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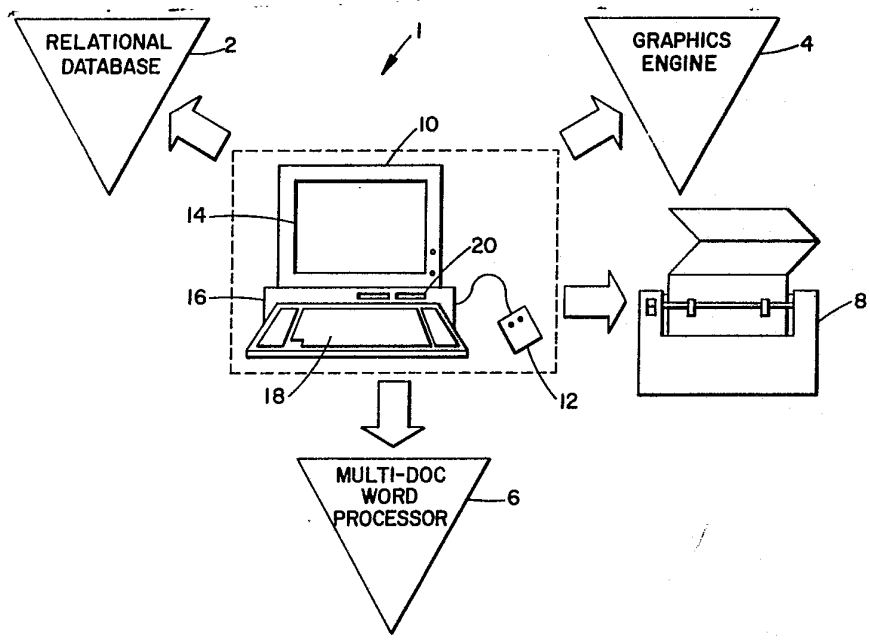

(57) Abstract

A document generation system is provided for enhancing or replacing the dictation and transcription process. More particularly, a computer-based documentation system utilizing a document structure manipulated by a user interface is provided. The document structure or "boiler plate" includes phrase fields containing user-definable phrases and option-text fields. The option-text fields include a plurality of option-text segments. Through the use of the user interface, desired modifications to the user-modifiable phrases and option-text segments can be accomplished. The user interface further enables selecting of at least one option-text segment from within an option-text field. Subsequently, the system generates a document comprising at least one user-definable phrase and at least one selected option-text segment.

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COMPUTER-ASSISTED DOCUMENTATION SYSTEM REGARDING DICTATING AND TRANSCRIBING

Background of the Invention

The present invention relates to document generation systems and, more particularly to a system incorporating user-modifiable document structures or "boiler-plates", a database including information to be placed into a particular document structure, and a computing device which combines the particular document structure with relevant information stored in the database to form a document.

Traditionally, the practice of dictating and transcribing has been used to record information related to interviews, personal reminders, thoughts on a subject, and drafts or letters of other documents. In the service industries, such as consulting, legal and medical fields, professionals have been increasingly burdened by the need to document every encounter with clients or patients. This is particularly true in the medical field where physicians must record information about each patient office visit, diagnosis, suggested treatment and prescription given. In addition to recording patient information, physicians must fill out forms for submission to insurance companies and provide information to regulatory agencies. To gather and produce all of this information, physicians must spend a significant portion of their work day dictating the needed information for each record or form. Further, a physician must maintain a staff to transcribe the information into reports and to fill out required forms.

A physician typically dictates a report on each patient encounter which, subsequently, must be typed by a transcriptionist. The process is time consuming and repetitive. For this reason, shortcuts are often taken causing reports to be incomplete. As a result, potential legal and insurance problems as well as

reduced quality of patient care can occur. Using traditional manual methods of record keeping, patient data is not readily available for fast and easy review. A patient's medical record cannot be easily combined with other reports or other patient data for analysis and reporting.

In response to the above-mentioned needs and problems encountered in the medical field, the present invention was developed. The present invention automates the documentation process by providing a computer-based documentation system incorporating a relational database with a multi-document word processor preferably comprising a graphics engine within a menu-driven, graphic window environment. The documentation system utilizes previously defined document structures or "boiler-plates" to manage patient reporting. A document structure offers a framework within which certain items will vary.

For instance, an initial exam conducted by an orthopedic surgeon will contain many basic elements common to all patients, but response to the exam will vary for each patient. A report to be input can contain any number of variable responses, and each variable within the input report can offer any number of different options from which to choose. In addition, a physician can personalize the report, modifying or creating new documents to suit a particular situation. Further, while generating a particular document, a physician can customize the document by inserting words into the generated document through the use of the integrated word processor.

In an alternative embodiment, the physician can avoid directly using the documenting system by utilizing printed checklists. After a checklist has been filled out by a physician, another individual can generate the desired documents from items checked off on the checklist.

The data input into the documenting system is electronically stored for possible future use in reporting and/or analysis. The future uses may include graphical analysis, cost accounting, time reporting and other desired document generation.

It will be appreciated by those familiar with the art that such a document generation system can be utilized in a plurality of environments including medical, legal, government, insurance and other service or document generating environments. In the legal field, simple contracts, licenses or agreements could be drafted in this manner. In the government, routine status reports, procurement requests or inspection reports could be produced by such a system. In the insurance field, insurance applications could be processed, policies maintained, or claim reports prepared. These and other possible areas of use of the present invention will become apparent after reading the following detailed description.

Summary of the Invention

A document generation system is provided for enhancing or replacing the dictation and transcription process. More particularly, a computer-based documentation system utilizing a document structure manipulated by a user interface is provided. The document structure or "boiler plate" includes phrase fields containing user-definable phrases and option-text fields. The option-text fields include a plurality of option-text segments. Through the use of the user interface, desired modifications to the user-modifiable phrases and option-text segments can be accomplished. The user interface further enables selecting of at least one option-text segment from within an option-text field. Subsequently, the system generates a document

comprising at least one user-definable phrase and at least one selected option-text segment.

Brief Description of the Drawings

Fig. 1 is a diagram showing a preferred embodiment of the document generation system.

Fig. 2 is a diagram showing the contents of the preferred embodiment relational database.

Fig. 3 is a diagram showing an alternative embodiment of the document generation system in which the relational database shares stored information with more than one user.

Fig. 4 is a drawing depicting a preferred embodiment menu driven, graphical window environment.

Fig. 5 is a drawing showing an example of a preferred embodiment linked user-modifiable document structure.

Fig. 6 is a drawing showing an example of a preferred embodiment user-modifiable option-text field.

Fig. 7 is a drawing showing a preferred embodiment example of information which can be stored in a patient database and subsequently may be utilized by a plurality of users through the selection of particular option-text segments within an option-text field.

Fig. 8 is a drawing showing a preferred embodiment example data structure which may be utilized to enter specific patient information.

Fig. 9 is a drawing showing a preferred embodiment example of selecting an option-text segment comprising a user-definable text-note and subsequently the automatic activation of a single line editing mode so that a single line of customized text can be entered into the database.

Fig. 10 is a drawing showing an alternative preferred embodiment example of selecting an option-text segment comprising a user-definable text-note and

subsequently the automatic activation of a multiple line editing mode so that multiple lines of customized text can be entered into the database.

Fig. 11 is a drawing showing an alternative preferred embodiment example of selecting several previously defined document structures to form a new document structure.

Fig. 12 is a diagram showing a preferred embodiment procedure for generating a document.

Detailed Description

Shown in Fig. 1, is a diagram of a preferred embodiment document generation system. The preferred embodiment document generation system 1 comprises a computing device 10, relational database 2, and multi-document word processor 6. In an alternative embodiment, the document generation system 1 further includes an output device such as a printer device 8.

The computing device 10 preferably comprises an electronic display 15, a data processing device 16, and a keyboard 18. The computing device 10 further includes an electronic storage device 20 for storing information from the relational database 2. Electronic storage device 20 can be any device capable of storing data for long periods of time. For example, electronic storage device 20 could be a floppy disk drive, Bernoulli hard drive, Winchester hard disk, analog tape drive, digital tape drive, optical disk drive. It will be appreciated by those in the art that new or improved electronic storage devices can be utilized by the present invention as they become available for use. In an alternative embodiment, the computing device 10 further includes a pointing device 12. The pointing device can be utilized by the document generation system 1 as an alternative

input device. The pointing device may comprise a mouse, trackball, light pen, bar-code scanner or digitizing pad.

In the preferred embodiment, relational database 2 comprises a user-definable electronic document structure 22 shown in Fig. 2. The user-definable document structure 22 comprises a plurality of phrase fields 40 which electronically store user-definable phrases and further comprises an option-text field for electronically storing a plurality of user definable option-text segments.

In an alternative embodiment, the option-text segments further comprises a plurality of data pointers which point to previously stored text which is electronically stored in an option list 24. The relational database 2 further comprises patient data 32 which includes specific information about a particular patient which may be needed to produce a plurality of different documents derived from a plurality of different document structures 22. The preferred option-text field further comprises a plurality of data pointers which point to particular data segments within stored patient data 32.

The relational database 2 preferably further comprises selection data 38. Preferred selection data 38 includes information concerning selections of different option-text segments within a particular document structure 32 in combination with a particular set of patient data 32 and a date stamp 28. The relational database 2 in combination with the data processor 16 further preferably includes a date stamp 28 function. The date stamp 28 function allows the relational database 2 to determine the data and time that each document structure 22, option list 24, patient data 32, or selection data 38 was created or modified. It will be appreciated that relational database 2 may be configured in a variety of different structures and the

description above is merely one example of one such structure.

The computing device 10 in combination with the multi-document word processor 6 and relational database 2 provide a user interface for utilizing the document structure 22 to generate a document. The multi-document word processor 6 provides an editing environment for making user modifications to the user-definable phrases and user-definable option-text segments within the option-text fields 42. Interaction of the electronic display 14, data processing device 16 and keyboard 18 provide a selecting function for selecting at least one user-definable option-text segment within an option-text field. This selecting may be accomplished by depressing key actuators on keyboard 18 which indicate the selection of a particular user definable option-text segment. In an alternative embodiment, movement of a pointing device 12 in combination with activating pointing activator accomplish the selecting function. The elements of the user interface further combine to provide a document generation function which generates a document comprising at least one user-definable phrase and at least one selection option-text segment of an option-text field.

In an alternative embodiment, document structure 22 preferably includes a user-modifiable electronic link between a phrase field and an option-text field. In addition, the document structure 22 preferably includes a user-modifiable electronic link between a first and second phrase field. Those skilled in the art will recognize that such links may be formed in various manners including, for example, the use of data pointers which point to the following element which is to be linked, the use of lookup tables, or B-tree data structures. Further, the multi-document word processor 6 typically provides an editing environment for making user modifications to the links between a

phrase field and an option-text field as well as between a first and second phrase field. The elements of the user interface typically further combine to provide a document generation function which generates a document comprising a phrase field linked to an option-text field. Similarly, the document generation function may generate a document from the linked first and second phrase fields.

In an alternative embodiment, a multi-user system partitions relational database 2 into a plurality of parts. The multi-user system includes user specific document structures 22, option lists 24 and selection data 38. In addition, particular information may be stored such that more than one user can access the particular information. Such information may include date stamp 28 and patient data 32. In this alternative embodiment, each user may have access to the shared information for use in generating a document and may define specific document structures incorporating available data in a manner which seems appropriate for the particular document desired. For instance, such a multi-user system might be used in a hospital or clinic wherein a variety of different types of physicians are using document generation system 1. An orthopedic surgeon and a gynecologist probably would not want to have the same document structure 22 for describing an office visit; however, both physicians may need to incorporate specific patient data including name, age, address, date of birth and insurance provider into a particular report document. Significant cost savings and efficiency can be achieved by sharing this information between various individuals utilizing document generation system 1. At the same time, it is typically necessary to provide flexibility within the document generation system 1 to allow custom documents or reports to be generated for a particular situation. As a result, relational database 2 preferably is

partitioned into user specific data and sharable data. Such a configuration can be utilized across a local area network comprising a plurality of computing devices 10 connected to a relational database 2 which has user specific and sharable portions of data.

Security access to stored data preferably is provided by the document generation system 1. Security access may be provided by distinguishing between each user's data and reports through the use of a user name. In the preferred embodiment, the user name is comprised of the first and last name of a user followed by an optional security password. The first and last name are combined to form a pointer to a storage location within relational database 2 which can typically be accessed by a user only after entering his or her first and last name as well as a security password.

Computing device 10 further includes an automatic configuration function in which the data processor 16 automatically senses the presence of an output device and automatically configures to operate with that output device. Such an output device may include electronic display 14 and printing device 8. In addition, computing device 10 preferably includes an operating function in which a user-definable output driver for operating the output device can be defined. Such a user-definable output driver definition function can be particularly important for use in preferred embodiment document generation systems 1 which include a printer device 8 which is not automatically supported and configured to by data processor 16.

The preferred embodiment document generation system 1 further includes a contextual help function in which operating instructions for use of the document generation system 1 can be displayed on electronic display 14 or printed to printer device 8.

Fig. 4 is a drawing depicting a preferred embodiment menu-driven, graphical windowing environment.

This windowing environment of document generation system 1 supports both text and graphics operation modes. A user can choose between the two different modes of operation. In either mode of operation, the appearance and functionality of the document generation system remains substantially consistent. The only limitation is that the use of an alternative embodiment graphics engine typically is not available in text mode operation.

The preferred graphics window environment 50 is divided into three areas. The areas include a top window section 52 which preferably displays the date, time, product name and main menu selections. In addition, window environment 50 includes a middle section window 54 where documents, graphics and dialogue windows can be displayed and manipulated. Further, the graphics window environment 50 includes a bottom section 56 which displays status information for such things as the word processor 6, a generated report, particular selections of report and patients, and keyboard choices.

One of the first steps in using the document generation system 1 is to create a document structure 22. An example of a preferred embodiment user-modifiable document structure 22' is shown in Fig. 5. The example user-modifiable document structure 22' comprises a series of phrase fields linked to option-text fields. For example, phrase 58 is linked to option-text field pointer 60 within example document structure 22'. In the preferred embodiment document generation system 1, a plurality of different reports can be generated for different needs. For example, a physician will probably create a separate report for initial visits and for follow-up visits by a particular patient as well as a separate report for writing a prescription.

After creating a document structure 22, a user typically defines the contents of an option-text field.

Shown in Fig. 6 is a drawing showing an example of a preferred embodiment user-modifiable option-text field 60. The example option-text field 60 includes a plurality of user-definable option-text segments 64 and 66. A user can modify the contents of option-text field 60 through the use of word processor 6. Option-text segments 62, 64 or 66 may be inserted into document structure 22 to form a document. By selecting different option-text segments within an option-text field, a user can customize a particular report for a particular patient corresponding to a particular office visit. For example, document structure 22' can be combined with the selection of option-text segment 62 to form a document stating "patient came in complaining of fatigue, ...". In the preferred embodiment, the user interface provides the ability to select more than one option-text segment within an option-text field. For example, if the user selects option-text segment 66, the user interface will prompt the user to select two other option-text segments which will subsequently be combined with the document structure 22 when a document is generated.

Another typical step in utilizing the document generation system 1 is the entering of patient data into patient data storage portion 32 of the relational database 2. Fig. 7 is a drawing showing a preferred embodiment example of information which can be stored in a patient database 32 within relational database 2. Subsequently, the patient information can be utilized by a plurality of users through the selection of particular option-text segments within the option-text field 68 for insertion into example document structure 22'. The patient specific information could be input into a user-defined document structure 70 shown in Fig. 8. By using patient data document structure 70, the user interface typically will prompt the user for various patient specific information such as last name, first name, middle initial, home phone and health insurance company

ID number. After a user enters this information into example patient data structure 70, the information can be stored in relational database 2 in patient data portion 32. Subsequently, such information can be retrieved for use in generating a document comprising option-text segments pointing to information stored within patient data storage portion 32.

After creating suitable document structures 22 and entering patient information into patient data storage portion 32 of relational database 2, a user can generate a set of selection data 38 which can be stored in relational database 2. To create a particular selection data set, a user will first select a particular patient for which a report is to be generated. Shown in Fig. 4 is a preferred embodiment menu from which to choose the option of specifying a particular patient. A user may select the "choose patient from list" option 51 from the menu. As a result of such a selection, preferred computer device 10 will display another menu from which to choose a particular patient for generating a report. After the user selects a particular patient from the menu, the user typically will select a "single report" option 53 from the menu to designate a particular report document which is to be generated for this particular patient. Upon selection of "single report" option 53, a window including a menu of possible document structures 22 which can be used to generate a document considering this patient preferably will be shown. A user then typically will select the particular document structure 22 which is to be used in conjunction with the selected patient. Subsequently, a document structure may be shown on electronic display 14 for review by user. Data processor 16 preferably will prompt the user to select particular option-text segments within option-text fields in a particular document structure 22. An example of such a document structure 22' is shown in Fig. 5, and an associated

example option-text field 60 is shown in Fig. 6. Data processor 16 typically will prompt the user to select one of the option-text segments within the option-text field 60 before allowing the user to generate a report.

Fig. 9 is a drawing showing a preferred embodiment example of selecting an option-text segment comprising a pointer 71 to a user-definable text note 73 and subsequently the automatic activation of a single line editing mode so that a single line of customized text can be entered into the selection data 38 for subsequent use in generating a document derived from the selection data 38. A user may select a pointer 71 linked to an option-text note 73 to customize a report for a particular situation when, for example, the option-text segments within an option-text field are not appropriate for a particular situation or when a user desires to add additional information into the report at that particular point. Alternatively, a user could select a pointer linked to an option-text note 73' shown in Fig. 10, which provides multiple line editing capabilities so that multiple lines of text can be entered into the selection data 38.

After a user has selected option-text segments within all of the option-text fields pointed at by option-text pointers within a document structure 22, the user can electronically store this selection data in electronic storage device 20. Upon storing the selection data in electronic storage device 20, a time/date stamp 28 typically is added to the selection data 38 so that the particular set of selection data can be identified at a later time.

In addition, a user may choose to generate a document. Shown in Fig. 12 is a diagram showing a preferred embodiment procedure for generating a document. A typical generated document 36 is derived from a data structure 22 in combination with option list

24, selection data 38 and patient data 32. Data preferably is inserted into data structure 22 at the points in which option-text field pointers point to particular data. In particular, option-text field pointers which point to patient data may become the actual patient data in a generated document. Further, selections of particular option-text segments within option fields 24 may be used to determine which option-text segments are to be inserted into data structure 22 to form generated document 36. Furthermore, selection data 38 comprising text notes typically are inserted into data structure 22 at the appropriate points to form a generated document 36. After generating a document 36, document generation system 1 can display a generated document on the electronic display 14 of computing device 10 and/or output the generated document to printer 8.

Fig. 11 is a drawing showing an alternative preferred embodiment example of selecting several previously defined document structures 22 to form a new document structure 72. It may be desirable to generate a complete patient report including several separate reports. For instance, a complete patient report document might include a report document structure 22 for "an initial visit," "lab results," and "follow-up" for ease of data entry and subsequent document generation these separate document structures 22 may be combined into a single document structure 72. As a result, a plurality of different multiple document structure definitions 72 may be generated for specific needs. Shown in Fig. 11, multiple document structure definitions 72 normally will include several document structure definitions 22. A user can define the order in which each document structure 22 will appear in multiple document structure definition 72. After a user has selected each of these desired document structures 22 in a particular order, a multiple document structure

definition 72 preferably can be stored on electronic storage device 20. Subsequently, multiple document storage definition 72 is typically selected by a user for use with a particular patient in a similar manner as was used to select a document structure 22.

In an alternative embodiment, document generation system 1 can generate a checklist document including indicia of option-text segments to be chosen within an option-text field for a particular document structure 22. A printed copy of the checklist document can be utilized by a user to indicate preferred option-text segments to be included in a generated document for a particular patient at a particular time. For example, a user might use a medical check-up checklist document to select or indicate particular information on an office visit by a patient. Such information might include measured weight of the patient during the office visit, new height or weight, symptoms of illness shown by the patient, diagnosis of an illness, and prescribed treatment of the illness. Subsequently, the same or a different user of the documentation generation system may enter the information indicated on the check sheet document to generate a report on the office visit by the patient.

In a further alternative embodiment, the document generation system 1, shown in Fig. 1, further includes a graphics engine 4. The graphics engine 4 is an option preferably provided within the document generation system 1 which allows visual analysis of data stored within the relational database 2 including selection data 38 and patient data 32. Data is displayed on electronic display 14 in various forms

within windows on the screen. The forms may include the following graph types:

- 3-D Bar
- Line
- Area Fill
- Pie
- Histogram

The graphics engine 4 allows a user to manipulate a graph in a wide variety of ways. Each data item has its own graphics definition, thereby allowing a mixture of graph types to be displayed simultaneously on the same graph. For example, a graph could contain a line of data overlaying a series of 3-D bars.

Preferred computer device 10 further includes a graphics editing mode of operation in which almost every aspect of a graph can be modified by user, including graph type, color, style, hatching, exploded pie pieces, x-axis and y-axis value ranges as well as number of points. In such an embodiment, the definition of the graph typically is stored by the electronic storage device 20 as an option-graphic image definition.

Preferred document structure 22 further comprises an option-graphic field for electronically storing a plurality of user-definable option-graphic image definitions. Such a computer device 10 typically further includes a selection function for selecting an option-graphic image definition within an option-graphic field. Subsequently, a document may be generated comprising the selected option-graphic image definition.

The document generation system 1 further preferably includes an analysis mode of operation in which data processor 16 can analyze electronically stored indicia of documents to produce graphs, tables or patient billing reports. The patient billing reports may be based upon selections made within option-text fields within one or more document structures 22 related to a particular patient. For example, a bill could be

generated for an office visit by analyzing the time spent with the patient indicated by a selection within an option-text field as well as the diagnosis made and the treatment prescribed. In addition, a brief description of the services provided could be incorporated into the billing document by deriving particular information from the electronic analysis of the selection data corresponding to a particular patient.

Although the present invention has been described and illustrated with a certain degree of particularity, it is understood that the present disclosure of embodiments has been made by way of example only and that numerous changes in the arrangement and combination of parts as well as steps may be resorted to by those skilled in the art without departing from the spirit and scope of the present invention as claimed. For example, the document generation system could be utilized by other professionals such as attorney's, accountants, psychologists, dentists and consultants. Each of these professionals may find significant cost savings and increased efficiency by utilizing a document generation system similar to the previously described preferred embodiments.

WHAT IS CLAIMED IS:

1. A computer-assisted documentation system for enhancing or replacing the process of dictating and transcribing, comprising:
   (a) document structure means for electronically storing an user-definable electronic document structure, the user-definable electronic document structure comprising:
      (i) a plurality of phrase fields for electronically storing user-definable phrases; and
      (ii) option-text field means for electronically storing a plurality of user-definable option-text segments; and
   (b) user interface means for utilizing the document structure means, the user interface means comprising:
      (i) editing means for making user modifications to the user-definable phrases and the user-definable option-text segments;
      (ii) selecting means for selecting at least one user-definable option-text segment within the option-text field means; and
      (iii) document generation means for generating a document comprising at least one user-definable phrase and at least one selected option-text segment.
2. The computer-assisted documentation system of claim 1 wherein:
   (a) the option-text field means comprises means for storing two types of user-definable option-text segments comprising a user-

definable character and a user-definable text-note; and

(b) the selecting means comprises means for automatically activating the editing means in response to selecting an option-text segment comprising a user-definable text-note so that the content of the option-text segment including a text-note can be customized for the particular generated document.

3. The computer-assisted documentation system of claim 1 wherein:

(a) the option-text field means comprises means for storing two types of user-definable option-text segments comprising a user-definable character and a user-definable text-pointer, the user-definable text-pointer comprising a pointer to previously electronically stored text; and

(b) the document generation means further comprises means for generating a document comprising at least one option-text segment derived from a user-definable text-pointer.

4. The computer-assisted documentation system of claim 1 wherein:

(a) the document structure means further comprises linking means for electronically storing a user-definable electronic link between a phrase field and the option-text field means; and

(b) the document generation means comprises means for generating a document comprising at least one user-definable phrase linked to at least one selected option-text segment.

5. The computer-assisted documentation system of claim 4 wherein:

(a) the linking means further comprises means for providing a user-definable link between first and second phrase fields; and

(b) the document generation means further comprises means for generating a document comprising the first phrase field linked to the second phrase field.

6. The computer-assisted documentation system of claim 4 wherein the editing means further comprises means for modifying the user-definable link between a phrase field and the option-text field means.

7. The computer-assisted documentation system of claim 5 wherein the editing means further comprises means for modifying the user-definable link between the first and second phrase fields.

8. The computer-assisted documentation system of claim 1 wherein the selecting means comprises means for simultaneously selecting a plurality of option-text segments within the option-text field means.

9. The computer-assisted documentation system of claim 1 wherein the user interface means further comprises storage means for electronically storing indicia of the document.

10. The computer-assisted documentation system of claim 9 wherein the document generation means further comprises means for generating a document derived from both the document structure means and the storage means.

11. The computer-assisted documentation system of claim 1 wherein the document generation means comprises

means for electronically storing the generated document.

12. The computer-assisted documentation system of claim 1 wherein the document structure means further comprises means for electronically storing a user-definable electronic document structure derived from a plurality of previously defined electronic document structures.

13. The computer-assisted documentation system of claim 1 wherein the user interface means further comprises output means for displaying a menu of option-text segments.

14. The computer-assisted documentation system of claim 13 wherein:
    (a) the output means comprises a printing device which produces a document including indicia of option-text segments; and
    (b) the selecting means comprises means for indicating a preferred option-text segment on the printed document.

15. The computer-assisted documentation system of claim 13 wherein:
    (a) the output means comprises an electronic display device which shows the menu of option-text segments; and
    (b) the selecting means comprises input means for selecting a preferred option-text segment from the menu.

16. The computer-assisted documentation system of claim 15 wherein the input means comprises pointing device means including at least one actuator for use in selecting the preferred option-text segment.

17. The computer-assisted documentation system of claim 1 wherein the selecting means comprises keyboard means including a plurality of actuators for use in selecting an option-text segment.

18. The computer-assisted documentation system of claim 1 wherein the selecting means comprises bar-code reader means for use in selecting an option-text segment.

19. The computer-assisted documentation system of claim 1 wherein the user interface means further comprises electronic display means operating in either of two modes of operation including text and graphic modes.

20. The computer-assisted documentation system of claim 19 wherein a visual image produced by the electronic display means in the text mode or in the graphic mode visually appear to be substantially similar.

21. The computer-assisted documentation system of claim 1 wherein the user interface means automatically senses the presence of an output device and automatically configures to operate with that output device.

22. The computer-assisted documentation system of claim 21 wherein the user interface means further comprises means for generating an user-definable output driver for operating the output device.

23. The computer-assisted documentation system of claim 1 wherein the user interface means comprises contextual help means for providing instructions on the use of the user interface means.

24. The computer-assisted documentation system of claim 1 wherein the user interface means further comprises data security means for allowing access to electronically stored data only to authorized users.

25. The computer-assisted documentation system of claim 1 wherein the document structure means further comprises means for electronically storing and accessing data on a computer network.

26. The computer-assisted documentation system of claim 9 wherein:

(a) the document structure means further comprises option-graphic field means for electronically storing a plurality of user-definable option-graphic image definitions derived from the electronically stored indicia of the document;

(b) the editing means further comprises means for making user modifications to the user-definable option-graphic image definitions;

(c) the selecting means further comprises means for selecting at least one user-definable option-graphic image definition within the option-graphic field means; and

(d) the document generation means further comprises means for generating a document comprising a graphic image derived from at least one selected user-definable option-graphic image definition.

27. The computer-assisted documentation system of claim 9 wherein the document generation means further comprises analyzing means for generating an analysis of electronically stored indicia of a plurality of documents and for generating an analysis document comprising information related to the analysis.

28. The computer-assisted documentation system of claim 26 wherein the analyzing means further comprises means for generating a graphic image derived from the analysis.

29. The computer-assisted documentation system of claim 9 wherein the document generation system further comprises billing means for generating a billing document for services rendered based upon an analysis of electronically stored indicia of the document.

30. A computer-assisted process for enhancing or replacing the process of dictating and transcribing, comprising:

(a) electronically providing an user-definable electronic document structure, the process of providing the user-definable electronic document structure comprising:

(i) electronically providing a plurality of phrase fields for electronically storing user-definable phrases; and

(ii) electronically providing an option-text field for electronically storing a plurality of user-definable option-text segments; and

(b) electronically providing a user interface for use in:

(i) making user modifications to the user-definable phrases and the user-definable option-text segments;

(ii) selecting at least one user-definable option-text segment within the option-text field means; and

(iii) generating a document comprising at least one user-definable phrase and

at least one selected option-text segment.

31. The process of claim 30 further comprising:

(a) providing a printing device which produces a document including indicia of option-text segments; and

(b) indicating a preferred option-text segment on the printed document.

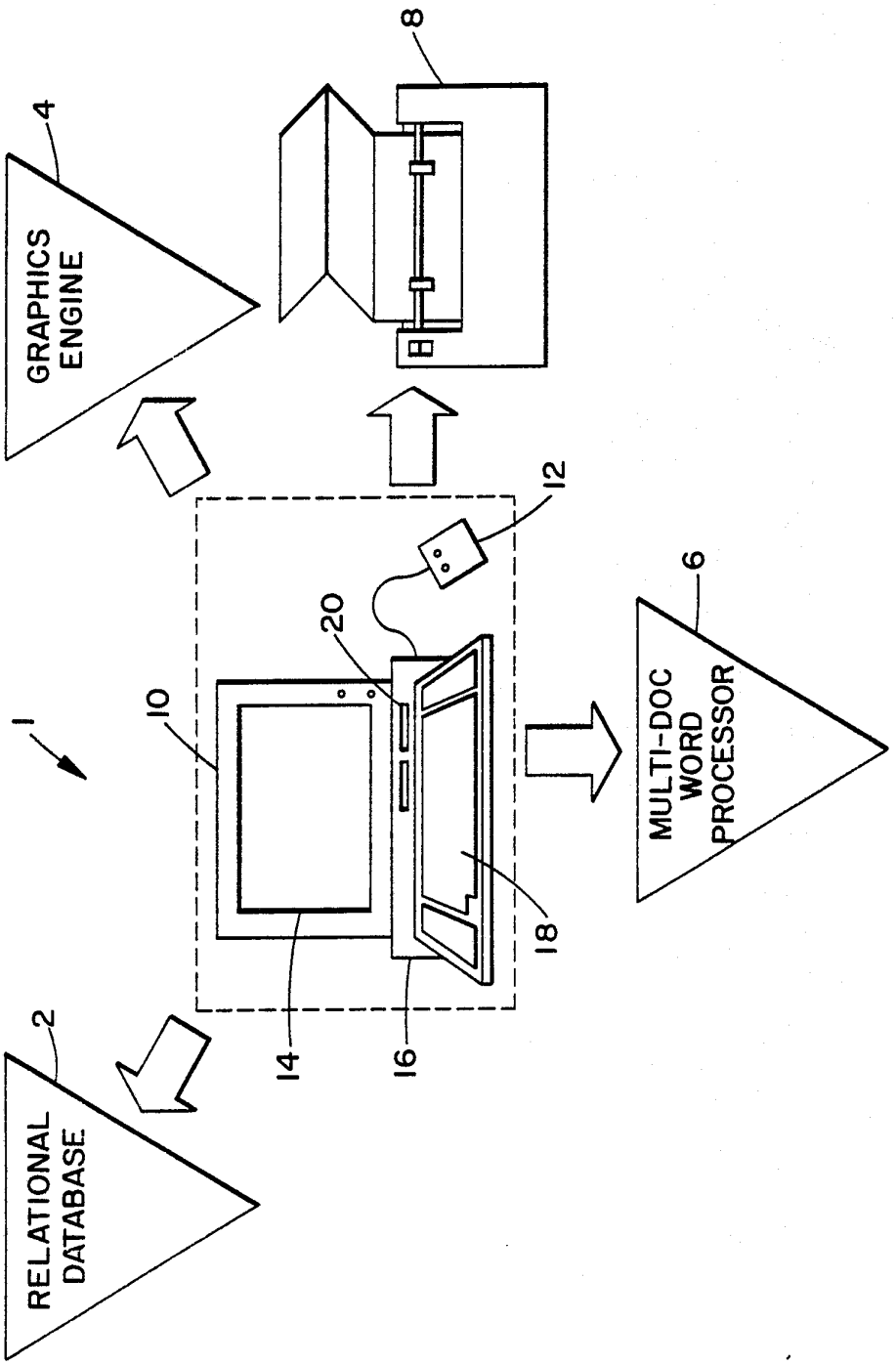

8
4
GRAPHICS ENGINE
12
20
6
MULTI-DOC WORD PROCESSOR
1
10
18
2
14
16
RELATIONAL DATABASE

FIG. 1

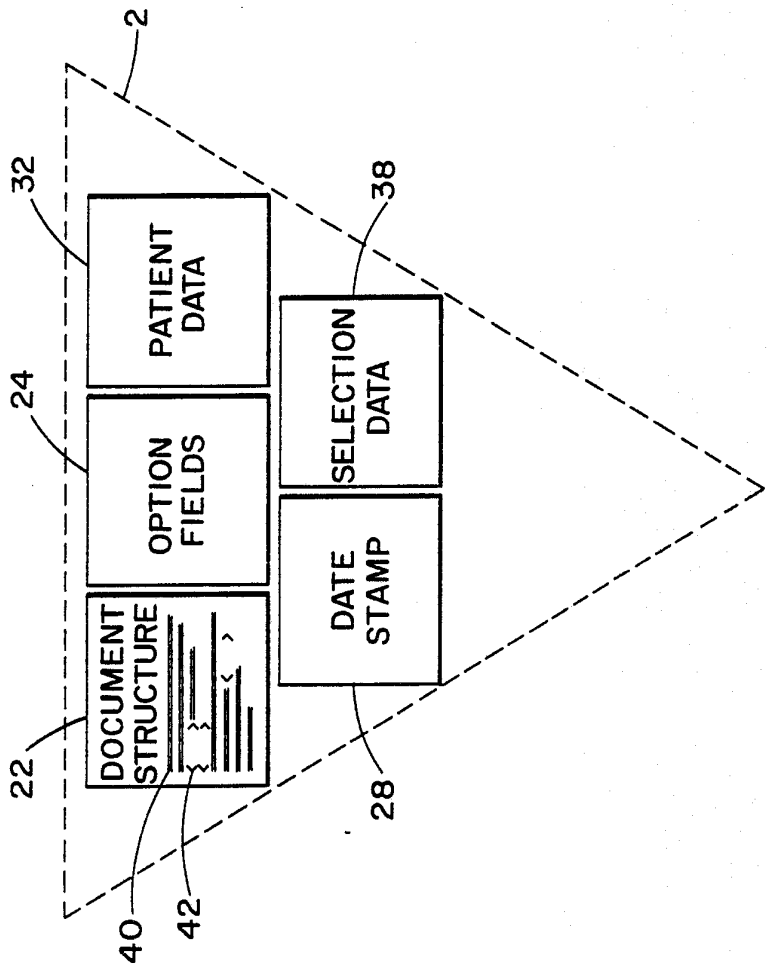

2
32
PATIENT DATA
38
SELECTION DATA
24
OPTION FIELDS
DATE STAMP
DOCUMENT STRUCTURE
22
28
40
42

FIG. 2

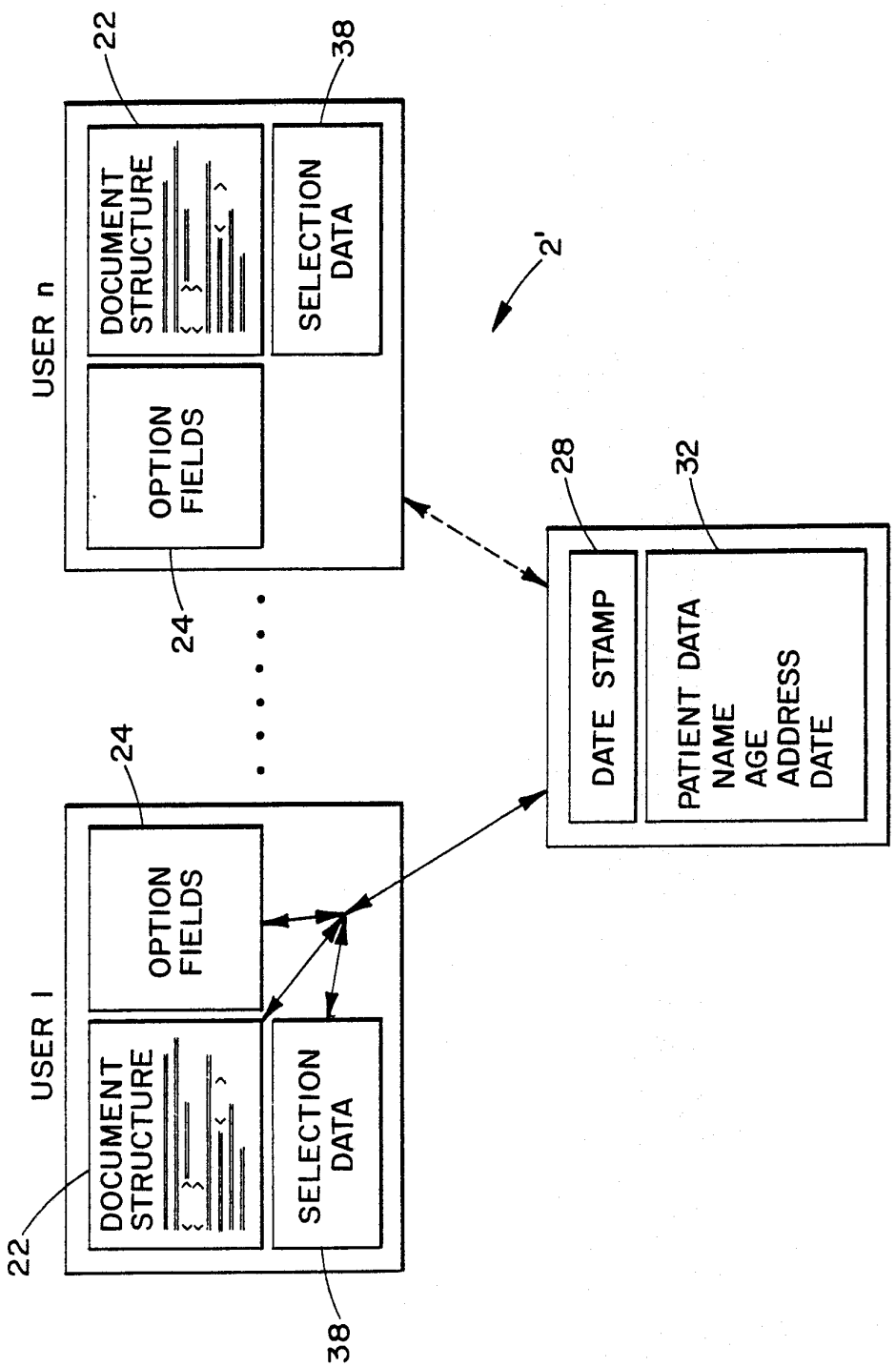

USER n
USER I
DOCUMENT STRUCTURE
OPTION FIELDS
SELECTION DATA
DATE STAMP
PATIENT DATA
NAME
AGE
ADDRESS
DATE
22
24
28
32
38
2'

FIG. 3

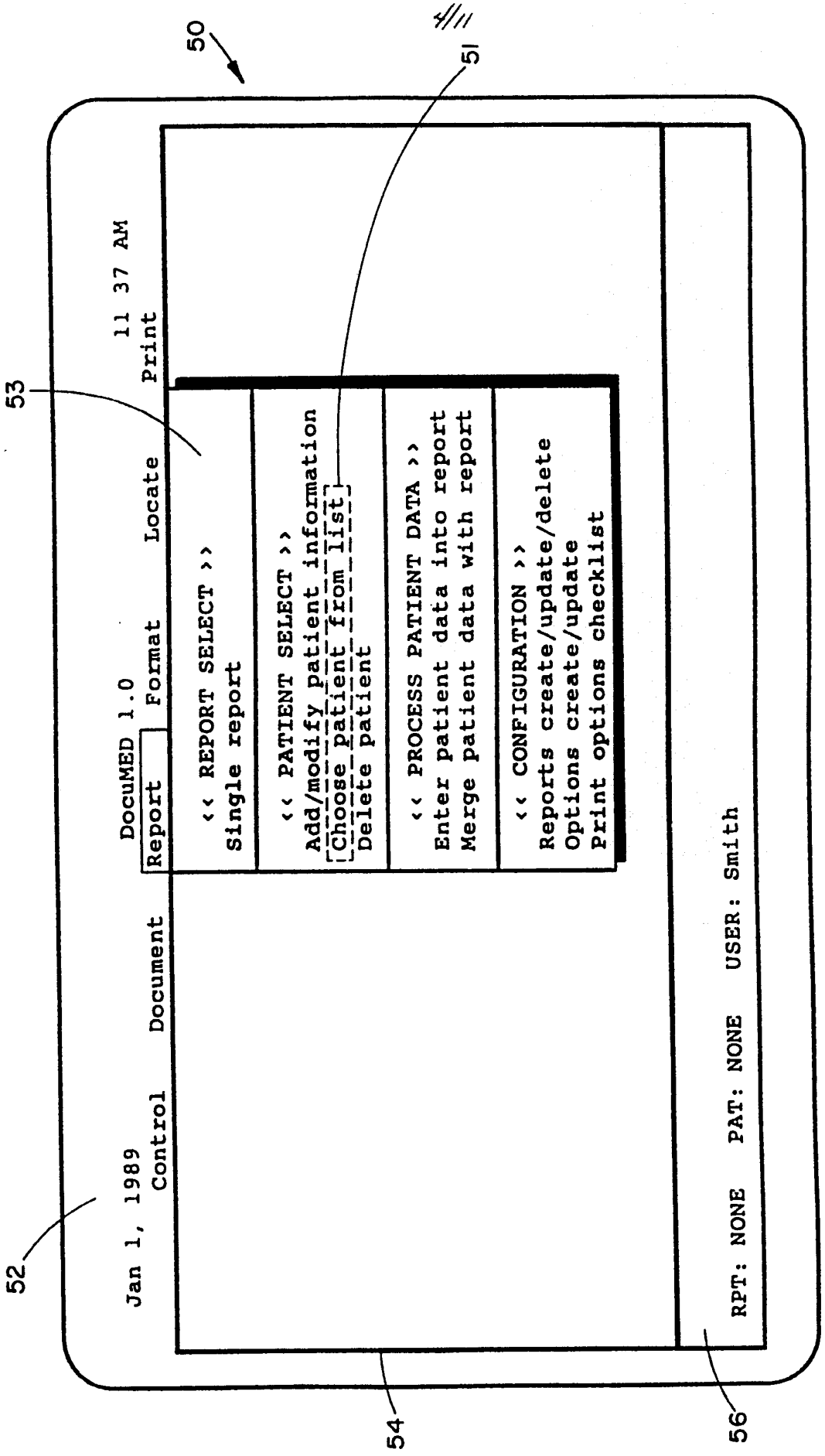

50
4/11
51
53
52
54
56
Jan 1, 1989 11 37 AM
DocuMED 1.0
Control Document Report Format Locate Print
<< REPORT SELECT >>
Single report
<< PATIENT SELECT >>
Add/modify patient infomation
Choose patient from list
Delete patient
<< PROCESS PATIENT DATA >>
Enter patient data into report
Merge patient data with report
<< CONFIGURATION >>
Reports create/update/delete
Options create/update
Print options checklist
RPT: NONE PAT: NONE USER: Smith

FIG. 4

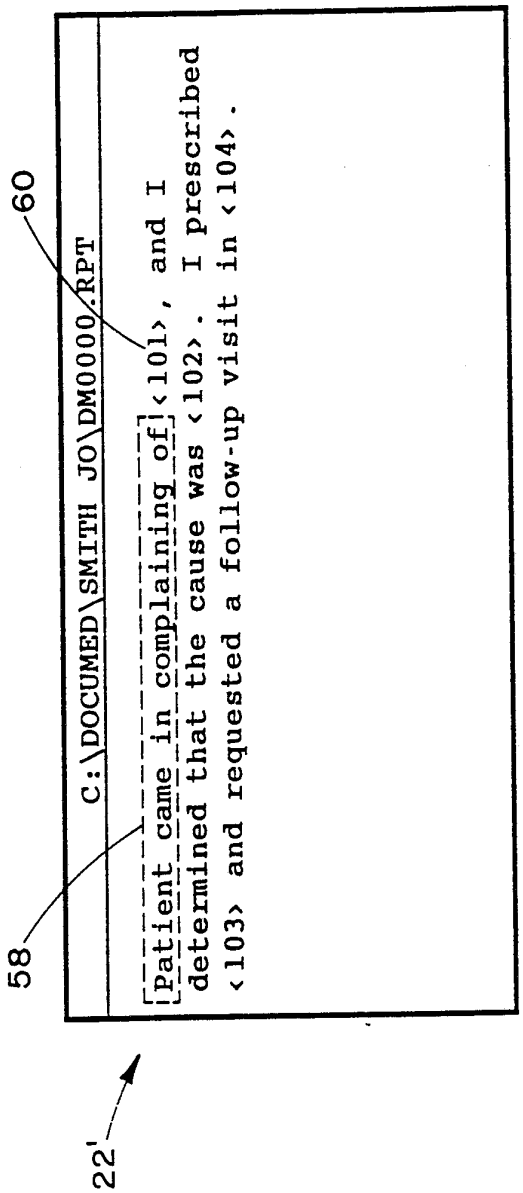

60
C:\DOCUMED\SMITH JO\DM0000.RPT
Patient came in complaining of ‹101›, and I determined that the cause was ‹102›. I prescribed ‹103› and requested a follow-up visit in ‹104›.
58
22'

FIG. 5

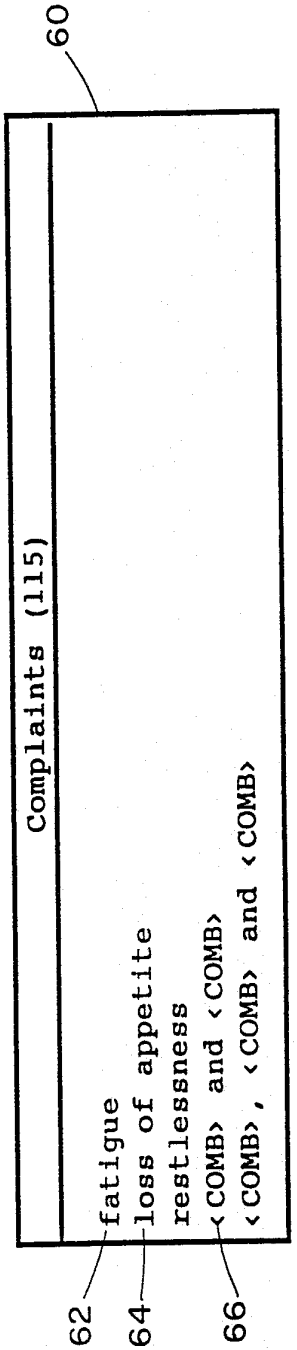

60
Complaints (115)
fatigue
loss of appetite
restlessness
‹COMB› and ‹COMB›
‹COMB›, ‹COMB› and ‹COMB›
62
64
66

FIG. 6

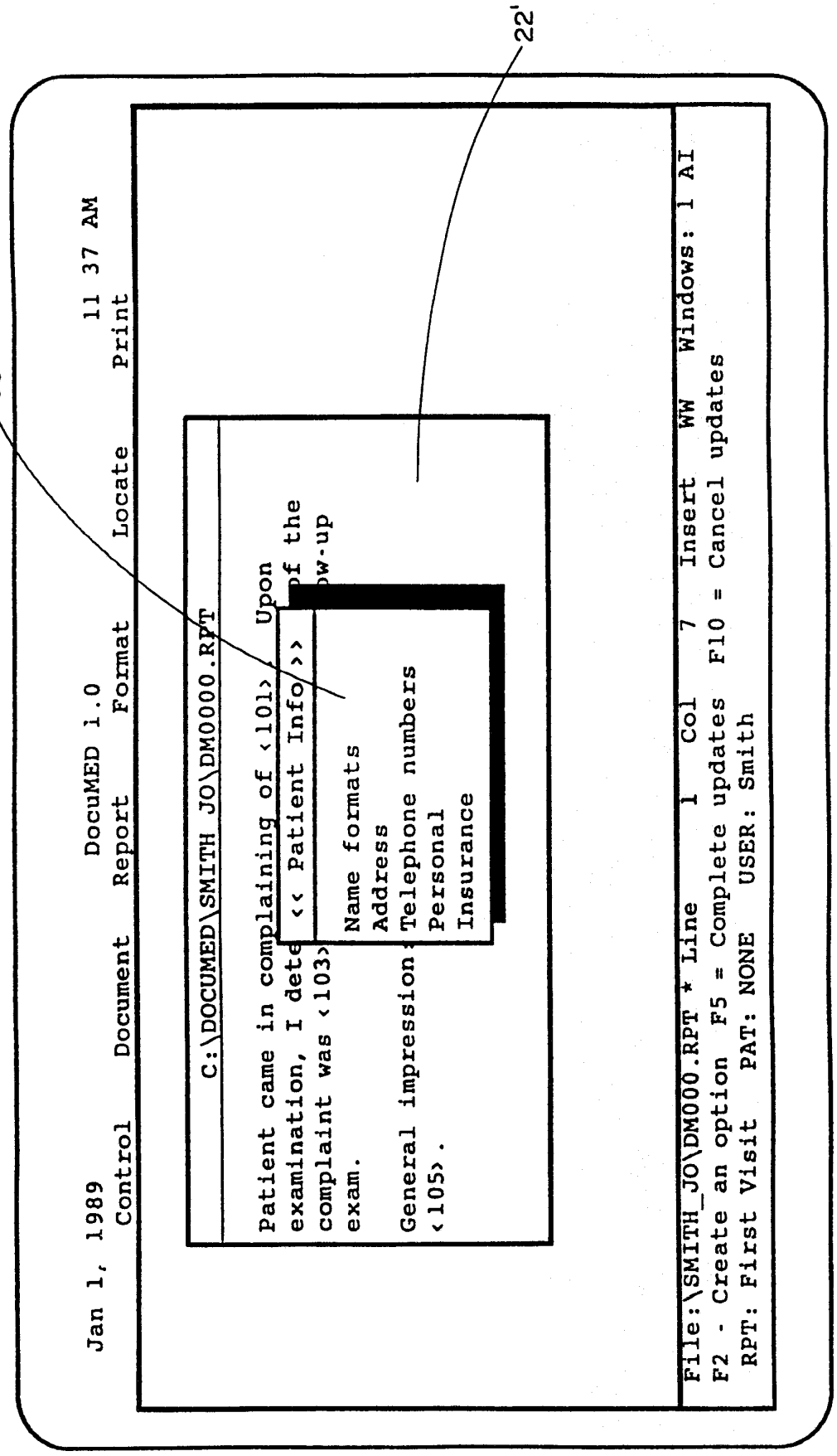

22'
68
Jan 1, 1989 11 37 AM
Control Document Report Format Locate Print
DocuMED 1.0
C:\DOCUMED\SMITH_JO\DM0000.RPT
Patient came in complaining of <101>. Upon
examination, I dete
complaint was <103>
exam.
General impression
<105>.
<< Patient Info >>
Name formats
Address
Telephone numbers
Personal
Insurance
File:\SMITH_JO\DM000.RPT * Line 1 Col 7 Insert WW Windows: 1 AI
F2 - Create an option F5 = Complete updates F10 = Cancel updates
RPT: First Visit PAT: NONE USER: Smith

FIG. 7

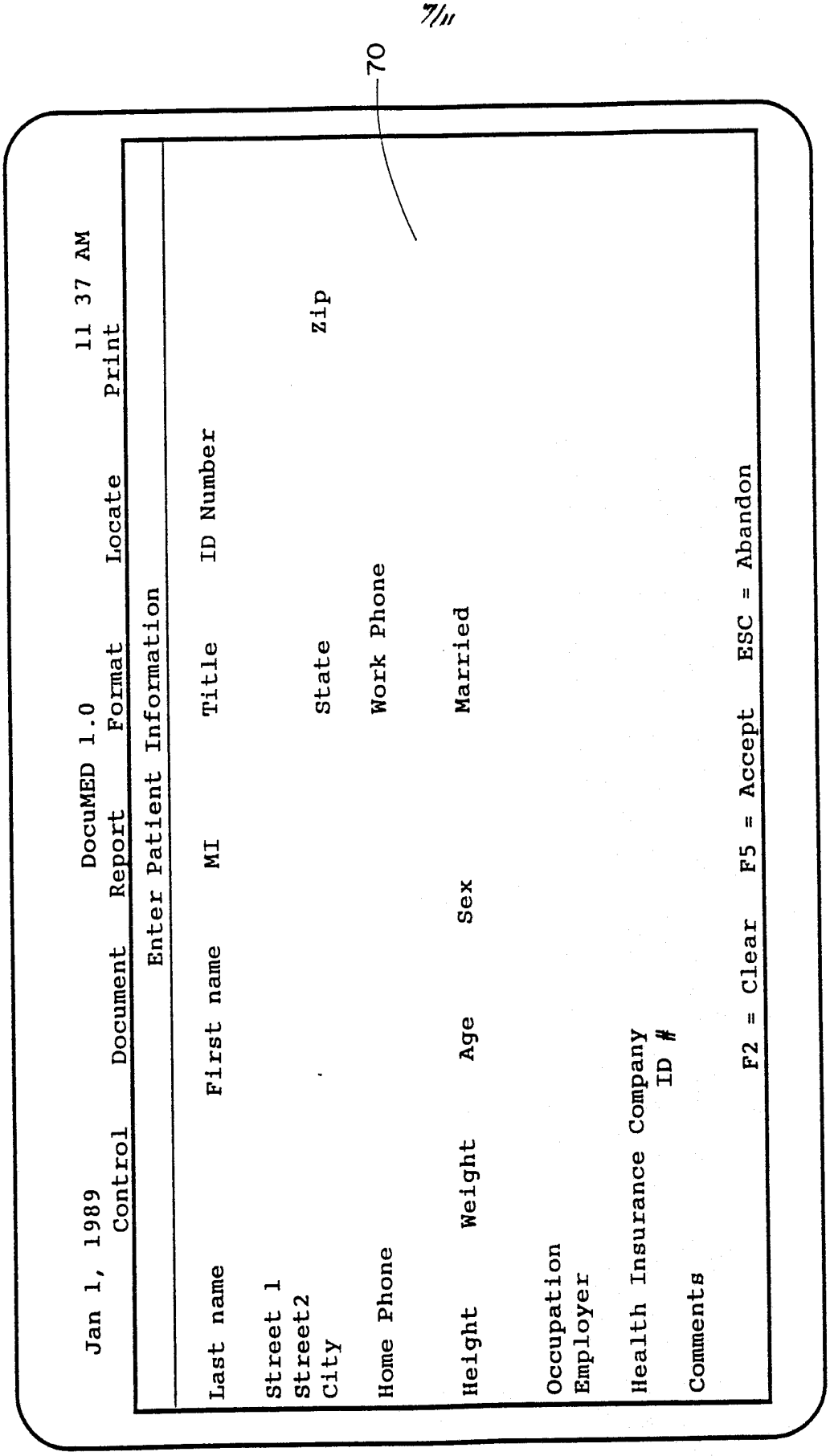

70
Jan 1, 1989 DocuMED 1.0 11 37 AM
Control Document Report Format Locate Print
Enter Patient Information
Last name First name MI Title ID Number
Street 1
Street2
City State Zip
Home Phone Work Phone
Height Weight Age Sex Married
Occupation
Employer
Health Insurance Company
ID #
Comments
F2 = Clear F5 = Accept ESC = Abandon

FIG. 8

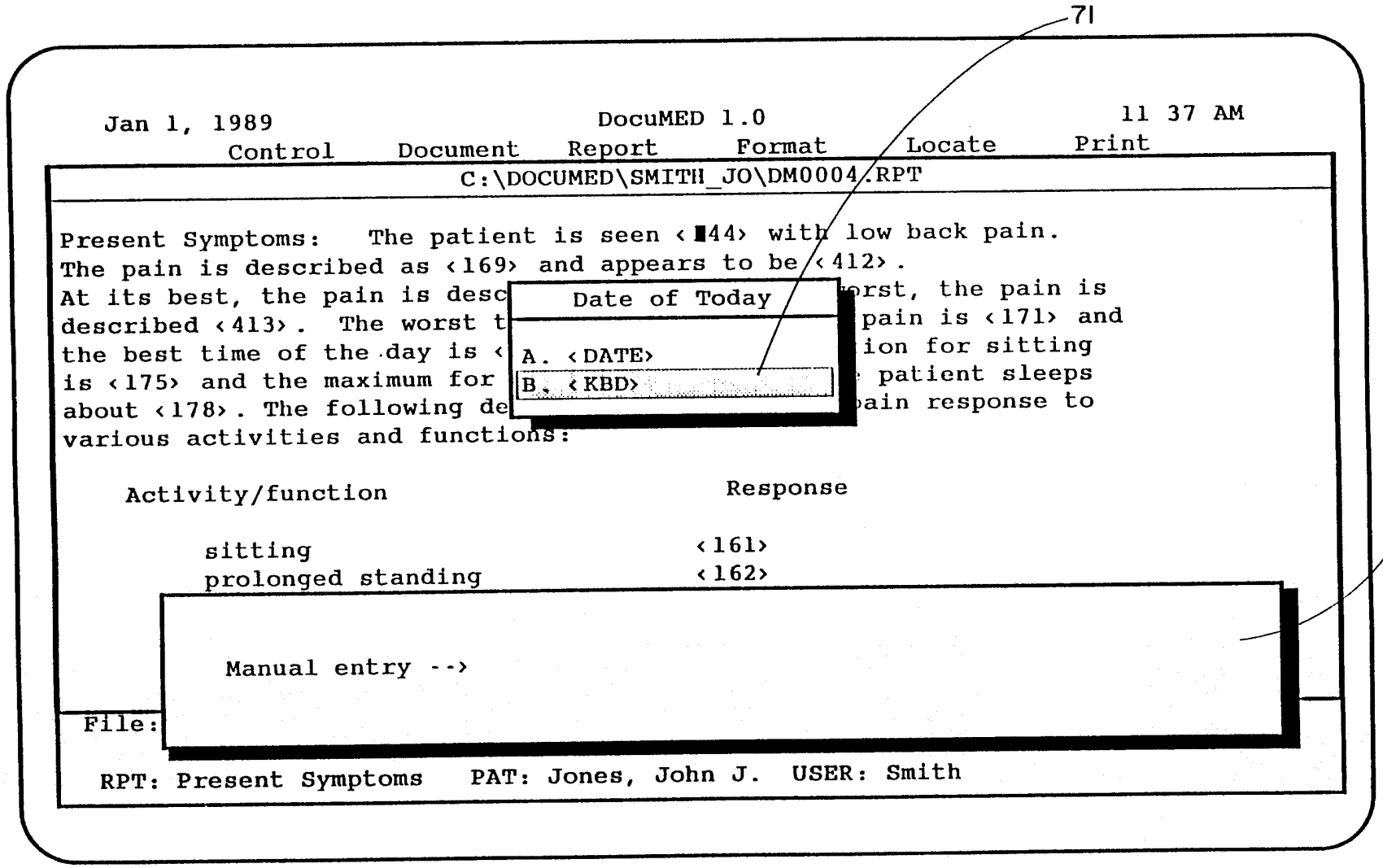

71
Jan 1, 1989
DocuMED 1.0
11 37 AM
Control
Document
Report
Format
Locate
Print
C:\DOCUMED\SMITH_JO\DM0004.RPT
Present Symptoms: The patient is seen ‹ ■44› with low back pain.
The pain is described as ‹169› and appears to be ‹412›.
At its best, the pain is desc
orst, the pain is
described ‹413›. The worst t
pain is ‹171› and
the best time of the day is ‹
ion for sitting
is ‹175› and the maximum for
patient sleeps
about ‹178›. The following de
ain response to
various activities and functions:
Date of Today
A. ‹DATE›
B. ‹KBD›
Activity/function
Response
sitting
‹161›
prolonged standing
‹162›
73
Manual entry -->
File:
RPT: Present Symptoms
PAT: Jones, John J.
USER: Smith

FIG. 9

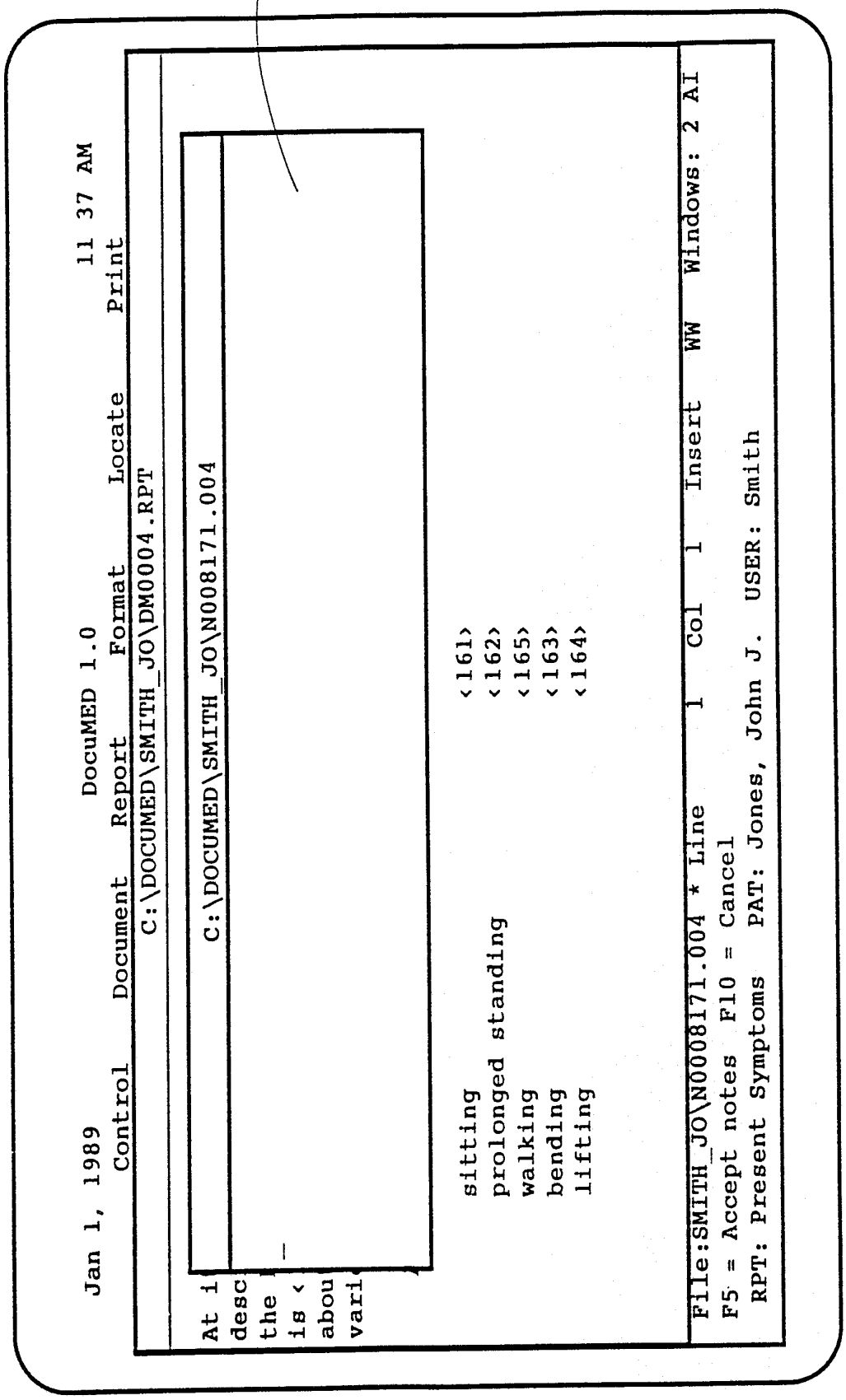

73'
Jan 1, 1989 DocuMED 1.0 11 37 AM
Control Document Report Format Locate Print
C:\DOCUMED\SMITH_JO\DM0004.RPT
C:\DOCUMED\SMITH_JO\N008171.004
At 1
desc
the
is <
abou
vari
sitting <161>
prolonged standing <162>
walking <165>
bending <163>
lifting <164>
File:SMITH_JO\N0008171.004 * Line 1 Col 1 Insert WW Windows: 2 AI
F5 = Accept notes F10 = Cancel
RPT: Present Symptoms PAT: Jones, John J. USER: Smith

FIG. 10

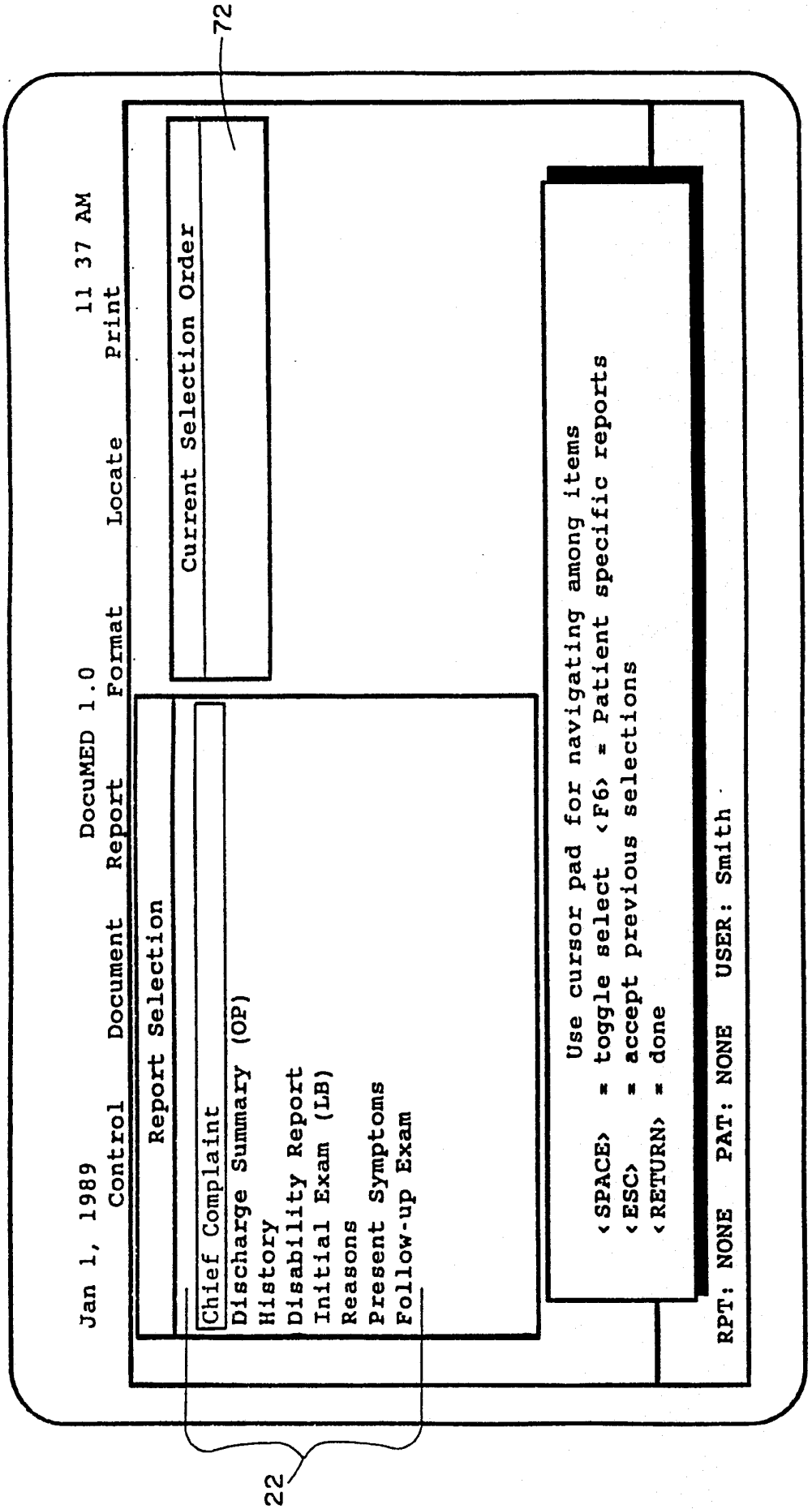
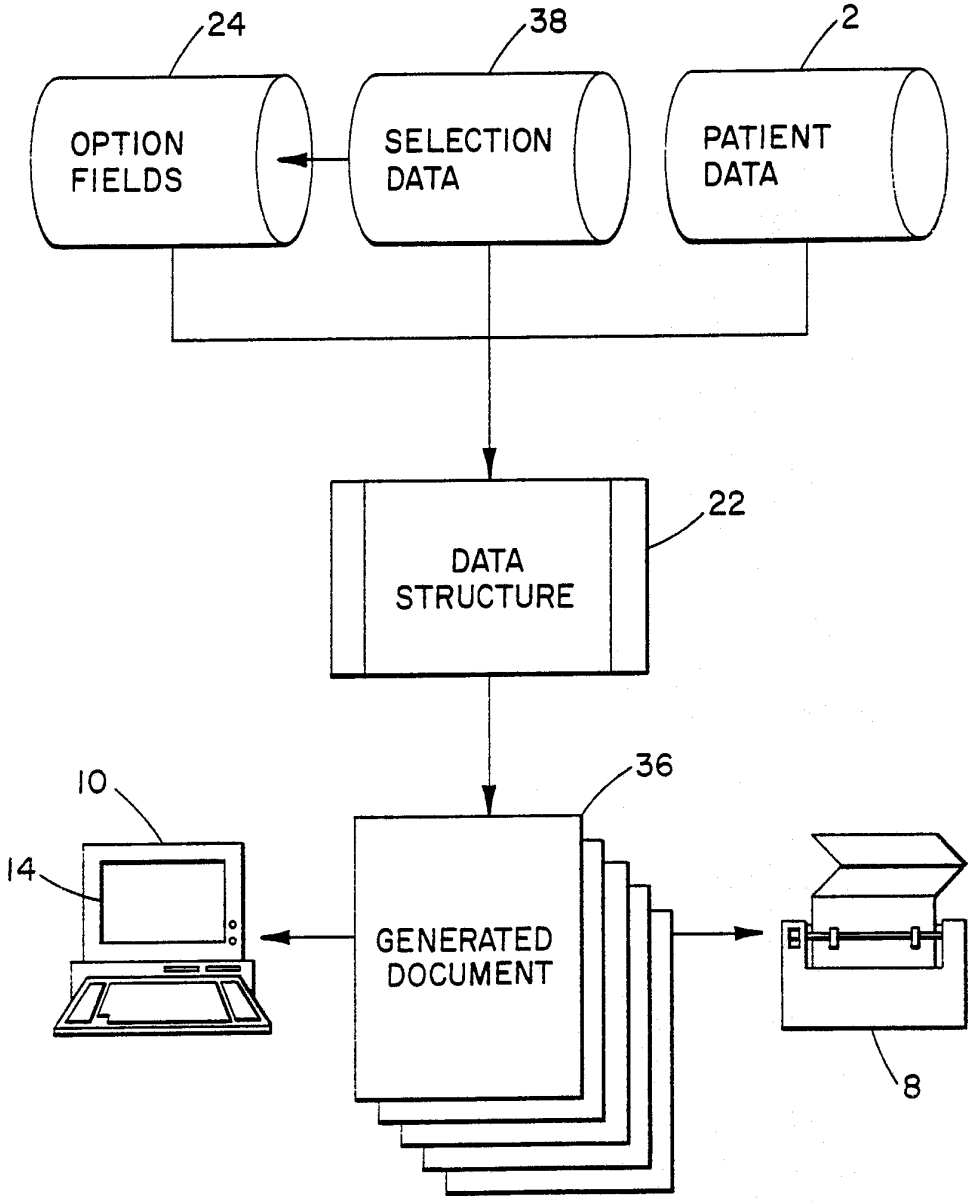

72
Jan 1, 1989 DocuMED 1.0 11 37 AM
Control Document Report Format Locate Print
Report Selection
Chief Complaint
Discharge Summary (OP)
History
Disability Report
Initial Exam (LB)
Reasons
Present Symptoms
Follow-up Exam
Current Selection Order
Use cursor pad for navigating among items
<SPACE> = toggle select <F6> = Patient specific reports
<ESC> = accept previous selections
<RETURN> = done
RPT: NONE PAT: NONE USER: Smith
22

FIG. 11

FIG. 12


24
38
2
OPTION FIELDS
SELECTION DATA
PATIENT DATA
DATA STRUCTURE
22
10
36
14
GENERATED DOCUMENT
8

INTERNATIONAL SEARCH REPORT

International Application No PCT/US 90/05655

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC[5]: G 06 F 15/20

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC[5]	G 06 F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
A	AFIPS Conference Proceedings, 1984 National Computer Conference, Las Vegas, Nevada, US, 9-12 July 1984, AFIPS Press, (Reston, Virginia, US), J. Sprowl et al.: "An expert system for drafting legal documents", pages 667-673, see page 669, column 1, lines 1-40; page 673, column 2, lines 15-35 ---	1-31
A	IBM Technical Disclosure Bulletin, volume 21, no. 11, April 1979, (Armonk, New York, US), R.J. Gerlach et al.: "System for simplified form fill-in using CRT display", pages 4323-4329 see the whole article ---	1-31
A	EP, A2, 0216063 (IBM) 1 April 1987 see page 2, column 1, line 1 to column 2, line 15 --------	1-31

* Special categories of cited documents: [10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
7th January 1991	01.02.91
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	F.W. HECK

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. US 9005655 SA 40670

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 21/01/91
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A- 0216063	01-04-87	US-A- 4730252	08-03-88
		JP-A- 62072058	02-04-87