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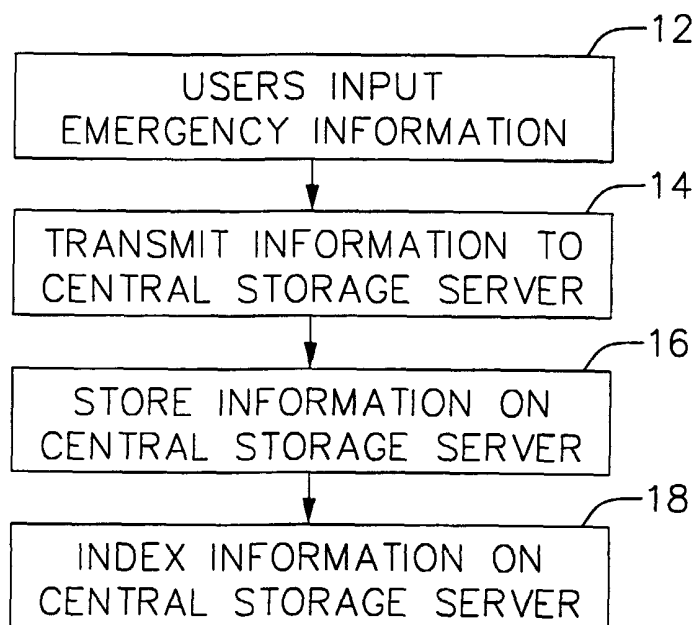
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(54) Title: METHOD AND DEVICE FOR DISTRIBUTING INFORMATION TO EMERGENCY PERSONNEL



(57) Abstract: A method and device for collecting emergency information for distribution to emergency personnel begins with a user inputting (12) emergency information into software operating on a general purpose computer. The user transmits (14) the data to a central storage computer (56) which stores (16) the emergency information and indexes (18) the information by, the example, street address. Alternatively or additionally, the information is stored (16) on substation computers (58) communicating with a central storage computer (56). In an emergency, the emergency personnel access (34) emergency information, search (36) emergency information according to index, and retrieve (38) the information for use during the emergency.

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METHOD AND DEVICE FOR DISTRIBUTING INFORMATION TO EMERGENCY PERSONNEL

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Field of the Invention

The present invention relates to information storage and distribution. Specifically, the present invention is a method for collecting information from users and distributing the information to emergency personnel to assist the emergency personnel in emergency situations.

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Background of the Invention

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To best handle emergency situations in a fast, efficient, and thorough manner, emergency personnel need information. For example, in a fire emergency, firefighters typically know the address of the building afire and whether the building is a residential building or a commercial building. However, often firefighters do not know how many persons are inside the burning building, where the persons may be located, where the utility shutoff valves are located, where flammable materials are located, and other information which would speed the firefighter's job as well as improve the firefighters' chances for preventing injuries and fatalities to occupants of the building.

20

In other kinds of natural disasters, knowing the number of occupants and the inhabited areas of a building could aid rescue efforts. For example, if a building collapsed due to an earthquake, tornado, hurricane, flood, or the like, rescuers could concentrate their search efforts on the inhabited areas of the building.

In these types of disaster situations, emergency personnel often have to gather information, such as blueprints, utility layouts, building tenant lists, and personal observations from neighbors, relatives, and other occupants of the building, to attempt to piece together the number persons in the building and the likely
5 location of those persons. However, there are many drawbacks to gathering this essential information in this fashion. First, gathering information from a variety of sources can take a long time— sometimes too long for an emergency situation.

Second, gathering information in this manner does not tell emergency personnel exactly what they need to know. That is, tenant lists, blueprints, and
10 personal observations of others do not tell emergency personnel which areas of the building are occupied and the number of occupants. Thus, emergency personnel must infer from the information gathered the number of occupants and their probable location in the building. The drawback, however, is that the emergency personnel risk making incorrect assumptions and miscalculations in the process.

15 Third, gathering information in this manner relies on other persons, companies, and agencies which may have also suffered damage in the disaster. In other words, if the only tenant list is in the burning building, the emergency personnel will not be able to use the tenant list. Similarly, if the entire neighborhood has been hit by a tornado, it will be difficult to piece information together from
20 neighbors regarding the number of people living in any particular house.

Aside from its use in disaster situations, police would also be aided by knowing the number and location of occupants in a building if the building needed to be evacuated. Police would also be aided by information such as the location, description, and serial numbers of valuables in the event of a theft.

Information such as that described above, would also be useful to insurance companies for two reasons. First, information about the valuables contained in the building could be used by insurance companies to verify claims in the event of a disaster. Second, and more importantly, knowing that such information is available
5 to emergency personnel, insurance companies could recalculate the insurance rates based on the improved probability that loss of life and property could be minimized.

A related problem is that, in a medical emergency, emergency medical technicians ("EMTs") are often dispatched without knowledge of the patient's medical history or current medical condition. To quickly arrive at a correct
10 diagnosis and apply the appropriate treatment, it is often essential that the EMTs know whether the patient suffers from any chronic illnesses, whether the patient has any allergies, and other relevant information in the patient's medical history. To compound the problem, often the patient himself or herself is incapacitated and cannot communicate information about the patient's medical history to the EMTs.

15 Thus, there is a need in the art for a method for collecting information about the number and location of occupants in a building, the medical condition of the occupants, the location of valuables in a building, the layout of the building, and other relevant information and distributing that information to emergency personnel in the event of emergency.

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Summary of the Invention

The emergency information which would be helpful to emergency personnel is compiled by the user. This emergency information includes the street address and layout of the building. In an optional embodiment, the emergency information

includes for each street address the location of the nearest fire hydrant. Optionally, the information includes text for each room on the layout of the building describing one or more of the following: (a) the type of room; (b) the number, ages, and medical conditions of the occupants of the room; (c) the type, description, and serial
5 number, if any, of valuables stored in the room; (d) the type, description, and quantity of inventory stored in the room; (e) whether any flammable or explosive materials are located in the room; (f) the location of utility shutoff valves; and (g) the quantity, location, expiration date, recharge date, and/or inspection date of any fire extinguishers.

10 In one optional embodiment, the user inputs the emergency information described above into a software program. In such an embodiment, the software program allows a user to input a drawing of the building and input emergency information in the form of text on or near the drawing. The software may be distributed through retail sales, may be available through the Internet, or may be
15 distributed with other software. Additionally, the software may be distributed by insurance companies, home owner associations, or the like.

In an alternate embodiment, the user transmits the collected emergency information, including the layout and the text information, to a central storage server operated by an operator. The operator then formats the information into a standard
20 blueprint-type layout.

To transmit the emergency information to a central storage server, the software optionally transmits the gathered information through the Internet or a direct modem connection to the central storage server. In an alternate embodiment,

the software generates a file which may be transmitted as an electronic mail ("e-mail") attachment to the central storage server.

In one embodiment of the present invention, the central storage server, stores the information in a database and indexes the information by the street address of the building described. In an alternate embodiment, the central computer determines, based on the street address of the building, the nearest substation used to retrieve the emergency information, and transmits the information to that substation to be stored locally. The data could be updated manually or automatically. For example, the inventory information at the central storage server or substation may be updated automatically by receiving data from, for instance, the user's inventory control system or the like.

In the event of an emergency, a dispatcher would alert the appropriate emergency personnel at the nearest substation of the address of the emergency. The emergency personnel would obtain the emergency information stored either by using a substation computer to access the information themselves, either by accessing the information stored locally or by accessing the database at the central storage server, or by receiving the information from a dispatcher who has accessed the information stored locally or accessed the database at the central storage server.

Likewise, the database could be used to remotely inspect for compliance with fire code by checking that the fire extinguishers are current.

It is an object of the present invention is to provide a method for emergency personnel to receive accurate information about the layout, contents, and occupants of a building in a fast, efficient manner from a single source.

Brief Description of the Drawings

FIG. 1 shows a block diagram of the input steps according to one embodiment of the present invention;

FIG. 2 shows a block diagram of the retrieval steps according to the embodiment of FIG. 1;

FIG. 3 shows a block diagram of the input steps according to an alternate embodiment of the present invention;

FIG. 4 shows a block diagram of the retrieval steps according to the embodiment of FIG. 3;

FIG. 5 shows a schematic of the a central storage server and substation computer network according to an embodiment of the present invention;

FIG. 6 shows a layout and text according to an embodiment of the present invention.

Description

As shown in FIGS. 1 and 3, the method begins with a user inputting 12 emergency information to be transmitted 14 to the central storage server 56. Such information includes, as will be described in more detail below, the street address of the user's building, a layout of the user's building and, in an optional embodiment, text describing the occupants and contents of the building. The present method could be used for any type of building. For example, the method could be used for residential buildings, such as homes, apartment buildings, or the like; commercial buildings, such as stores, malls, office buildings, or the like; industrial buildings,

such as manufacturing facilities, or the like; or government buildings, such as schools, courthouses, office buildings, or the like.

The present method begins with the user transmitting 14 information to a central storage server 56. The step of collecting and transmitting 14 the information could take many forms. For example, in a first embodiment of the present method, the user fills out a form provided over a computer network such as the Internet. The fields of the form are then transmitted 14 to a central storage server 56. As described above, the data include at least the street address of the building and a floorplan layout 10 of a building.

In such an embodiment, the user has various options for inputting the layout 10 of the building for transmission 14. For example, a user could scan a printed or hand-drawn layout 10 with a scanner to thereby create a file that may be transmitted 14 to the central storage server 56. Alternatively, the user may physically mail a printed or hand-drawn layout 10 and the associated data to the operator of the central storage server 56. The operator may then enter 12 the data and layout 10 into the central storage server 56.

Similarly, the user may receive a layout 10 stored on a computer readable medium, such as a magnetic disc, a laser readable disc, or other medium, by the builder, designer, architect, home owner association, or the like. The user may then transmit 14 the stored layout 10 to the central storage server 56.

In yet another alternate optional embodiment, the user may describe the layout 10 and transmit 14 the description to the central storage server 56. In any of these embodiments, it may be necessary for the operator of the central storage server

56 to create a CAD file or the like so that all the layout files at the central storage server 56 are legible and uniform.

As shown in the example layout of FIG. 6, the layout 10 optionally shows walls 70, windows 72, doors 78, furniture (not shown), and utility shutoff valves (not shown). Optionally, the location of the nearest fire hydrants (not shown) may be placed on the layout 10. The layout 10 could also optionally show the location of the fire extinguishers (not shown) inside the building.

In an optional embodiment, the user also inputs 12 data such as text 76 and/or photographs describing each room and the occupants, valuables, and materials therein. Specifically, a description of the type of room, i.e. office, storage, bedroom, is placed on the layout in a manner that clearly identifies which room the description describes. For example, if, on a layout, a user wishes to designate a room as a bedroom, the user could place text 76 within the room, near the room with a lead line pointing to the room, in a legend, or the like. Likewise, photographs and names of occupants of the building may be included among the data.

In such an optional embodiment, the user may include text 76 describing the occupants, valuables, and materials in the room with the text 76 describing the room. With respect to the occupants, the text 76 optionally describes at least the age and medical condition, such as any chronic illnesses or allergies, of the occupant. For example, a homeowner may wish to alert emergency personnel that an elderly person with a heart condition occupies a particular bedroom in the house so that if there is a fire, firefighters may go directly to that area of the house to find the elderly person and EMTs may be prepared to treat a patient with a heart condition once firefighters rescue the elderly person.

With respect to the valuables, a user would input 12 any information about the valuable which would assist the police in recovering the valuable if it is stolen. Likewise, the information could be used by an insurer to verify the amount of the loss. Thus, a brief description of the valuable with any identifying information such as serial numbers or the like could be input 12. For example, a user could input text 76 about jewelry, home electronics, computer equipment, or the like, stored in a residence. Similarly, if a business' inventory is stored in a particular area of a commercial building, the user would input 12 the location on the layout so firefighters could concentrate on that area and so insurers could verify the quantity of the loss. Alternatively, the user could choose not to enter any information about valuables to protect the user's privacy.

With respect to the materials, a user would input 12 text 76 describing hazardous materials stored in the building. For example, if a flammable or explosive material is stored in a particular room, the user would include that information so firefighters could fight the fire in an appropriate fashion. Similarly, information about other hazardous materials could be included on the layout.

In addition to the location of the fire extinguishers, the information on the layout 10 could optionally include one or more of the following: the expiration date, the recharge date, and/or the most recent inspection date of any fire extinguishers. By providing this information, the database could be used as a means for remotely inspecting for compliance with fire code by fire officials. That is, rather than physically inspecting a building, fire officials could inspect for compliance using the fire extinguisher data or any of the other data, such as the type and condition of hazardous materials stored in the building, entered into the database.

In an optional alternate optional embodiment of the method of the present invention, software is utilized to obtain the appropriate information from users and transmit 14 the information to the central storage server 56. A variety of different distribution means may be utilized to distribute the software. For example, the software may be sold through retail outlets or mail order outlets, made available for download from a computer network such as the Internet, distributed along with other software, or the like. The software may also be distributed by home owner associations, insurance companies, homebuilders or homebuilder organizations, or the like.

The software itself allows a user to input 12 emergency information to be transmitted and stored on a central storage server 56. Specifically, the software allows a user to input 12 a drawing, as shown in FIG. 6, representing the layout 10 of a building showing walls 70, windows 72, doors 78, furniture (not shown), and utility shutoff valves (not shown), the street address of the building (not shown), occupants 74, and text 76 representing information such as the type of room, the number, location, medical condition and age of the occupants, the locations and serial numbers of any valuables, and the location of any flammable materials. The layout may also include text showing the dimensions (not shown) of the building.

Once the user obtains 10 a copy of the software, the user collects the information described above such as by measuring or approximating the dimensions of the building, locating utility shutoff valves, and recording information about occupants, valuables, and stored materials. The user first inputs 12 the street address of a building. The user then inputs 12 the layout 10 of the building into the software. In one embodiment, the user uses a computer aided design ("CAD")

program to input 12 the layout 10. The software could use any CAD program, however, in an optional embodiment, the CAD program is easy to use so that users with no drafting or design experience can easily create an accurate representation of the layout 10 of the building. In an alternate embodiment, the user scans a printed layout 10 with a scanner which inputs 12 the layout 10 into the software. In yet another embodiment, the user is provided with a layout 10 stored on a computer readable medium, such as a magnetic disc, an optical disc, or other medium, by the builder, designer, architect, home owner association, or the like. The user may then input 12 the stored layout 10 into the software.

As described above, after the user inputs 12 the layout 10 of the building, the user may optionally input 12 data such as text 76 or photographs describing each room and the occupants, valuables, and materials therein. For example, a description of the type of room, i.e. office, storage, bedroom, may be placed on the layout, or near the layout with a lead line pointing to the room, to identify the room described.

Along with the text 76 describing the room the user could include text 76 describing the occupants, valuables, and materials in the room. Also, text 76 may be included describing the age, medical condition, and location of the occupants.

With respect to the valuables, a user could optionally input 12 any identifying information about the valuable and information that could be used to verify the value of the object. Thus, a brief description of the valuable with any identifying information such as serial numbers or the like could be input 12.

Similarly, if a business' inventory is stored in a particular area of a commercial building, the user would input 12 the location on the layout so firefighters could

concentrate on that area and so insurers could verify the quantity of the loss. As above, the user could choose not to enter any information about valuables to protect the user's privacy.

5 With respect to the materials, a user could input 12 text 76 describing the nature and location of hazardous materials stored in the building.

Referring again to FIGS. 1 and 3, once the information has been collected and entered into the user's computer 50, the computer transmits 14 the input information to a central storage server 56 as directed by the software or the user. For example, the user may establish a dial-up connection with the user's Internet service
10 provider 52 and transfer the information to the central storage server 56 over the Internet as shown in FIG. 5. In an embodiment where software is used, the software could optionally include a file transfer client through which the user's computer 50 establishes a direct connection with the central storage server 56 via a direct modem connection or an Internet connection 64 through the user's Internet service provider
15 52. If an Internet service provider 52 is used, the Internet service provider 52 transmits the information through a T1 line 66 to the central storage server 56.

In an alternate embodiment, the user or the software itself can generate a file containing the input information. The file may then be sent 14 as an e-mail attachment to the central storage server 56.

20 Regardless of the method used to transmit 14 the information, the information may be updated periodically or on a real time basis. For example, the software may include a component that automatically updates the information by connecting the central storage server 56, either directly or via the user's Internet service provider 52, and sending updated files. In a further embodiment, the user's

computer 50 may use information from the user's other software applications, such as an inventory control application, to automatically generate updated information files and transmit those updated information files to the central storage server 56. The central storage server 56 could then access the database, find the corresponding data file, and overwrite the stored data with the updated data.

With reference to FIG. 5, for added security, the central storage server 56 could be insulated from unauthorized access and computer viruses by a secured server 54. In this embodiment, the user's computer 50 establishes a direct connection with the central storage server 56 via a direct modem connection or an Internet connection 64 through the user's Internet service provider 52. If an Internet service provider 52 is used, the Internet service provider 52 transmits the information through a T1 line 66 to the secured server 54 which, in turn, transmits the input information to the central storage server 56 through a network connection 60. The secured server 54 could use a variety of security devices such as a firewall, proxy server, or the like.

The central storage server 56 is optionally a server which stores the emergency information for each building input and indexes the information according to the street address of the building or other identifying indicia such as a name of a person or building. The central storage server 56 includes data storage media, such as magnetic storage, optical storage, EPROM, ROM, RAM, or the like storing the database. The central storage server 56 also includes a data communication device such as a modem, network interface, or the like. In an optional embodiment, the database is backed up on a computer readable medium such as a magnetic medium, optical medium, or the like.

In one optional embodiment, as shown in FIGS. 1 and 2, the data may be stored centrally at the central storage server 56. The retrieval process for this embodiment is shown in FIG. 2. When an emergency occurs, the street address of the emergency is received 30 at a substation. Substation computers 58, such as a personal computer, could be located at police stations, fire stations, hospitals, and the like. In an alternate embodiment, substation computers 58 are located at a dispatcher's station. The dispatcher then provides the information to the appropriate emergency personnel. To retrieve the information, emergency personnel at a substation access 34 the emergency information on the central storage server 56 by inputting 32 the address into the substation computer 58. Each substation computer 58 includes software for accessing and downloading emergency information stored on the central storage server 56. While the substation computers 58 could access the emergency information using a direct modem connection or DSL connection, in an optional embodiment, a faster and more secure method is used. For example, each substation computer 58 may include an ISDN modem to dial directly to, and receive information directly from, the central storage server 56 through an ISDN line 62. The central storage server 56 searches 36 the database and retrieves 38 the database record storing the emergency information. The central storage server 56 retrieves 38 the information and transmits 40 the information back to the substation computer 58.

In an embodiment where a secured server 54 is used, shown in FIG. 5, the substation computers 58 communicate with the secured server 54 rather than the central storage server 56. The secured server 54 could use a variety of security measures to protect the information on the database from unauthorized access. When a substation computer 58 requests information, the secured server 54

communicates with the central storage server 56 through a network connection 60. The database record is transmitted to the secured server 54 which, in turn, transmits 22 the database record to the substation computer 58.

In an alternate embodiment, shown in FIGS. 3 and 4, the data may be stored 5 16 locally at the substation computer 58. In this embodiment, as the central storage server 56 receives the information from the users, the central storage server 56 determines 20 the substation computer 58 nearest the user's building from the street address of the user's building. That is, the central storage server 56 sorts the data according to geographic location or area. The central storage server 56 periodically 10 transmits a building's emergency information record to the substation computer 58 serving the geographic area in which the building is located. Thus, as shown in FIG. 4, the emergency information records are stored locally at on substation computers 58 so that when an emergency call is received 30, the records may be quickly searched 44 and retrieved 46 without resort to a communication line such as a 15 telephone line, modem line, or the like.

In either embodiment, the information is output 42 once retrieved by the substation computer 58. In one embodiment, substation computers 58 are connected to a printer which allows emergency personnel to produce printed copies of the emergency information which can be taken to the emergency location for use.

20 While certain embodiments of the present invention have been shown and described it is to be understood that the present invention is subject to many modifications and changes without departing from the spirit and scope of the claims presented herein.

I CLAIM:

1. A method for distributing information to emergency personnel of a selected geographic area comprising:
 - providing a central storage server having data storage media and data
 - 5 communication device;
 - storing data corresponding to at least a layout and street address of each of a plurality of buildings in a database in the data storage media at the central storage server;
 - indexing said data in the database according to the street address of said
 - 10 building; and
 - upon receiving a request including a specified street address of the emergency from emergency personnel in the selected geographic area, said central storage server accessing said database, retrieving the data based on the received address, and transmitting the data retrieved to said requesting emergency personnel
 - 15 through said data communication device for output thereof.
2. The method of claim 1 wherein said data further includes descriptions of the locations of the occupants of said building.
- 20 3. The method of claim 1 wherein said data further includes descriptions of hazardous materials stored in said building.
4. The method of claim 1 wherein said data further includes descriptions of the locations of utility shutoff controls.

5. The method of claim 1 wherein said data further includes descriptions of tangible objects stored in said building.
6. The method of claim 1 wherein said data further includes the location of the nearest fire hydrant.
7. The method of claim 1 wherein said data further includes the location of any fire extinguishers.
8. The method of claim 7 wherein said data further describes the condition of said fire extinguishers.
9. The method of claim 1 further comprising:
on a regular, periodic basis, receiving updated data for a building having a specified street address;
accessing said database using said specified street address; and
overwriting said data with said updated data.
10. A method for distributing information to emergency personnel of a selected geographic area comprising:
providing a central storage server having data storage media and data communication device;
a user transmitting data corresponding to at least a layout and a street address of a building to said central storage server;

storing said data in a database in the data storage media at the central storage server;

indexing said data in the database according to the street address of said building; and

5 upon receiving a request including a specified street address of the emergency from emergency personnel in the selected geographic area, said central storage server accessing said database, retrieving the data based on the received address, and transmitting the data retrieved to said requesting emergency personnel through said data communication device for output thereof.

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11. The method of claim 10 wherein said data further includes descriptions of the locations of the occupants of said building.

12. The method of claim 10 wherein said data further includes descriptions of
15 hazardous materials stored in said building.

13. The method of claim 10 wherein said data further includes descriptions of the locations of utility shutoff controls.

14. The method of claim 10 wherein said data further includes descriptions of
20 tangible objects stored in said building.

15. The method of claim 10 wherein said data further includes the location of the nearest fire hydrant.

16. The method of claim 10 wherein said data further includes the location of any fire extinguishers.

17. The method of claim 16 wherein said data further describes the condition of said fire extinguishers.

18. The method of claim 10 further comprising:
on a regular, periodic basis, receiving updated data for a building having a specified street address;

accessing said database using said specified street address; and
overwriting said data with said updated data.

19. A method for distributing information to emergency personnel of a selected geographic area comprising:

providing a central storage server having data storage media;
providing a substation computer having a substation data storage media, said substation computer communicating with said central storage server through a data link;

storing data corresponding to at least a layout and street address of each of a plurality of buildings in a database in the data storage media at the central storage server;

sorting said data by selected geographic area;

transmitting data corresponding to at least a layout and street address of each building in a selected geographic area to a substation computer serving said selected geographic area;

5 storing said transmitted data in a substation database in the substation data storage media at the substation computer;

indexing said data in the substation database according to the street address of each building; and

upon receiving a request including a specified street address of the emergency from emergency personnel in the selected geographic area, said
10 substation accessing said substation database, retrieving the data based on the received address, and outputting said data to said requesting emergency personnel.

20. The method of claim 19 wherein said data further includes descriptions of the locations of the occupants of said building.

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21. The method of claim 19 wherein said data further includes descriptions of hazardous materials stored in said building.

22. The method of claim 19 wherein said data further includes descriptions of the
20 locations of utility shutoff controls.

23. The method of claim 19 wherein said data further includes descriptions of tangible objects stored in said building.

24. The method of claim 19 wherein said data further includes the location of the nearest fire hydrant.
25. The method of claim 19 wherein said data further includes the location of
5 any fire extinguishers.
26. The method of claim 25 wherein said data further describes the condition of said fire extinguishers.
- 10 27. The method of claim 19 further comprising:
on a regular, periodic basis, receiving updated data for a building having a specified street address;
accessing said substation database using said specified street address; and
overwriting said data with said updated data.

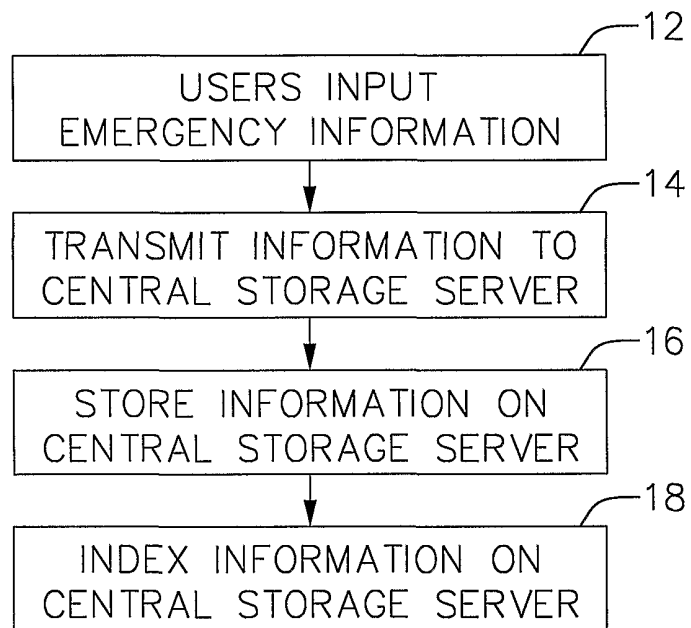
FIG. 1

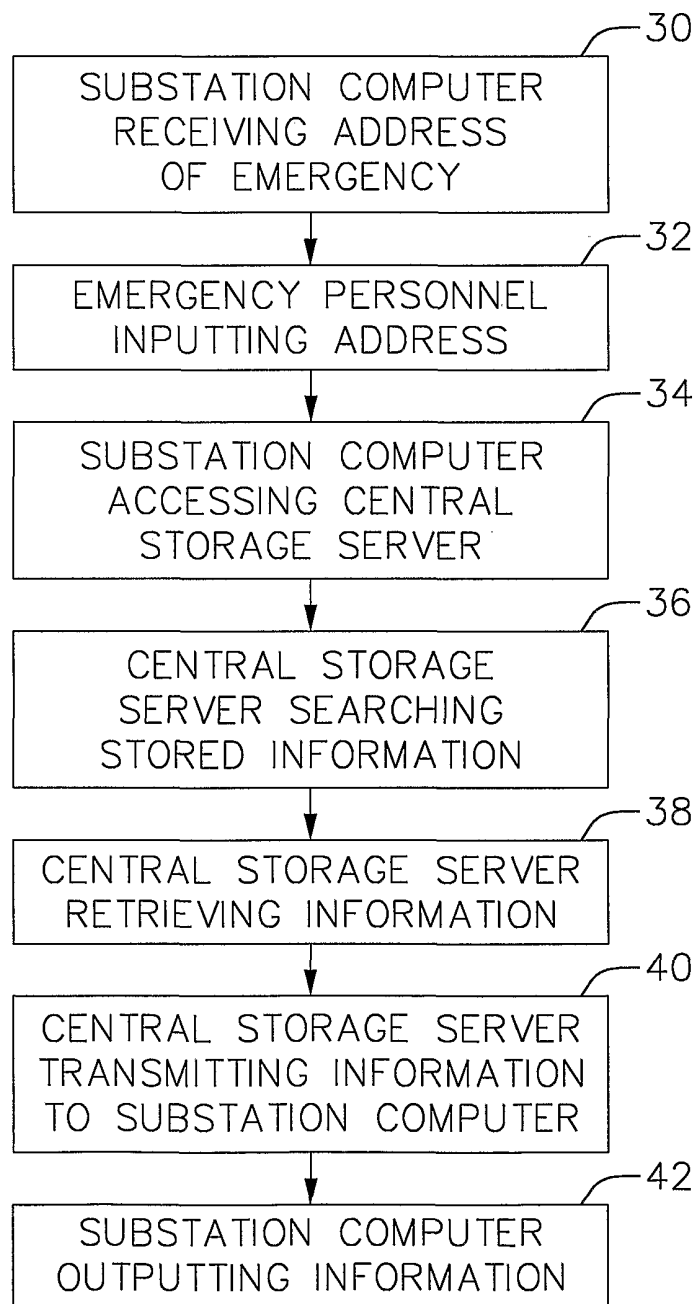
FIG. 2

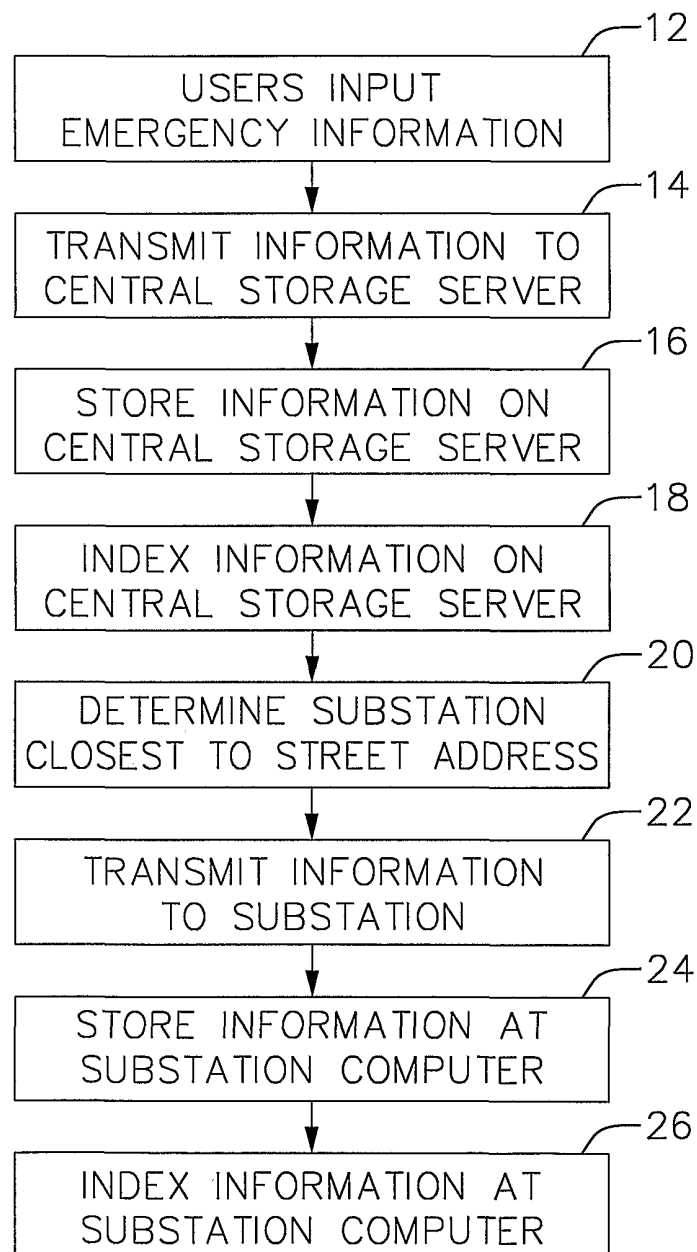
FIG. 3

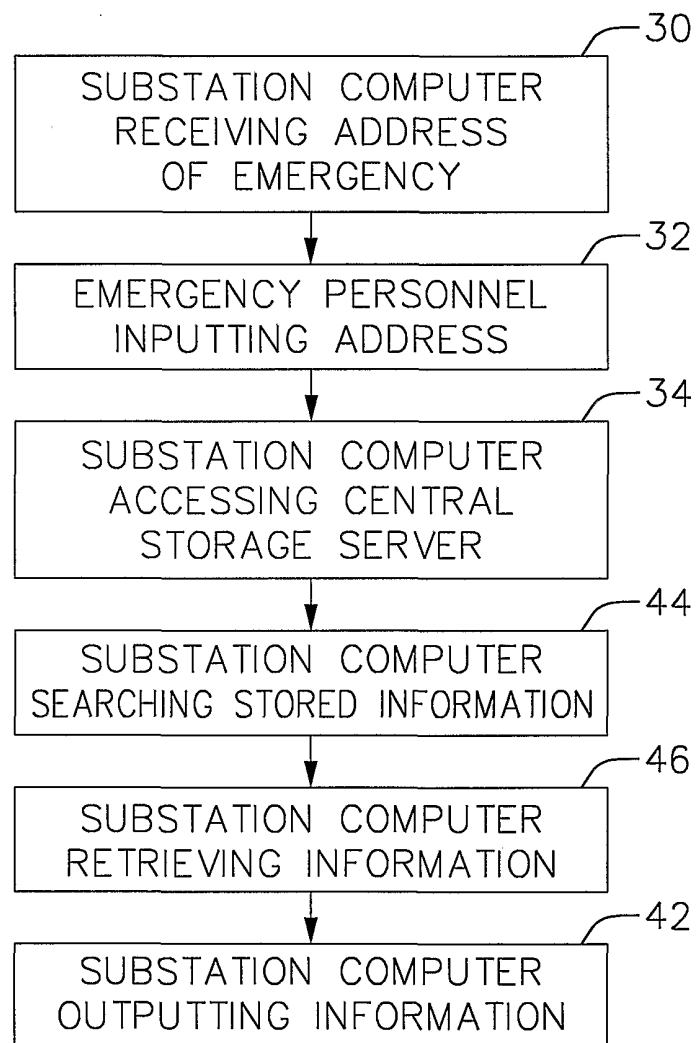
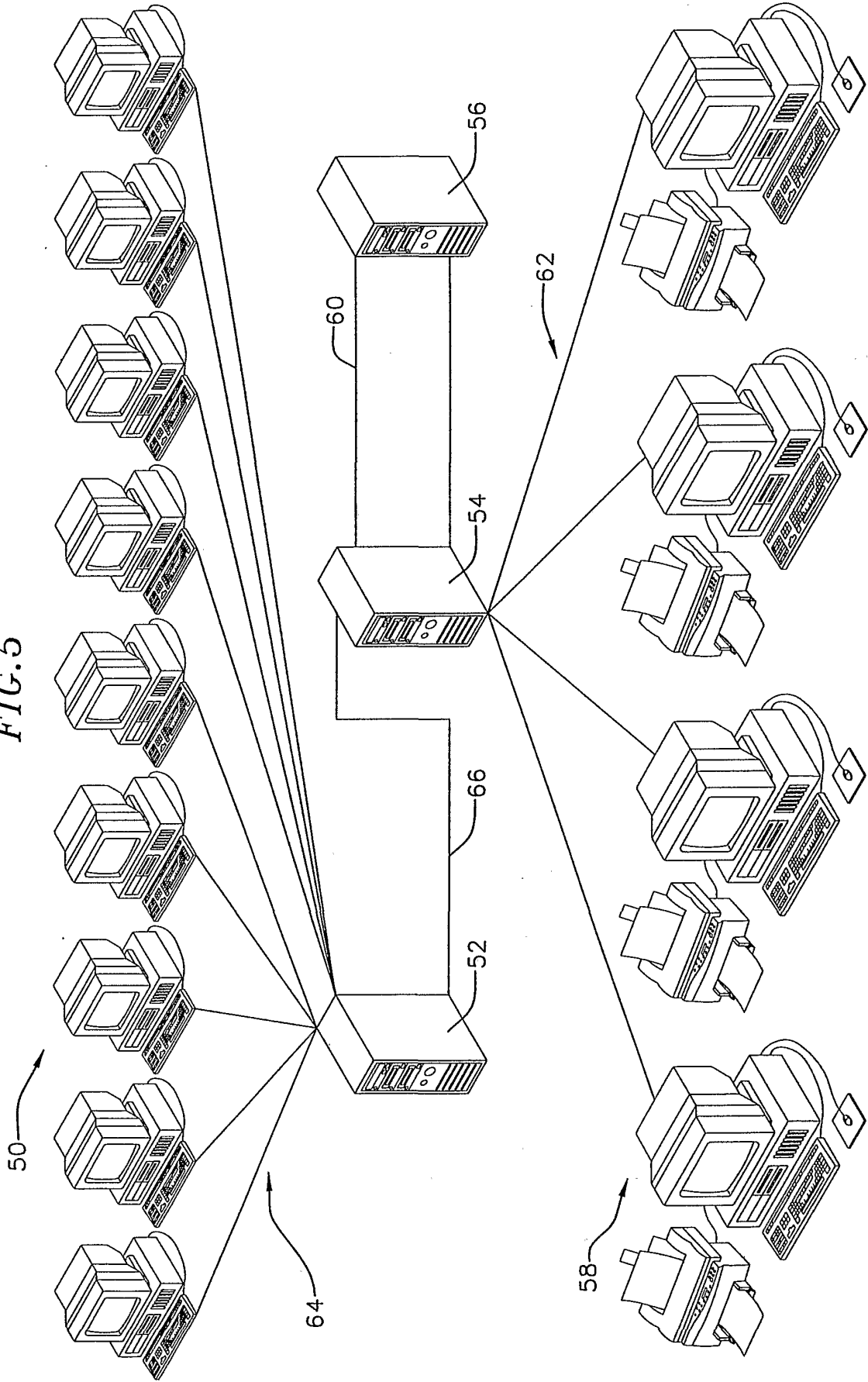
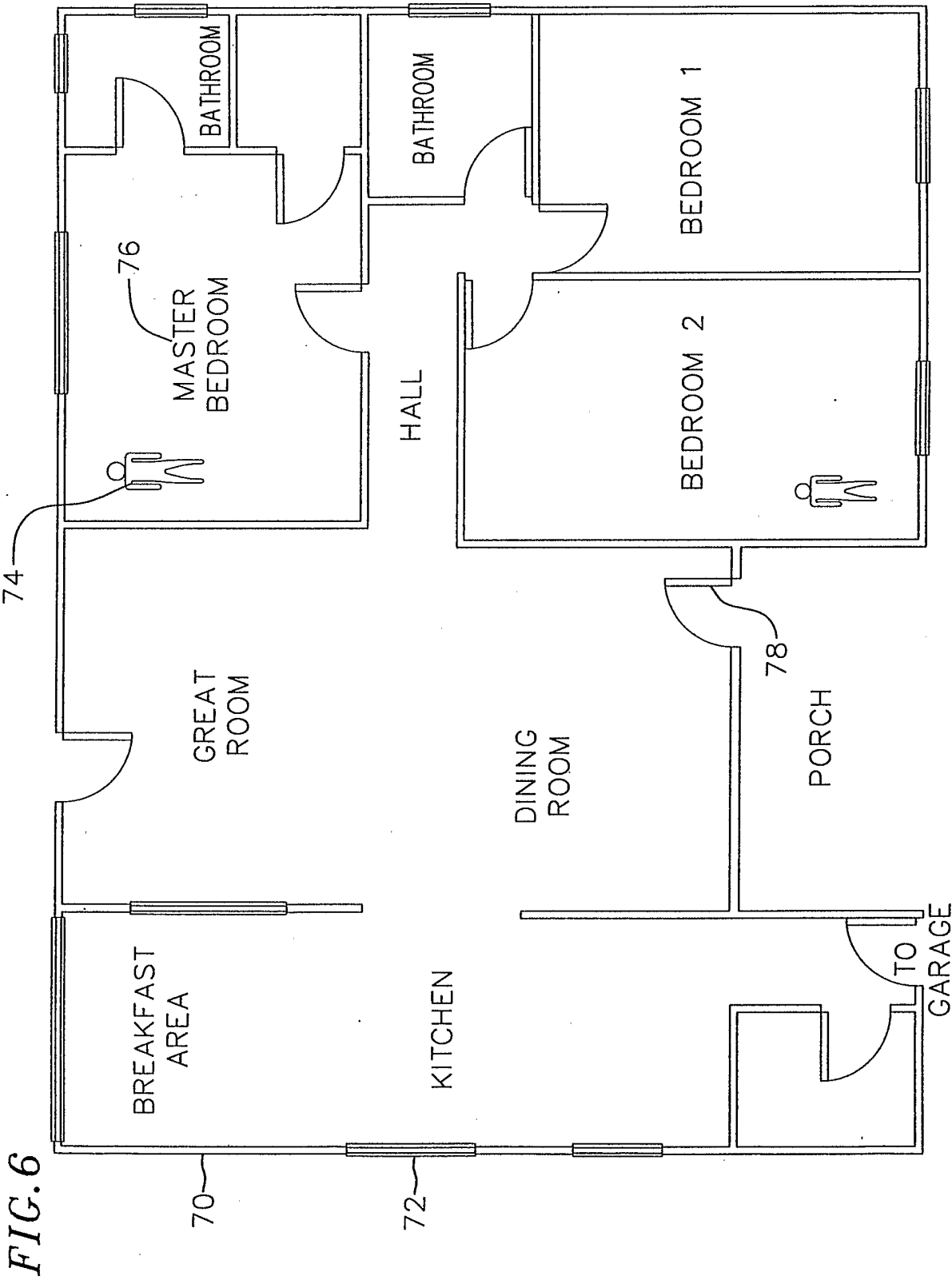
FIG. 4

FIG. 5





INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/29047

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/00, 17/30, 17/60; G08B 1/08

US CL : 707/10, 104; 705/3; 340/539

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 707/10, 104; 705/3; 340/539

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,835,907 A (NEWMAN) 10 November 1998, the entire paper is relevant	1-27
Y	US 5,553,304 A (LIPNER et al.) 03 September 1996, the entire paper is relevant.	1-27
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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"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
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Date of the actual completion of the international search

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