THE TERM "OSTEOARTHRITIS," OR DISEASE, "IS MORE APPROPRIATE. ALTHOUGH OA IS CONSIDERED A NONINFLAMMATORY FORM OF ARTHRITIS, THERE CAN BE A SMALL INFLAMMATORY COMPONENT. HOWEVER, THIS INFLAMMATION IS LESS INTENSE THAN THAT SEEN IN RHEUMATOID ARTHRITIS, WHICH IS CONSIDERED AN INFLAMMATO OF ARTHRITIS.</p> <p>IN SOME RESPECTS, OA APPEARS TO BE A NORMAL RESPONSE OF THE JOINT TO CARTILAGE WEAR.</p> </div>													

FIG. 25

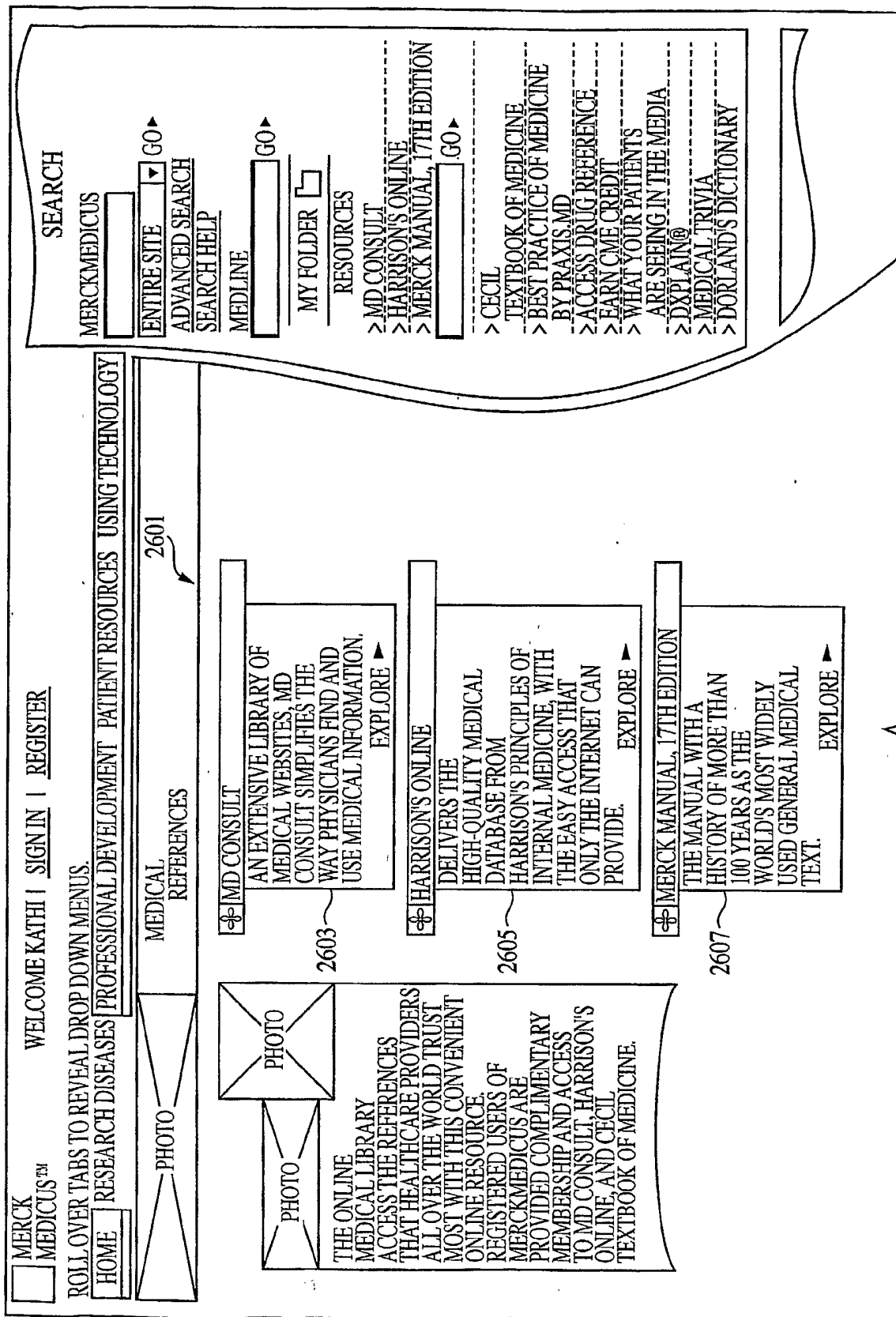
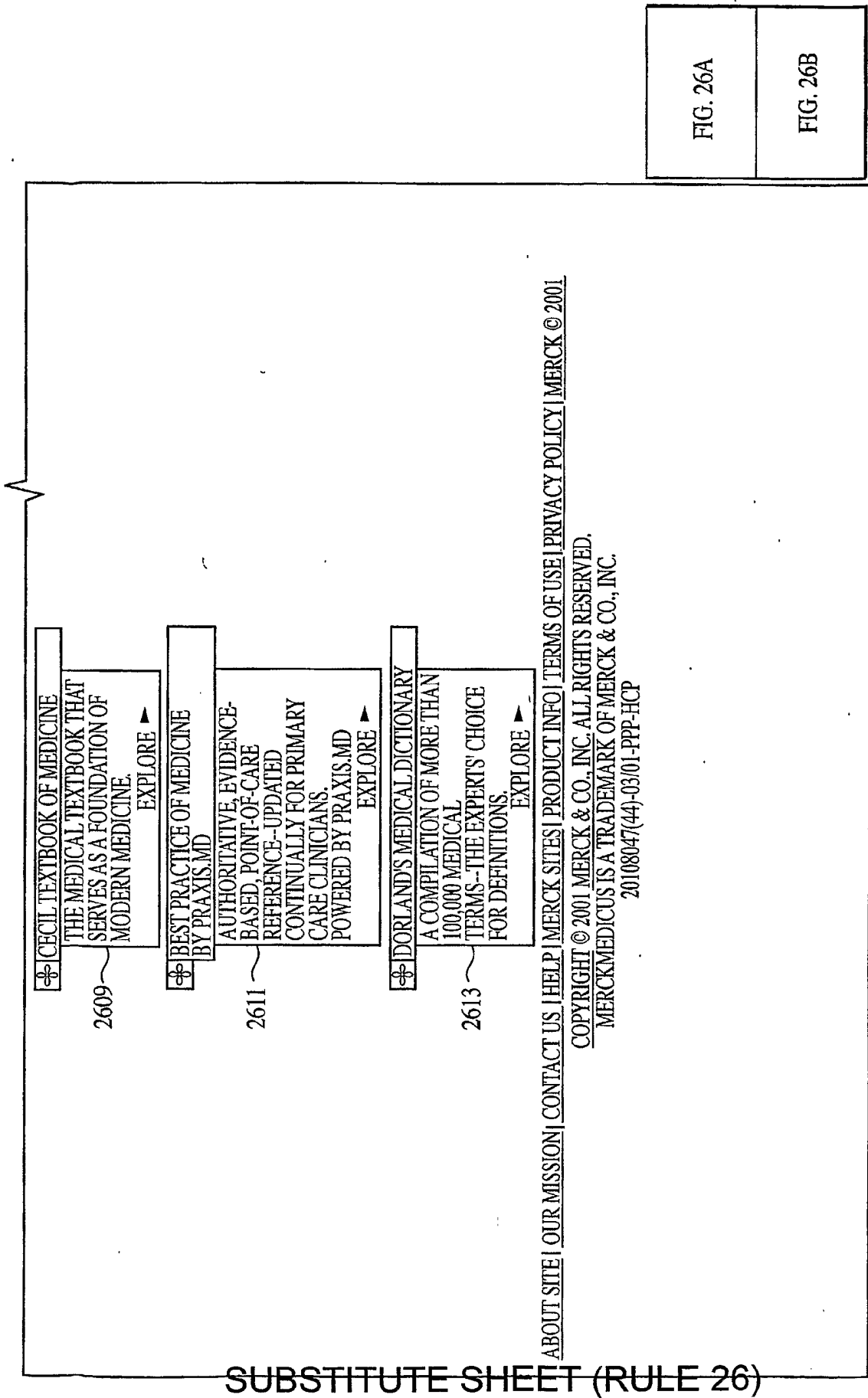


FIG. 26A



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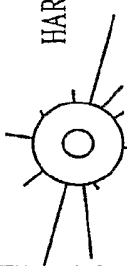
[15 OF 16]

FIG. 27



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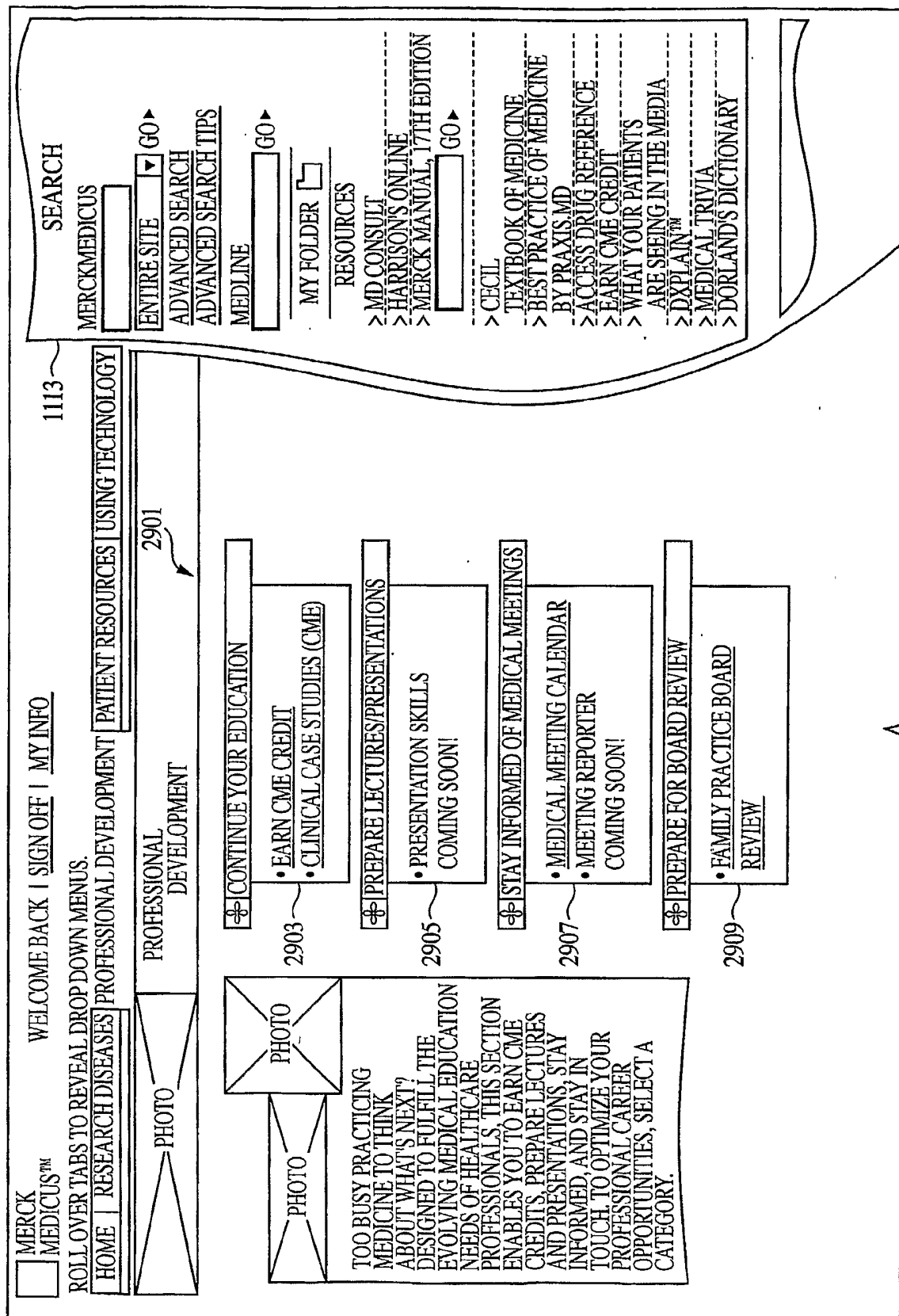
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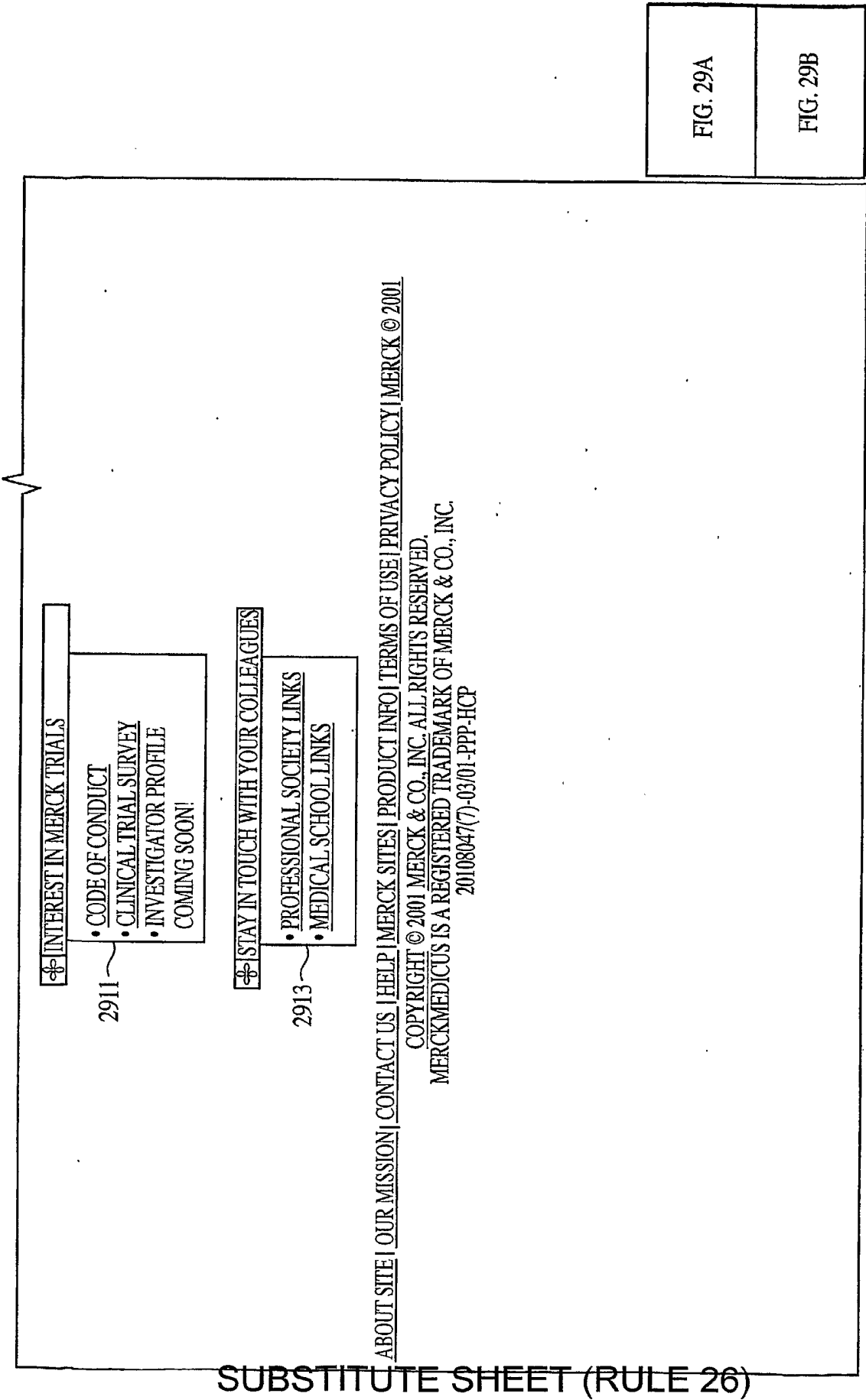
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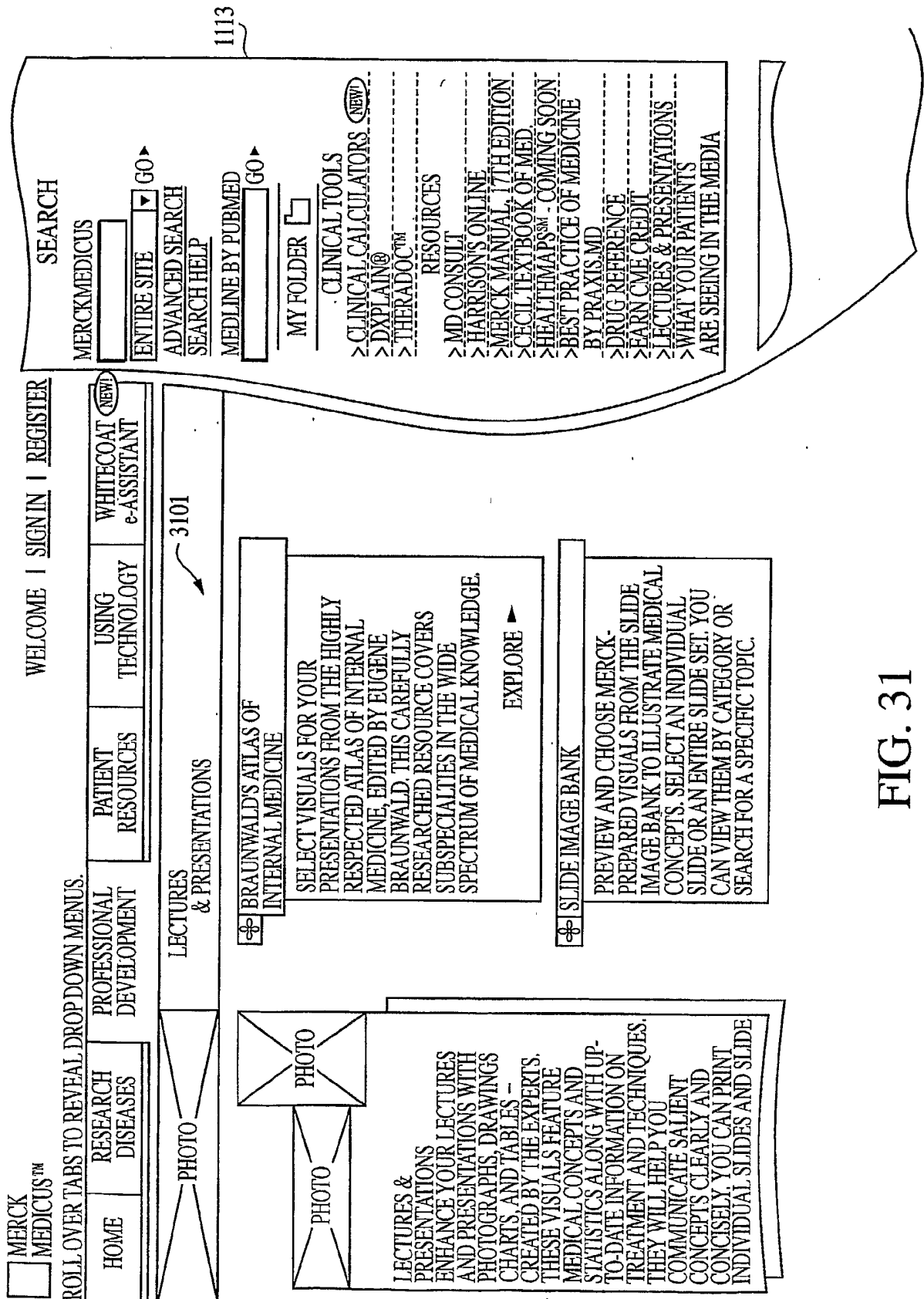
FIG. 28

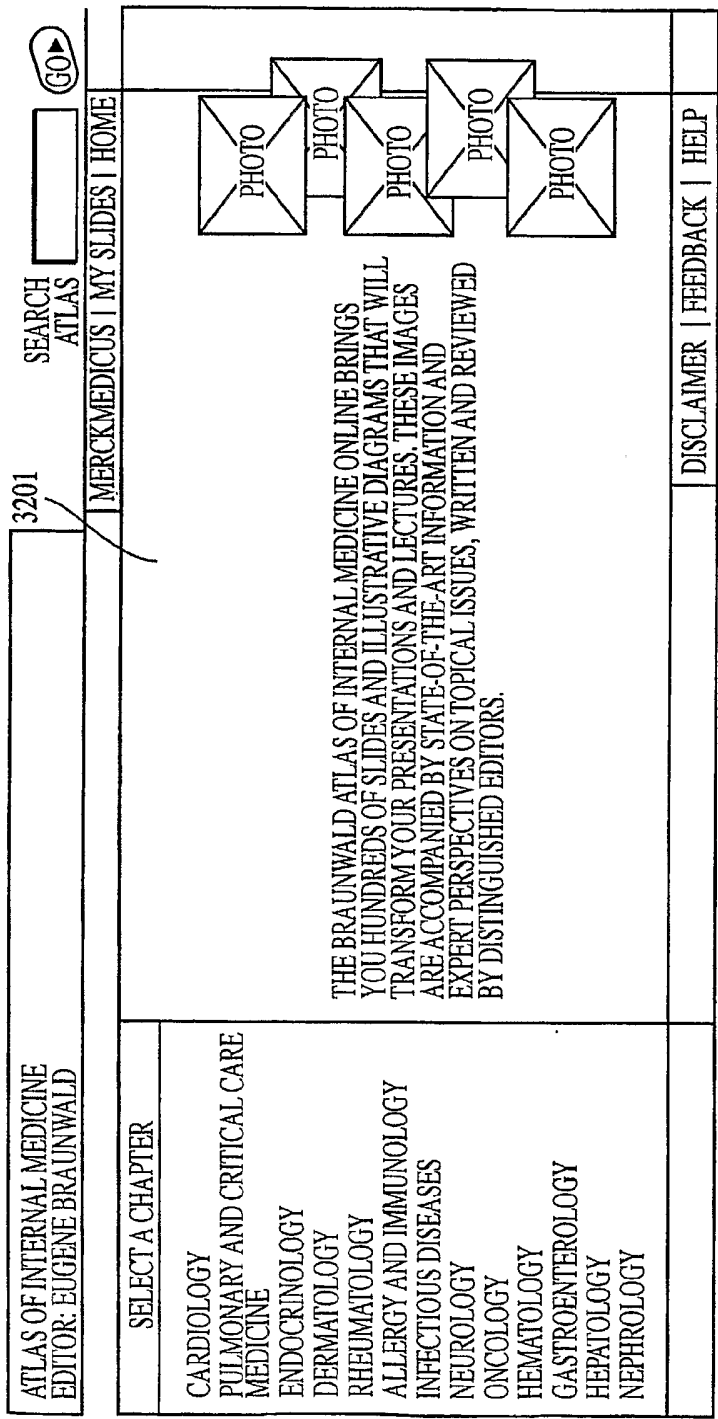




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FIG. 30





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FIG. 32

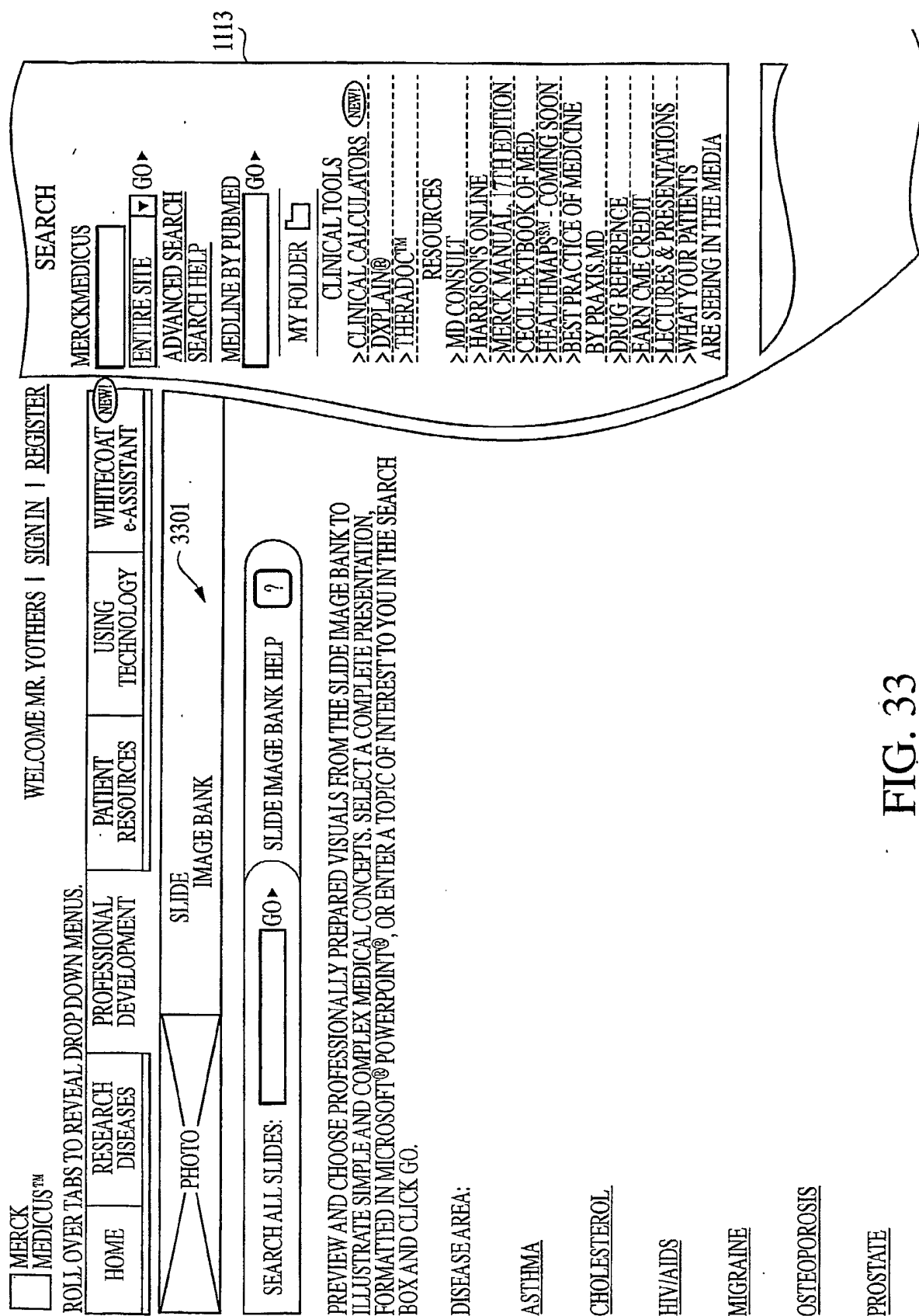
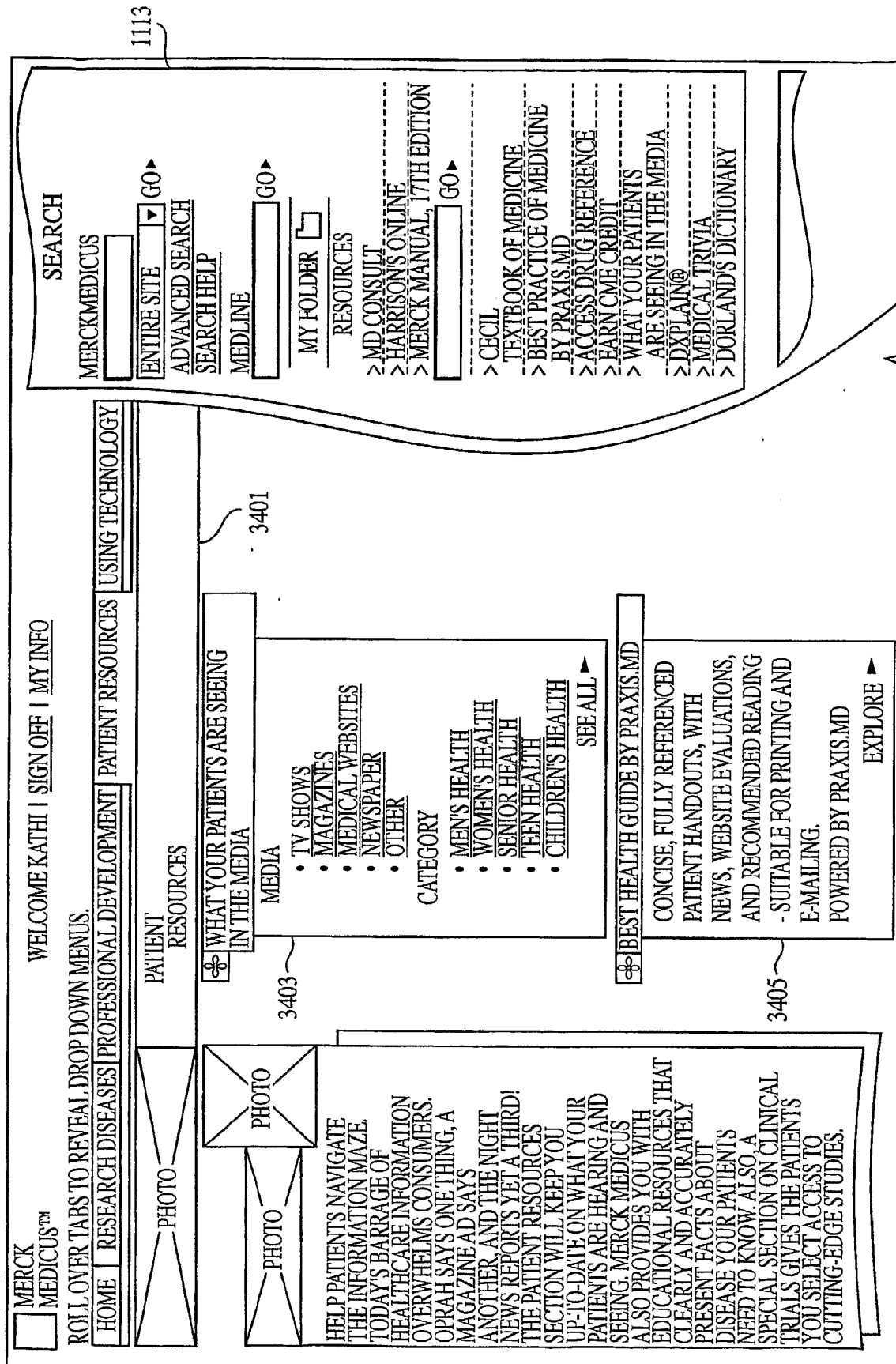


FIG. 33



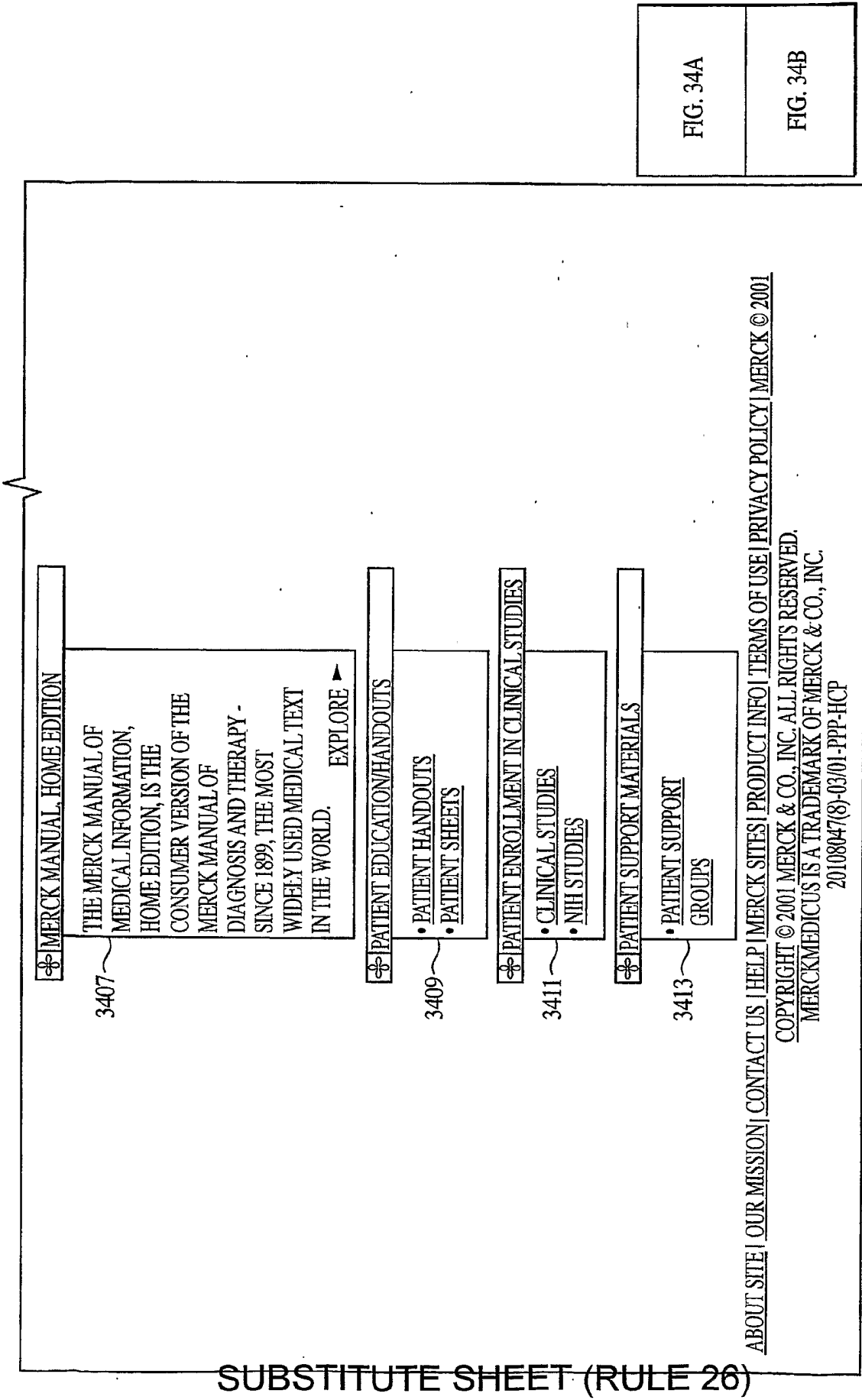


FIG. 34A
FIG. 34B

FIG. 34

FIG. 34B

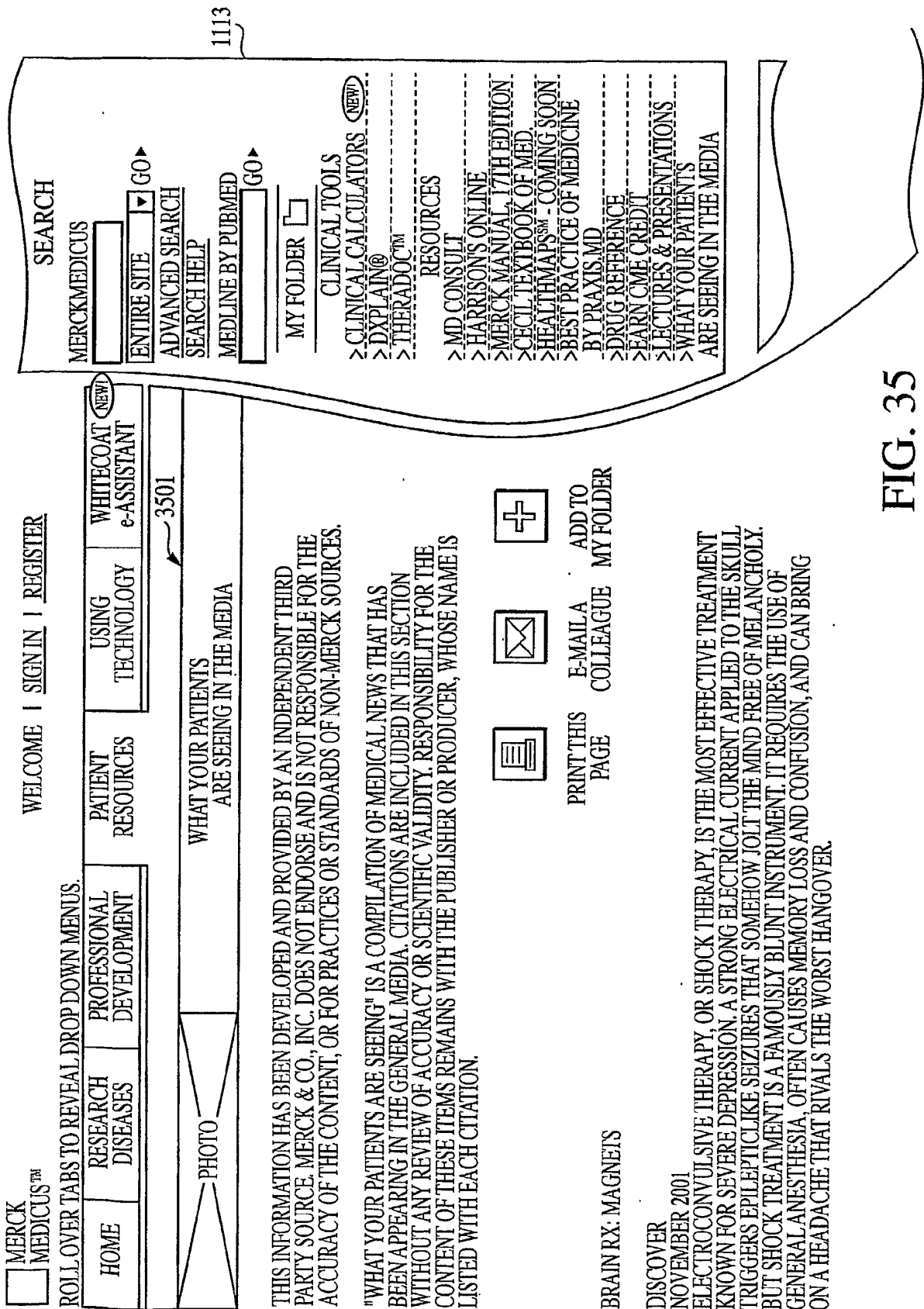


FIG. 35

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FIG. 36

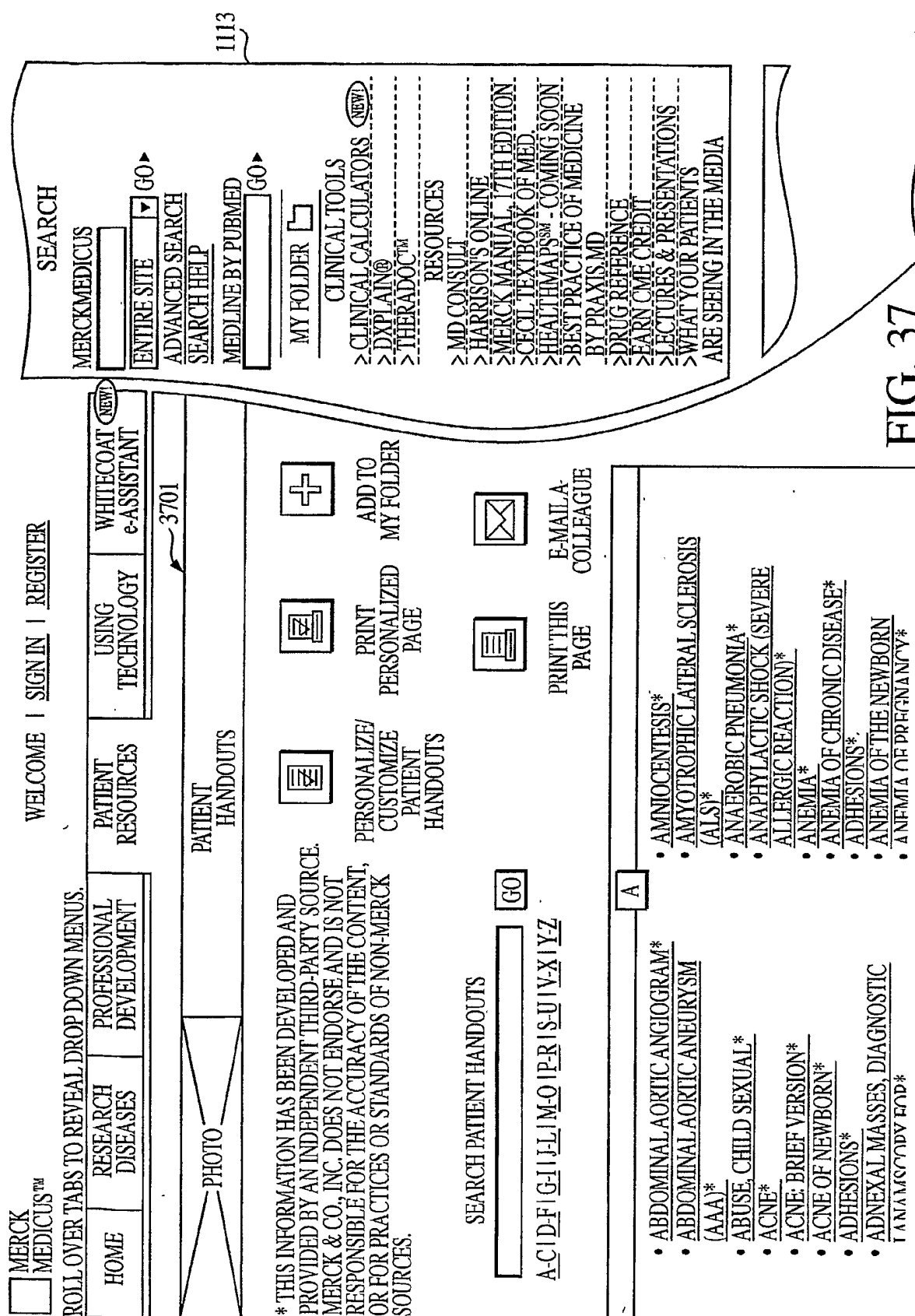


FIG. 37

FIG. 38

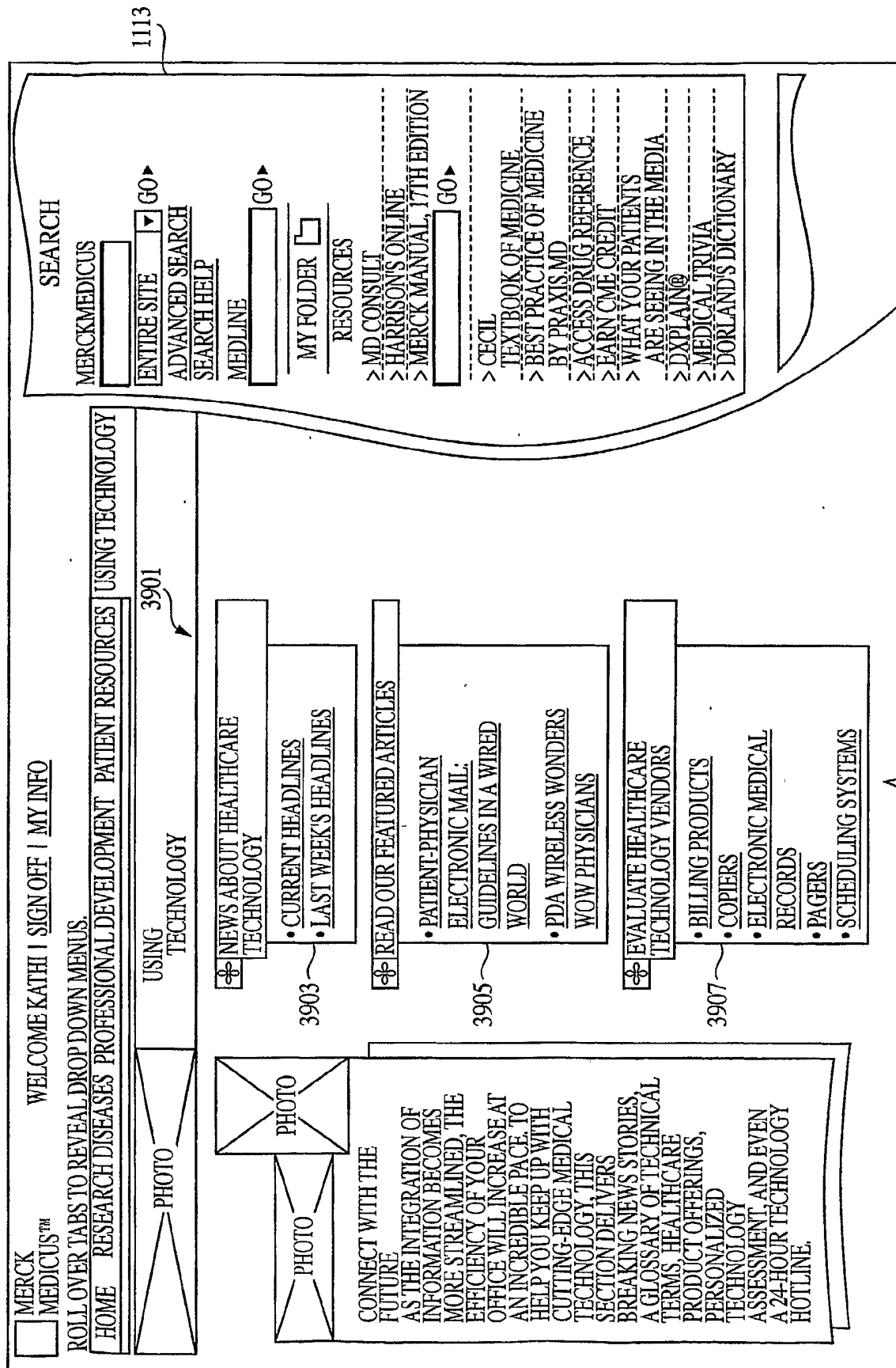


FIG. 39A

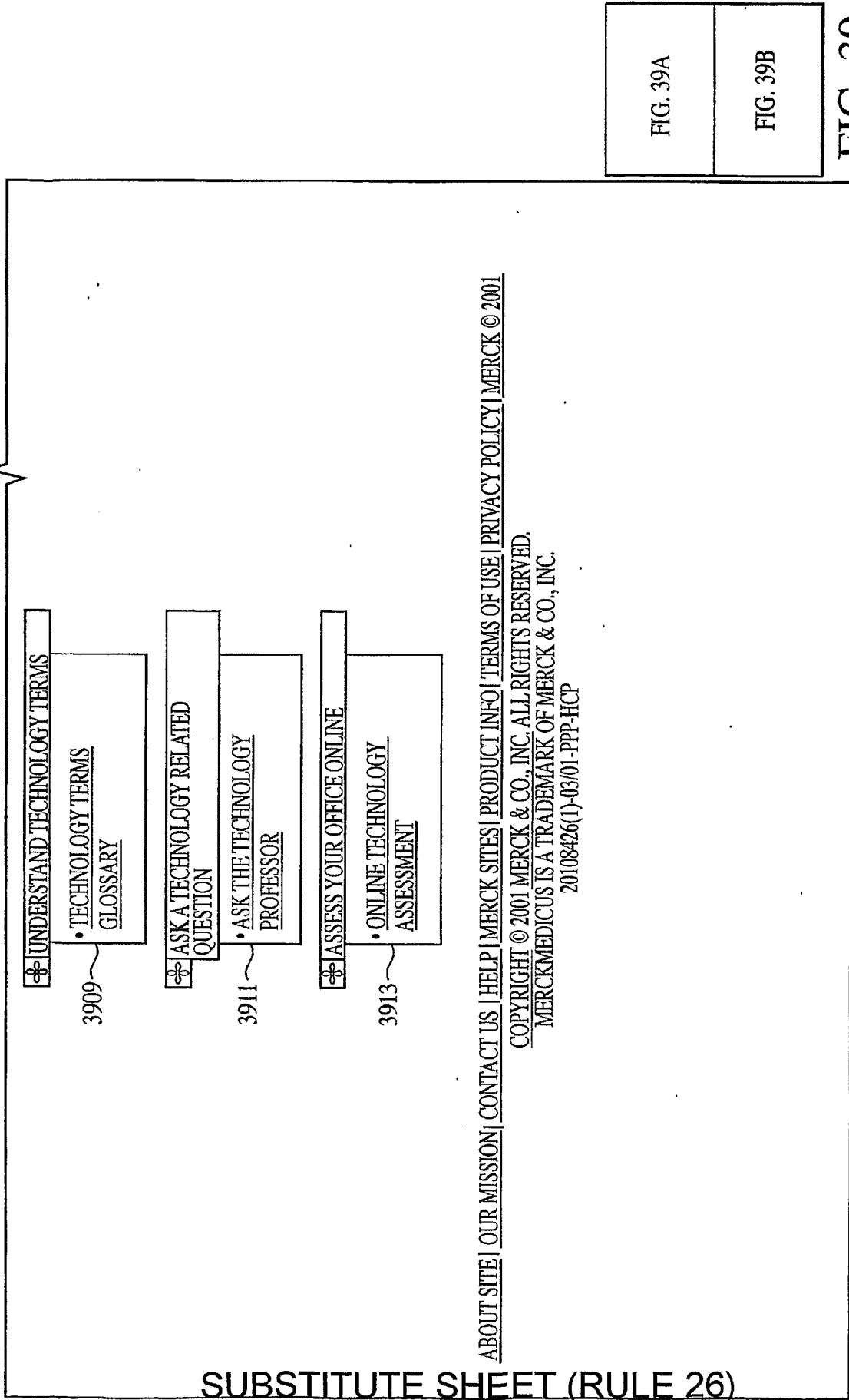


FIG. 39

FIG. 39B

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FIG. 40

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FIG. 41

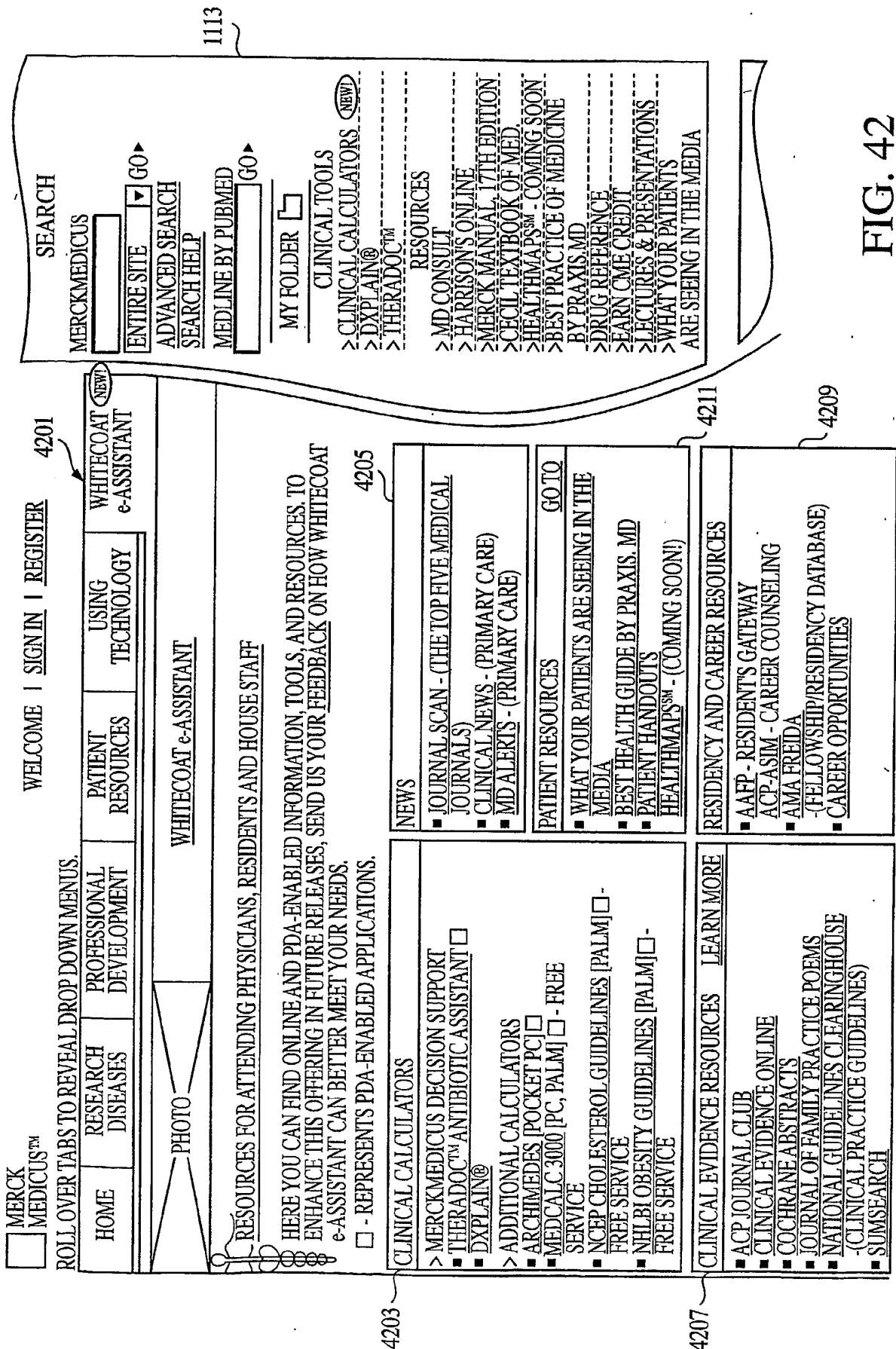


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<div style="display: flex; align-items: center; justify-content: center;"> <div> <div style="border: 1px solid black; padding: 5px; display: inline-block;">PHOTO</div> <div style="margin-left: 10px;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">SEARCH RESULTS</div> <div style="margin-left: 10px;">4501</div> </div> </div> </div>																						
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<div style="display: flex; justify-content: space-between; align-items: center;"> <div> <div style="border: 1px solid black; padding: 2px 5px;">SEARCH</div> <div style="border: 1px solid black; padding: 2px 5px;">ARTHRITIS</div> <div style="border: 1px solid black; padding: 2px 5px;">ENTIRE SITE</div> <div style="border: 1px solid black; padding: 2px 5px;">▼</div> <div style="border: 1px solid black; padding: 2px 5px;">▷ GO</div> </div> <div> <div style="border: 1px solid black; padding: 2px 5px;">ADVANCED SEARCH</div> <div style="border: 1px solid black; padding: 2px 5px;">SEARCH HELP</div> <div style="border: 1px solid black; padding: 2px 5px;">PRINT THIS PAGE</div> </div> </div>																						
<div style="display: flex; justify-content: space-between;"> <div> <p>SEARCH RESULTS FOR: ARTHRITIS</p> <div style="display: flex; align-items: center;"> <input type="checkbox"/> NEWS <div style="margin-left: 10px;">RESULTS 1-2 OF 46</div> <div style="margin-left: 10px;">MORE...</div> <div style="margin-left: 10px;">RELEVANCE RANKING 65%</div> </div> <ol style="list-style-type: none"> 1. DECAF COFFEE LOCKED TO ARTHRITIS RISK BY MELISSA SCHORR SAN FRANCISCO, NOV 13 (RUETERS HEALTH). DECAFFEINATED COFFEE MAY RAISE WOMEN'S RISK OF DEVELOPING RHEUMATOID ARTHRITIS, ACCORDING TO THE... HTTP://MERCKMEDICUS.COM/PPI/HCP/HCP_NEWSARTICLE.JSP?_NEWSID=37814&NEWSGROUP= 2. NEWS BUREAU, MD NEWS - HEALTHCARE QUALITY FOR RHEUMATOID ARTHRITIS PATIENTS IS SUBOPTIMAL. HEALTHCARE QUALITY FOR RHEUMATOID ARTHRITIS PATIENTS IS SUBOPTIMAL HTTP://MERCKPRAXIS.COM/INDEX_JSP/PAGE=NEWSARCHIVE&NEWS_ID=ID1597&NEWS=MD </div> <div> <div style="border: 1px solid black; padding: 2px 5px;">MEDICAL REFERENCES</div> <div style="margin-left: 10px;">RESULTS 1-2 OF 512</div> <div style="margin-left: 10px;">MORE...</div> <div style="margin-left: 10px;">RELEVANCE RANKING 55%</div> <ol style="list-style-type: none"> 1. PRAXIS, MD - BEST PRACTICE, MEDICINE - REACTIVE AND ENTEROPATHIC ARTHRITIS RHEUMATOLOGY, REACTIVE AND ENTEROPATHIC ARTHRITIS HTTP://MERCKPRAXIS.COM/PPI/MX1PM.ASP?PAGE=CFM02RH39-1 2. PRAXIS, MD - BEST PRACTICE MEDICINE - INFECTIOUS ARTHRITIS AND BURSTITIS </div> </div>																						
<div style="display: flex; justify-content: space-between;"> <div> <p>SITE SEARCH SUMMARY</p> <p>LEARN MORE >>></p> <table style="width: 100%;"> <thead> <tr> <th>SOURCE</th> <th>RESULTS</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> BEST HEALTH GUIDE BY PRAXIS.MD</td> <td>10</td> </tr> <tr> <td><input type="checkbox"/> BEST PRACTICE OF MEDICINE BY PRAXIS.MD</td> <td>14</td> </tr> <tr> <td><input type="checkbox"/> DISEASE MODULES</td> <td>6</td> </tr> <tr> <td><input type="checkbox"/> DORLAND'S MEDICAL DICTIONARY</td> <td>98</td> </tr> <tr> <td><input type="checkbox"/> HIV/AIDS SECTION</td> <td>1</td> </tr> <tr> <td><input type="checkbox"/> MD ALERTS</td> <td>2</td> </tr> <tr> <td><input type="checkbox"/> MEDICAL NEWS BY PRAXIS.MD</td> <td>12</td> </tr> <tr> <td><input type="checkbox"/> MERCK MANUAL, 17TH EDITION</td> <td>113</td> </tr> </tbody> </table> </div> </div>					SOURCE	RESULTS	<input type="checkbox"/> BEST HEALTH GUIDE BY PRAXIS.MD	10	<input type="checkbox"/> BEST PRACTICE OF MEDICINE BY PRAXIS.MD	14	<input type="checkbox"/> DISEASE MODULES	6	<input type="checkbox"/> DORLAND'S MEDICAL DICTIONARY	98	<input type="checkbox"/> HIV/AIDS SECTION	1	<input type="checkbox"/> MD ALERTS	2	<input type="checkbox"/> MEDICAL NEWS BY PRAXIS.MD	12	<input type="checkbox"/> MERCK MANUAL, 17TH EDITION	113
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<input type="checkbox"/> MERCK MANUAL, 17TH EDITION	113																					

FIG. 45

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SHOW: 20 [▼] ITEMS 1-20 of 65187 PAGE 1 OF 3260 SELECT PAGE: 1 2 3 4 5 6 7 8 9 10 >>

☐ 1: NOGUCHI E, YOKOUCHI Y, SHIBASAKI M, KAMIOKA M, YAMAKAWA-KABAYASHI K, MATSUI A, ARINAMI T.
IDENTIFICATION OF MISSENSE MUTATION IN THE IL12B GENE: LACK OF ASSOCIATION BETWEEN IL12B POLYMORPHISMS AND ASTHMA AND ALLERGIC RHINITIS IN THE JAPANESE POPULATION.
GENES IMMUN. 2001 NOV;2(7):401-403
PMID: 11704807 [PUBMED - AS SUPPLIED BY PUBLISHER]

☐ 2: BUSSE WW.
ANTI-IMMUNOGLOBULIN E (OMALIZUMAB) THERAPY IN ALLERGIC ASTHMA.
AM J RESPIR CRIT CARE MED. 2001 OCT 15;164(8):S12-S17.
PMID: 11704612 [PUBMED - AS SUPPLIED BY PUBLISHER]

☐ 3: SCHULMAN ES.
DEVELOPMENT OF A MONOCLONAL ANTI-IMMUNOGLOBULIN E ANTIBODY (OMALIZUMAB) FOR THE TREATMENT OF ALLERGIC RESPIRATORY DISORDERS
AM J RESPIR CRIT CARE MED. 2001 OCT 15;164(8):S6-S11.
PMID: 11704611 [PUBMED - AS SUPPLIED BY PUBLISHER]

☐ 4: PLATTS-MILLS TA.
THE ROLE OF IMMUNOGLOBULIN E IN ALLERGY AND ASTHMA.
AM J RESPIR CRIT CARE MED. 2001 OCT 15;164(8):S1-S5

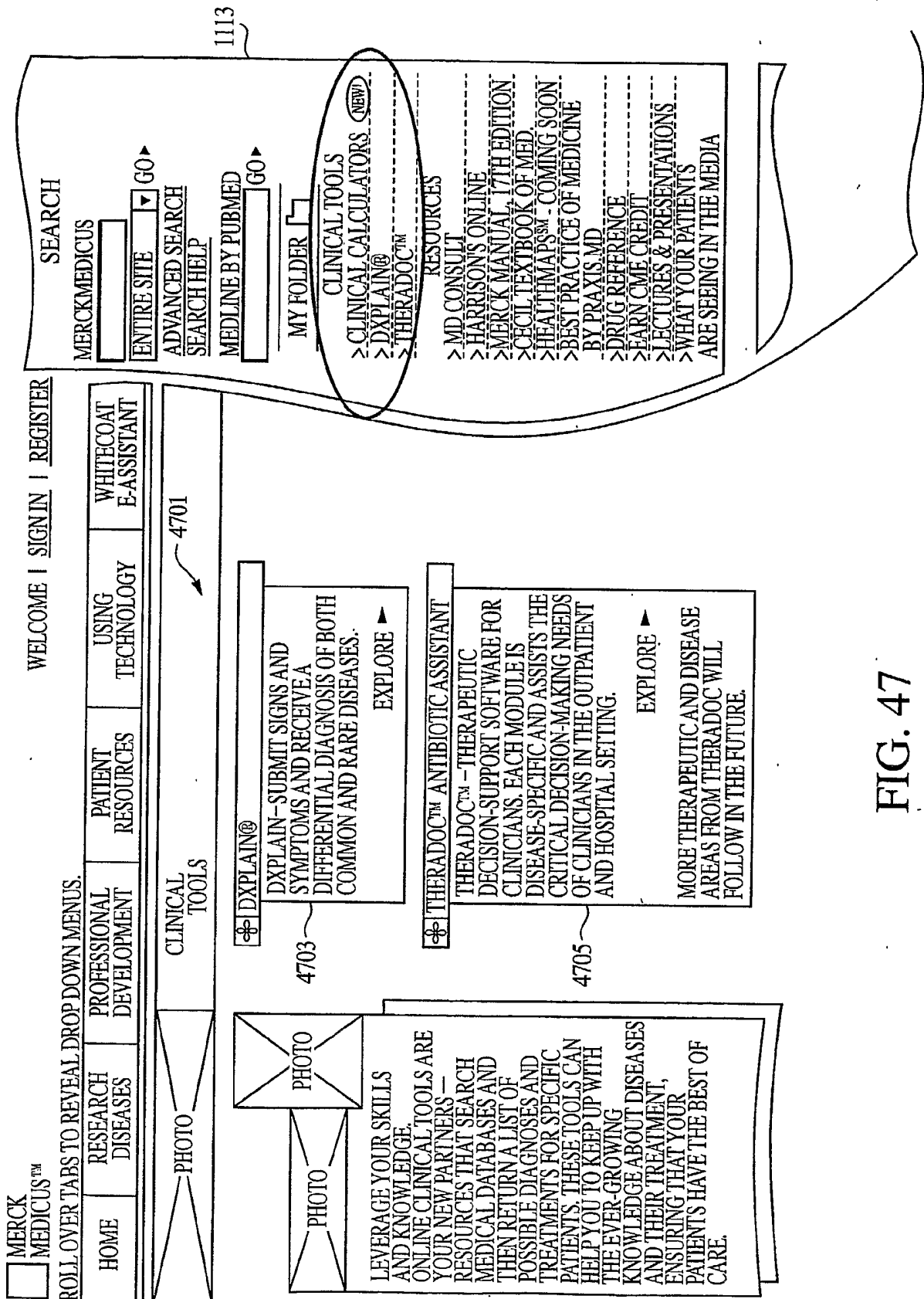


FIG. 47

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ANTIBIOTIC THERADOC ASSISTANT

↘ 4801

THE THERADOC ANTIBIOTIC ASSISTANT™ PROVIDES THE CLINICIAN THE ABILITY TO GENERATE A PATIENT-SPECIFIC AND DISEASE-SPECIFIC EVIDENCE-BASED ANTIBIOTIC RECOMMENDATION.

THE CLINICIAN CAN ENTER KEY PATIENT DEMOGRAPHIC INFORMATION AND THEN BY ANSWERING A SERIES OF DISEASE SPECIFIC QUESTIONS, RECEIVE AN ANTIBIOTIC RECOMMENDATION TAILORED TO THE NEEDS OF THE PATIENT.

THE ANTIBIOTIC ASSISTANT IS FINALLY THE ONE TOOL THAT CAN PROVIDE TRUE POINT OF CARE CLINICAL DECISION SUPPORT.

THE ANTIBIOTIC ASSISTANT SPECTRUM OF SYNDROMES (CURRENTLY AVAILABLE) WILL INCLUDE THE FOLLOWING KNOWLEDGE BASES:

- BITES
- CATHETER-RELATED BACTEREMIA
- CELLULITIS/ERYSIPELAS (ADDED 11/2/01)
- DIABETIC FOOT
- ENDOCARDITIS
- ENDOCARDITIS PROPHYLAXIS
- INTRA-ABDOMINAL INFECTION/PERITONITIS
- JOINT INFECTION
- MENINGITIS
- NOSOCOMIAL SEPSIS (ADDED 11/2/01)
- PNEUMONIA
- PROSTATITIS
- SEXUALLY TRANSMITTED DISEASES (ADDED 11/2/01)
- SINUSITIS




FIG. 48

<p><input type="checkbox"/> MERCK MEDICUS™</p> <p>THIS INFORMATION HAS BEEN DEVELOPED AND PROVIDED BY AN INDEPENDENT THIRD-PARTY SOURCE. MERCK & CO., INC., DOES NOT ENDORSE AND IS NOT RESPONSIBLE FOR THE ACCURACY OF THE CONTENT, OR FOR PRACTICES OR STANDARDS OF NON-MERCK SOURCES.</p>	<p>MD CONSULT CORE COLLECTION</p> <p>HOME CLINICAL KNOWLEDGE NEWS & REPORTS PATIENT HANDOUTS PROFESSIONAL SERVICES </p> <p>HOME ○ WHAT'S NEW ○ EXPLORE OUR FEATURES ○ ABOUT MD CONSULT</p>	<p>MD CONSULT CORE COLLECTION</p> <p>HOME CLINICAL KNOWLEDGE NEWS & REPORTS PATIENT HANDOUTS PROFESSIONAL SERVICES </p> <p>HOME ○ WHAT'S NEW ○ EXPLORE OUR FEATURES ○ ABOUT MD CONSULT</p>	<p>MD CONSULT CORE COLLECTION</p> <p>HOME CLINICAL KNOWLEDGE NEWS & REPORTS PATIENT HANDOUTS PROFESSIONAL SERVICES </p> <p>HOME ○ WHAT'S NEW ○ EXPLORE OUR FEATURES ○ ABOUT MD CONSULT</p>
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WHAT'S NEW IN MD CONSULT...

☒ MD CONSULT'S NEW DESIGN

MD CONSULT HAS AN EXCITING NEW DESIGN. A NEW ORGANIZATION OF FEATURES, NEW SEARCH DESIGN, AND A CLEAN, NEW LOOK. TAKE A QUICK TOUR FOR A PREVIEW OF OUR NEW DESIGN.

☒ STEM CELL BATTLE MAY CAUSE "BRAIN DRAIN" IN US

THE DEFECTION OF A LEADING US STEM CELL SCIENTIST FROM CALIFORNIA TO GREAT BRITAIN HIGHLIGHTS A REVERSE "BRAIN DRAIN" AND TRANSATLANTIC GULF OVER CONTROVERSIAL STEM CELL

PHOTO

► TRIAL PARTICIPANT NOT AWARE OF RISKS IN FATAL EVENT

A WOMAN WHO DIED AFTER TAKING PART IN AN ASTHMA STUDY WAS NOT FULLY INFORMED OF THE RISKS INVOLVED, ACCORDING TO A COMMITTEE FORMED TO INVESTIGATE THE DEATH. YOU'LL FIND MORE INFORMATION IN MD CONSULT'S TODAY IN MEDICINE SECTION.

 PHOTO

PHOTO

► COMMON ETHICAL AND LEGAL ISSUES IN PRIMARY CARE

THE ETHICAL AND LEGAL DUTIES OF THE PRIMARY CARE PHYSICIAN INCLUDE MAINTENANCE OF CONFIDENTIALITY, PROVISION OF INFORMED CONSENT, ASSISTANCE IN DEVELOPING A HEALTH CARE PROXY AND LIVING WILL, AND DETERMINATION OF PATIENT INCOMPETENCE. THIS BOOK CHAPTER FROM PRIMARY CARE MEDICINE CAN HELP YOU ARRANGE AND MANAGE THESE IMPORTANT TASKS.

 PHOTO

4901 1113

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- > MERCKMANUAL, 17TH EDITION
- > CECIL TEXTBOOK OF MED.
- > HEALTHMAPSSM - COMING SOON
- > BEST PRACTICE OF MEDICINE BY PRAXIS MD
- > DRUG REFERENCE
- > EARN CME CREDIT
- > LECTURES & PRESENTATIONS
- > WHAT YOUR PATIENTS ARE SEEING IN THE MEDIA

FIG. 49

5001

EMAIL: *

☒ REMEMBER ME ABOUT REMEMBER ME
☐ I DO NOT WISH FOR MERCKMEDICUS TO CONTACT ME ONLINE.

5003

HEALTHCARE PROFESSIONAL PROFILE

PROFESSIONAL DESIGNATION: *

PRACTICE TYPE:

SPECIALTY: *

5005

CHOOSE YOUR SIGN-IN INFORMATION

USER NAME: *

ABOUT USER NAME
USE ANY COMBINATION OF LETTERS AND NUMBERS,
EXCEPT SPACES, FROM 6-16 CHARACTERS IN LENGTH.

PASSWORD: *

ABOUT PASSWORD
USE ANY COMBINATION OF LETTERS AND NUMBERS,
EXCEPT SPACES, FROM 6-16 CHARACTERS IN LENGTH.

RETYPE PASSWORD: *

SEX: MALE ☐ FEMALE ☐

PROFESSIONAL LICENSURE INFORMATION
FILL IN ONE OR MORE OF THE FOLLOWING.*
ABOUT PROFESSIONAL LICENSE #

STATE LICENSE #: STATE OF LICENSURE:

MEDED #:

AOA #:

HINT IF YOU FORGET YOUR PASSWORD

FORGOT-YOUR-PASSWORD QUESTION: *

ABOUT FORGOT-YOUR-PASSWORD QUESTION
ANSWER TO FORGOT-YOUR-PASSWORD QUESTION: *

ABOUT ANSWER TO YOUR QUESTION
GREETINGS:

ABOUT GREETINGS

FIG. 50

☐ MERCK
☐ MEDICUS™

WELCOME DR. JOHN [SIGN OFF]! MY INFO

ROLL OVER TABS TO REVEAL DROP DOWN MENUS.

HOME	RESEARCH DISEASES	PROFESSIONAL DEVELOPMENT	PATIENT RESOURCES	USING TECHNOLOGY	WHITECOAT E-ASSISTANT
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PHOTO

THANK YOU

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 YOUR USER NAME AND PASSWORD WILL BE SENT TO YOUR EMAIL ADDRESS.

AS A REGISTERED USER, YOU NOW HAVE ACCESS TO A NUMBER OF QUALITY RESOURCES:
 HARRISON'S ONLINE--THE ONLINE, FULLY SEARCHABLE VERSION OF HARRISON'S PRINCIPLES OF INTERNAL MEDICINE WITH BOARD REVIEW, LATE-BREAKING CLINICAL TRIAL DATA, AND MUCH MORE.
 ONLINE CME--TRACK ONLINE AND OFFLINE CME CREDITS AND OBTAIN ONLINE CME CREDIT FROM AN INDEPENDENT SITE. CHOOSE FROM OVER 700 COURSES, GROUPED BY THERAPEUTIC AREA.
 BRAUNWALD'S ATLAS OF INTERNAL MEDICINE - HUNDREDS OF SLIDES AND ILLUSTRATIVE DIAGRAMS THAT WILL TRANSFORM YOUR PRESENTATIONS AND LECTURES.
 MERCK MANUAL, 17TH EDITION, MERCK MANUAL OF GERIATRICS, 3RD EDITION, MERCK MANUAL-HOME EDITION-THE MERCK MANUAL HAS A HISTORY OF MORE THAN 100 YEARS AS THE WORLD'S MOST WIDELY USED GENERAL MEDICAL TEXT. RECENT ADDITIONS TO THE SERIES INCLUDE MANUALS FEATURING GERIATRIC MEDICINE AND CONSUMER HEALTHCARE INFORMATION.
 AND MORE...

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 > BY PRAXIS MD
 > DRUG REFERENCE
 > EARN CME CREDIT
 > LECTURES & PRESENTATIONS
 > WHAT YOUR PATIENTS
 ARE SEEING IN THE MEDIA

PLEASE NOTE...

FIG. 51A

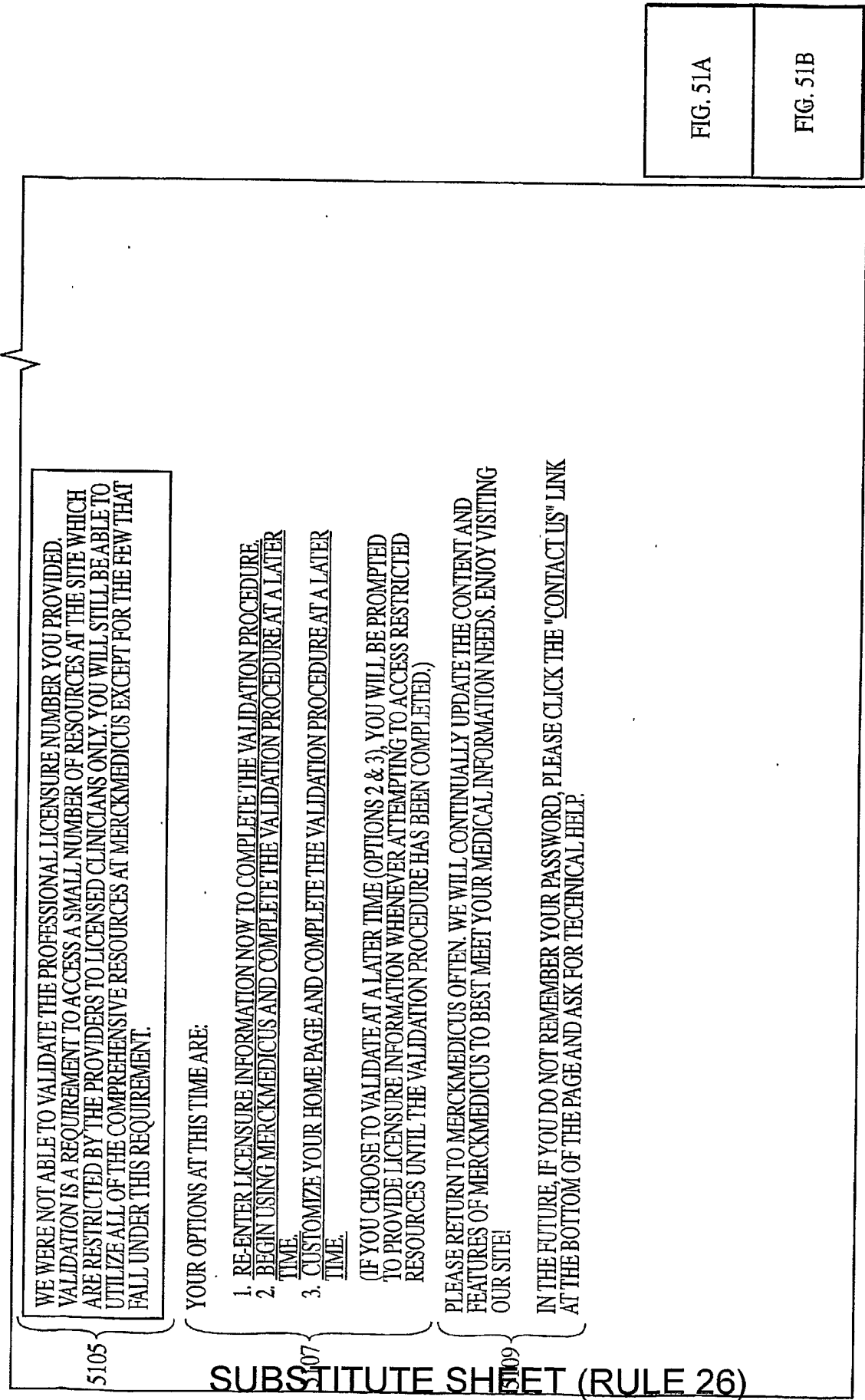


FIG. 51A
FIG. 51B

FIG. 51

FIG. 51B

5105

5107

5109

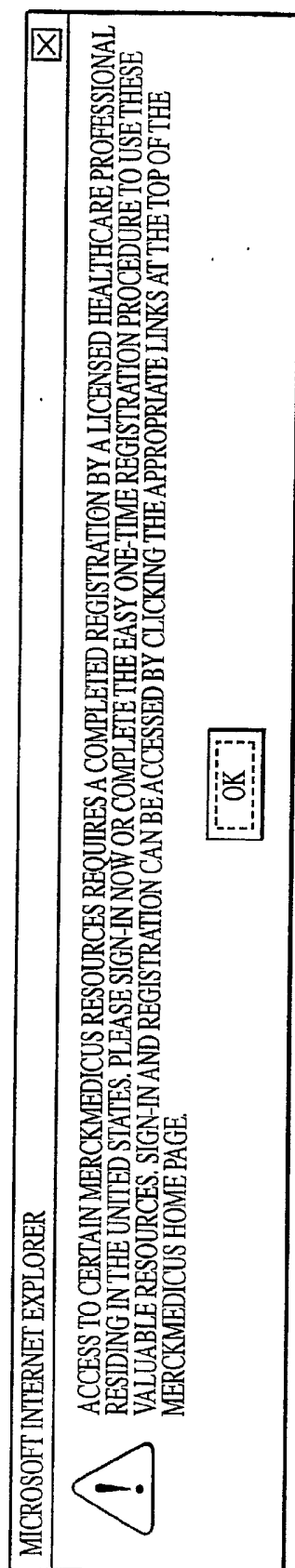


FIG. 52

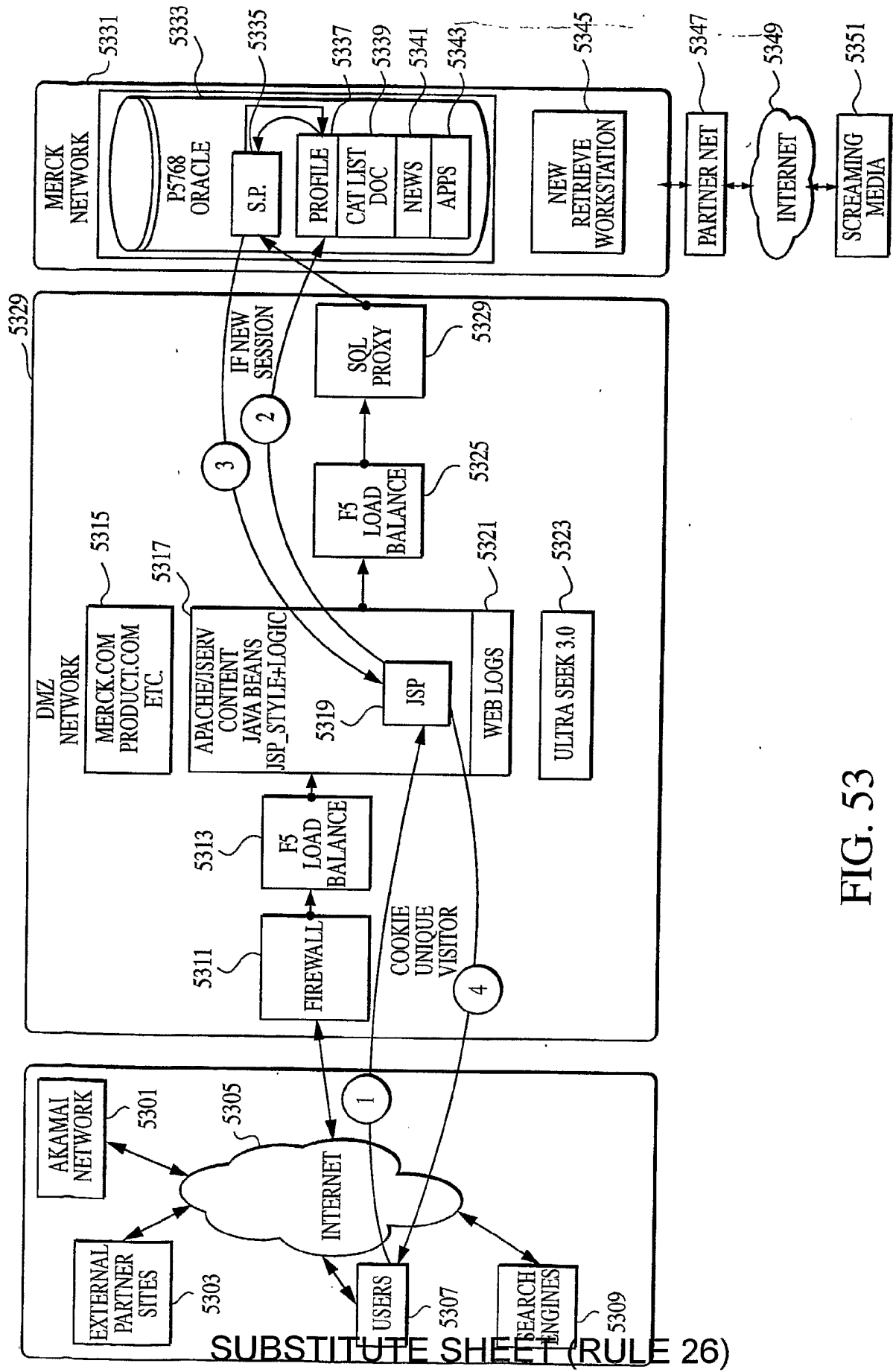


FIG. 53

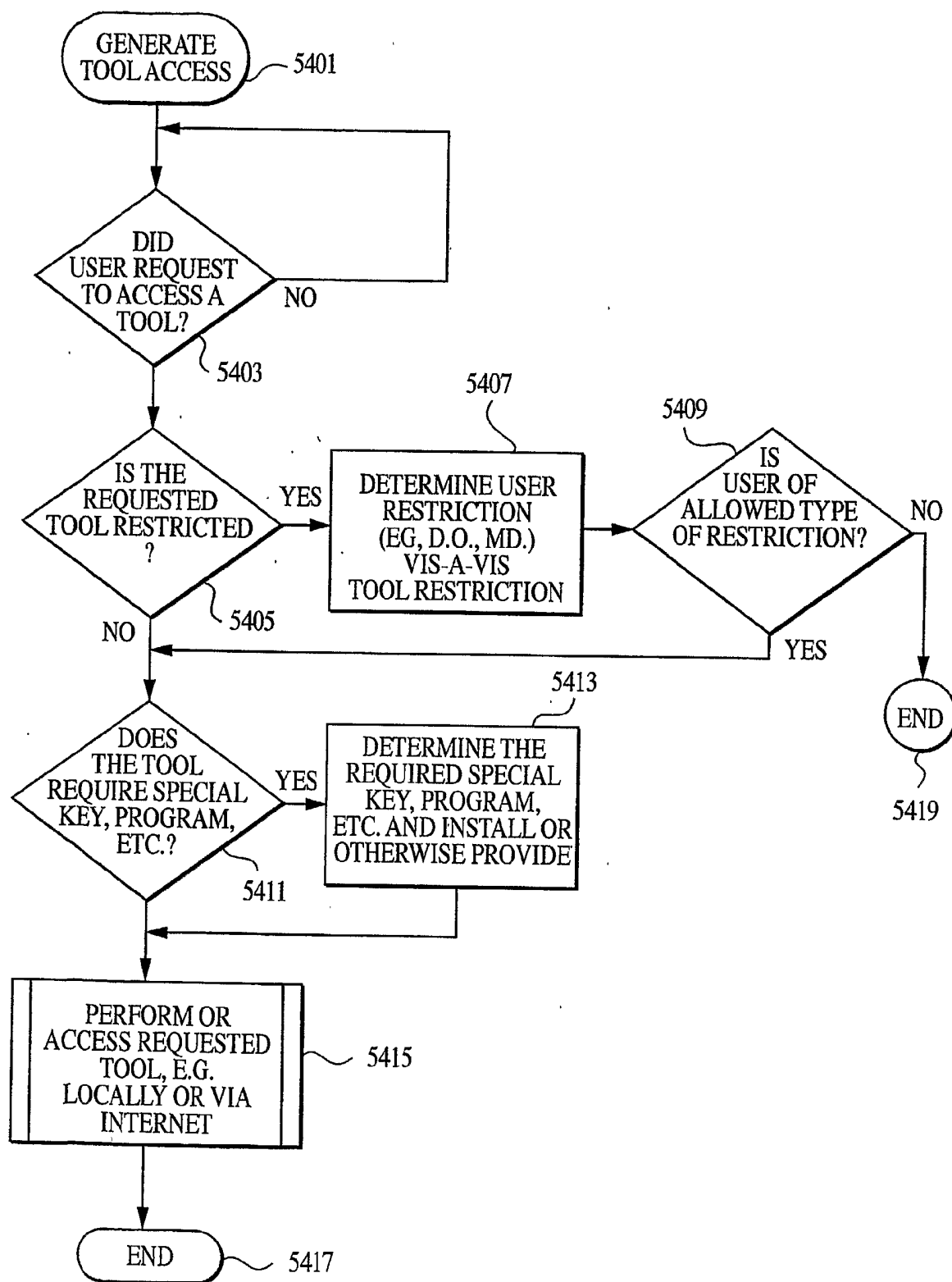


FIG. 54
SUBSTITUTE SHEET (RULE 26)

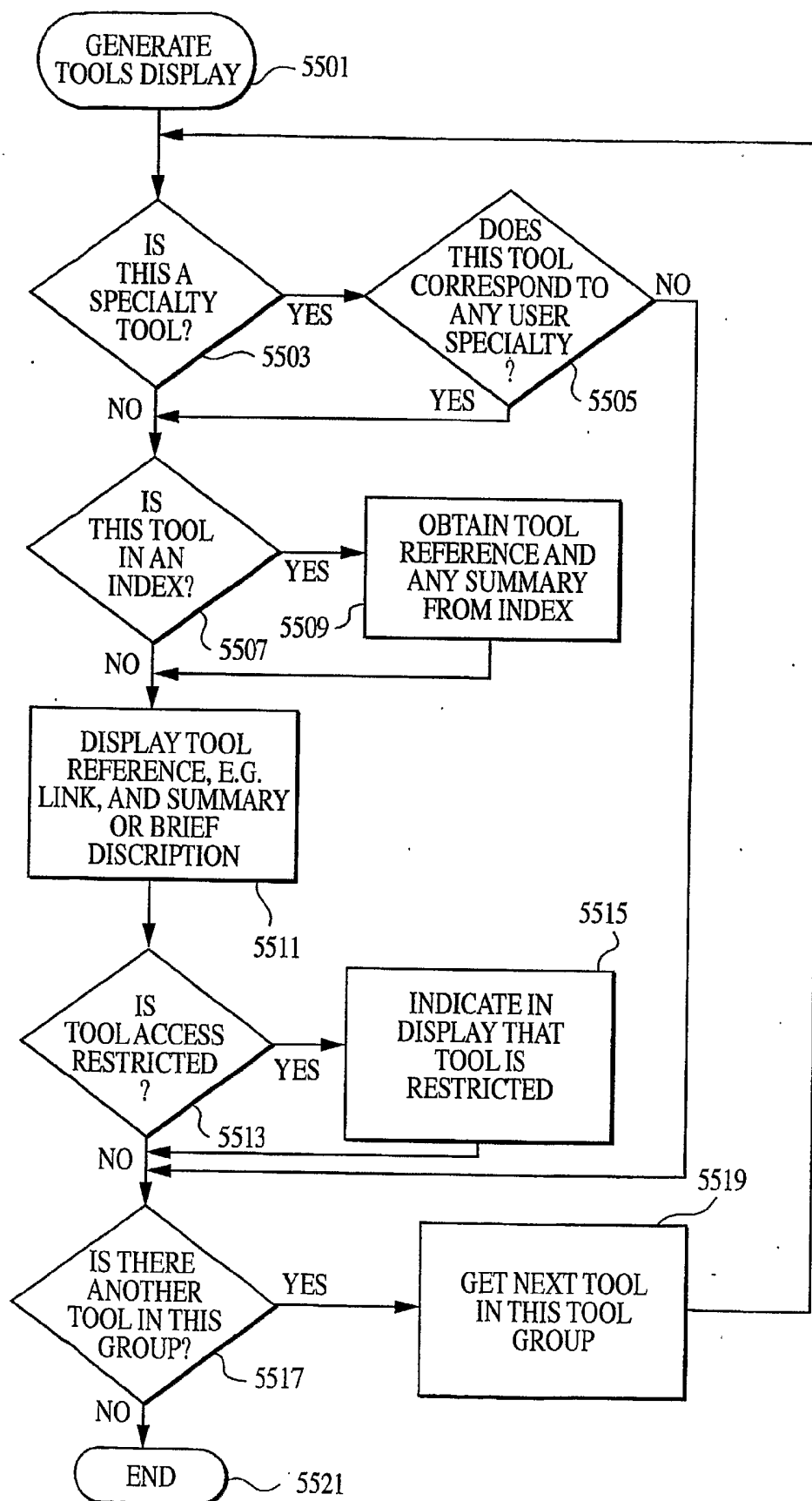


FIG. 55
SUBSTITUTE SHEET (RULE 26)

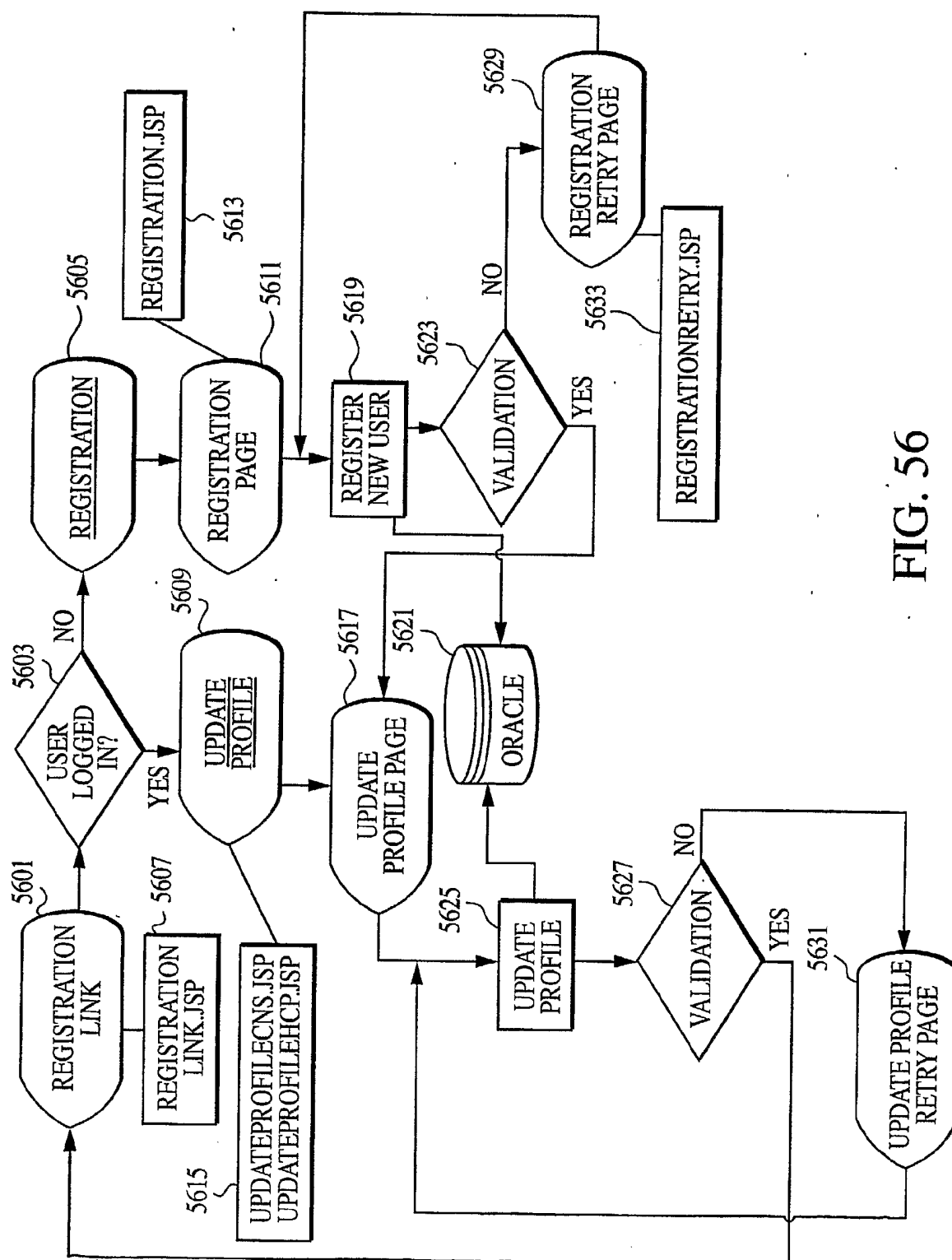
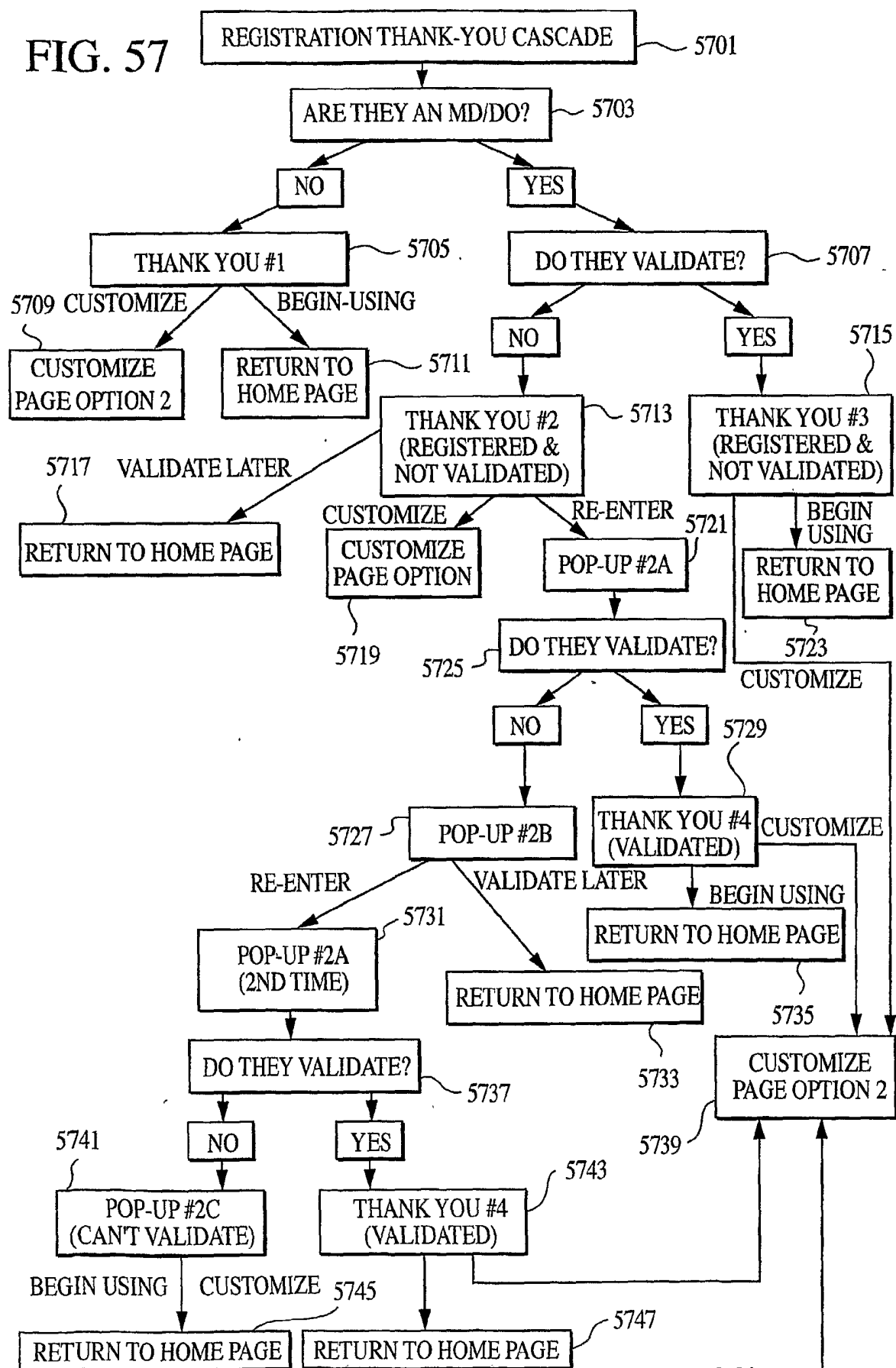


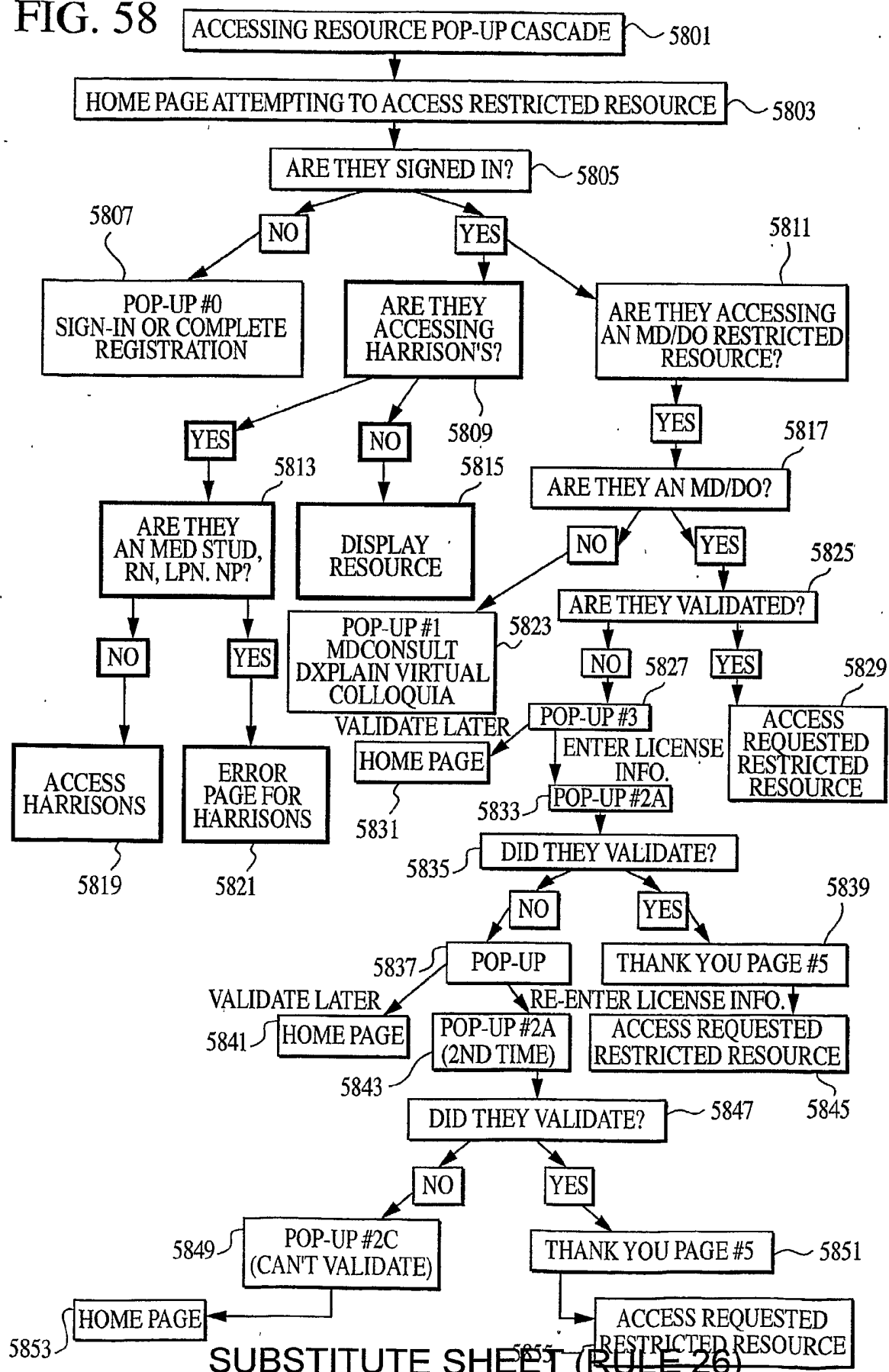
FIG. 56

FIG. 57



SUBSTITUTE SHEET (RULE 26)

FIG. 58



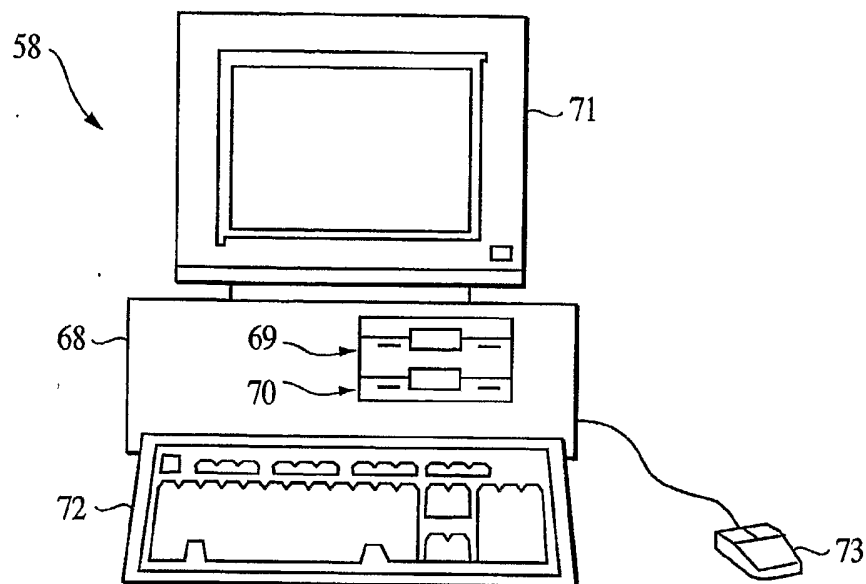


FIG. 59

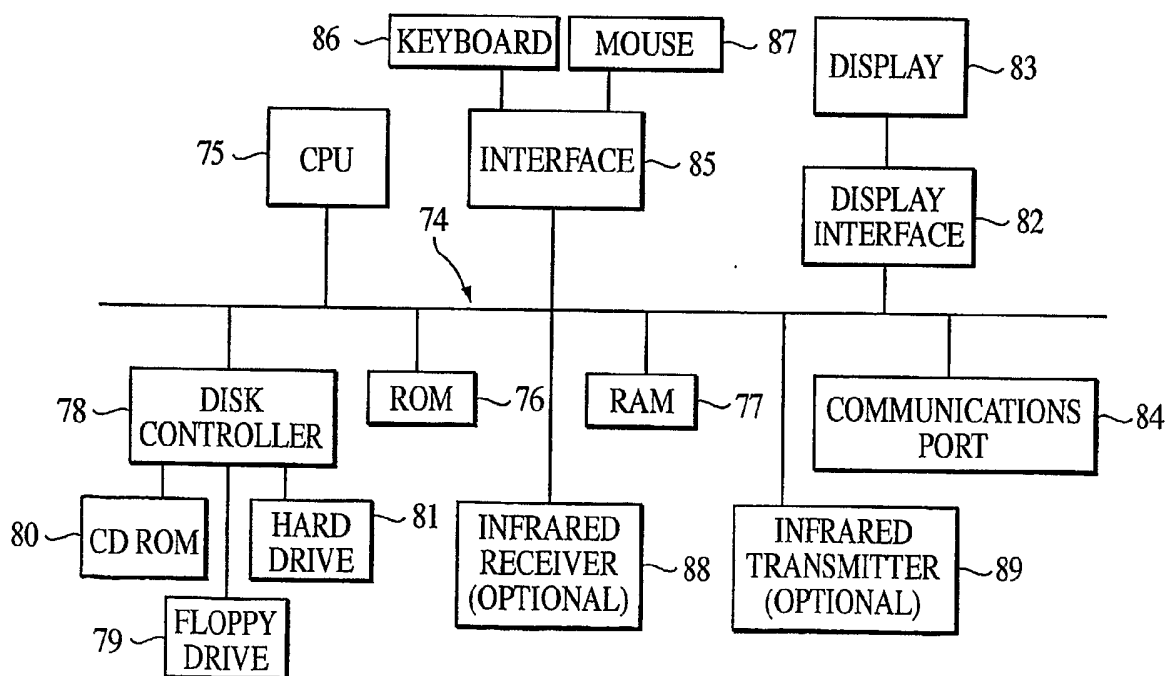


FIG. 60

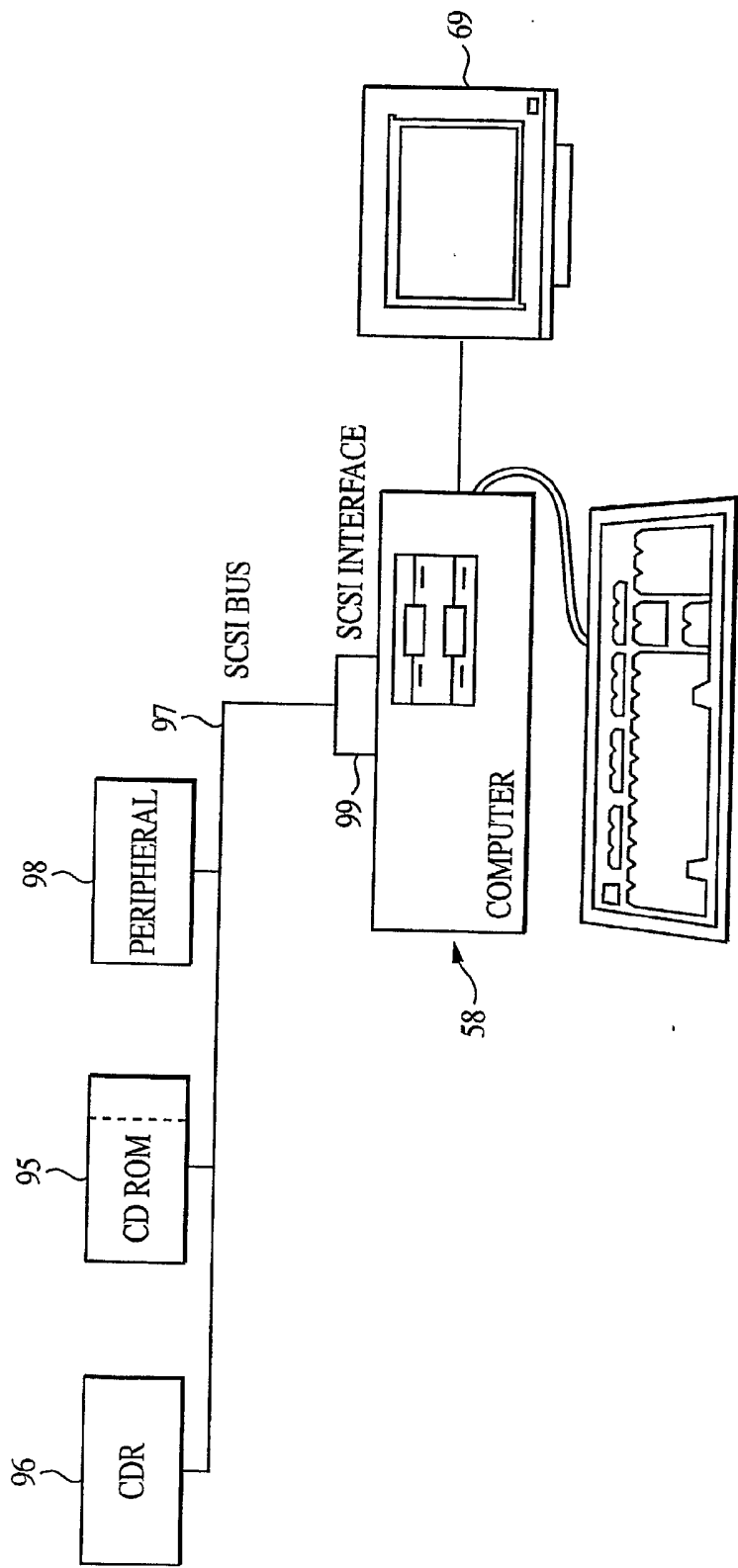


FIG. 61