



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
14.02.2001 Bulletin 2001/07

(51) Int. Cl.⁷: **B66B 3/00**

(21) Application number: **00500171.4**

(22) Date of filing: **27.07.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

• **De Miguel Murillo, Diego**
50006 Zaragoza (ES)

(30) Priority: **06.08.1999 ES 9901815**
19.05.2000 ES 200001267

(72) Inventors:
• **Bastiaans Belot, Jean Paul**
50006 Zaragoza (ES)
• **Sofin Ballano, Roberto**
50006 Zaragoza (ES)
• **De Miguel Murillo, Diego**
50006 Zaragoza (ES)

(71) Applicants:
• **Bastiaans Belot, Jean Paul**
50006 Zaragoza (ES)
• **Sofin Ballano, Roberto**
50006 Zaragoza (ES)

(74) Representative:
Ungria Lopez, Javier et al
Avda. Ramon y Cajal, 78
28043 Madrid (ES)

(54) **Communication system for lifts with transmission of recorded information**

(57) It allows for the programming and transmission of different messages in lifts (1). The programming is carried out from an Information Server Center (2), which also, controls and detects in a centralized manner the possible alarms that are produced in a plurality of lifts (1).

The messages may be audio, video and combinations thereof, and they are loaded in a memory (7) (of each lift) together with information that informs the device when the messages have to be transmitted. The message record book of each lift may be personalized separately.

When an alarm is produced, the intercommunication system between the lift and the Alarm Center (3) functions, the center which in turn reports the emergency to the different emergency services. It permits communications with deaf people, dumb people or deaf-mutes caught in the lift.

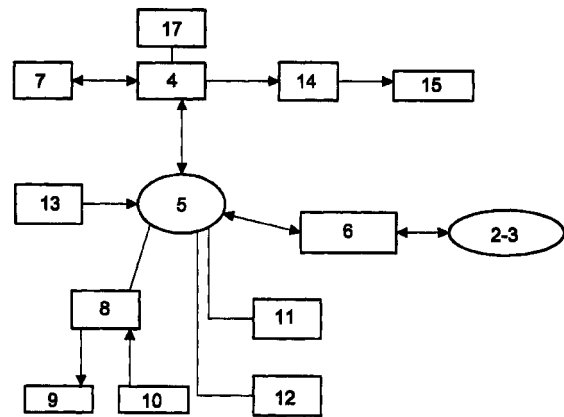


FIG. 2

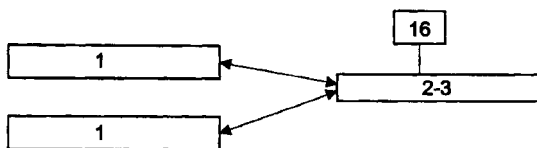


FIG. 1

Description

[0001] The invention in question refers to a system that permits the programming and transmission of different messages inside and outside the cars of lifts (next to the pushbuttons for calling the lift). The programming is carried out from an Information Server Center, that includes identification, location, programming and control means of each lift. Furthermore, the system may control and detect in a centralized manner the possible alarms that are produced in a plurality of lifts, establishing communication between the lift and an Alarm Center.

[0002] The messages transmitted during the normal operation of the lift are of different types, for example: advertizing messages, messages of public utility (light and water cutoffs, location of the closest pharmacy on duty), cultural messages (exhibits, concerts), etc. The messages may be audio, video and combinations thereof. These messages are loaded in the memory of the system along with information that informs the device when the messages have to be transmitted: during a certain time range, when the lift goes up and/or goes down, when the doors open and/or close, etc. Furthermore, the system allows personalization of the message record book of each lift separately, in other words, each lift will have the type, number and programming of messages that is desired thereof.

[0003] The Information Server Center has the possibility of controlling each one of the message transmission devices that has been installed in its network, in other words, it may know: the number, type and time when an emergency has taken place, the number of transmitted messages, the code of each one of the transmitted messages and the transmission time of each message in each and every one of the lifts. In this way, the Information Server Center maintains an up-to-date record of all the incidences, including emergencies and transmissions of messages. This record can be consulted at any time.

[0004] The system has the function of an intercommunication system between the lift and the Alarm Center, the Center which in turn reports the emergency to: the lift maintenance firm, the Police, Fire Department, Civil Defense, etc. When the emergency system is activated a reassuring message is immediately transmitted and the message transmission function is disconnected, in other words, the device only operates as an intercommunication system.

[0005] Furthermore, the present invention permits that in the event the person caught in the lift is deaf, dumb or a deaf-mute, communication can be established between said person and the Alarm Center, for which purpose the emergency button has a double purpose, one to carry out the function for which it was designed, in other words to carry out an emergency call, and another one, so that after the call signal has been made communication can take place between the deaf

person, dumb person or the deaf-mute and the Alarm Center.

[0006] The invention also permits communication to be carried out with blind people.

[0007] In order to permit the transmission of video messages, inside the lift there is a screen on which the different images and/or messages are shown, and furthermore, the inclusion of a video camera in the Alarm Center has been provided for, so that in the event that a person is caught in the lift, this person can see on the screen the person of the Alarm Center who is answering his call, the written messages and the messages in sign language for deaf people, dumb people or deaf-mutes; in other words, it has a double function, as a video screen and/or as a message transmission screen.

[0008] The invention is applicable in any type of lift in which it is necessary to include a system for providing information to users, such as for example, the systems used in some commercial centers and department stores, hospitals, hotels, etc.

BACKGROUND OF THE INVENTION

[0009] The use of lifts in commercial centers and department stores that are provided with a public address system whereby users of the lift are informed of the services of the center, offers and information regarding that which is displayed on the different floors of the building is known only too well in the prior art.

[0010] The piped music system wherein music is transmitted inside the car of the lift by means of some loudspeakers is also known.

[0011] An announcer, cassette player, CD player, etc. is needed in order to transmit the messages.

[0012] There is no system that has a network for transmitting audio messages, video messages or a combination thereof, installed in a multitude of lifts. Nor is there a system in which the message transmitters are connected to an Information Server that periodically updates them loading the different messages and the message transmission code in a memory.

[0013] Furthermore, there is no system that is capable of controlling the emitters of a plurality of lifts.

[0014] Nor is there a system that communicates the inside of the lift with the Alarm Center when someone is caught inside the lift, and much less is a system that permits such communication with deaf people, dumb people or deaf-mutes known.

DESCRIPTION OF THE INVENTION

[0015] The invention provides greater performance qualities in lifts provided with systems providing information to users, such as for example the systems used in some commercial centers and department stores.

[0016] For this purpose, each lift includes a message transmitting module that comprises a memory for storing messages and transmission protocols, that are

transmitted from an Information Server Center by means of a communication channel. Furthermore, the message transmitting module has: a processor, a communication adapter, a modem, a voice synthesizer, loudspeakers and a microphone, a video adapter and a screen, in such a way that the transmission of the messages stored in the memory is made possible by means of the screen and/or loudspeaker.

[0017] Another characteristic of the invention consists of the fact that the message transmitting module is connected to the operating device of the lift and to an Alarm Center, with which it is linked by means of the communication channel, in order to permit direct communication between the car of the lift and the Alarm Center, upon pushing the emergency button of the operating device of the lift.

[0018] The Alarm Center is based on a computer that has transmitting means in order to transmit the data of the lift, whose alarm button has been pushed, to different emergency services such as: lift maintenance firms, the Fire Department, Civil Defense, etc. For this purpose, the Alarm Center as well as the different services are provided with communication means.

[0019] The computer of the Alarm Center has a data base for storing the different alarms that are produced in each lift and updating means in order to update said data base where the alarms of each lift are gathered and thus the histogram thereof is updated.

[0020] Likewise, the Information Server Center is based on a computer that has a data base for storing the different incidences that are produced in each lift and control means in order to control the transmission of messages and to update said data base wherein the incidences of each lift are gathered, and thus histogram thereof is updated.

[0021] The indicated incidences refer to the data regarding the transmitted messages and the produced alarms.

[0022] In this way it can be known how many times a message has been transmitted, where, at what time, etc. and furthermore the information regarding the emergencies: the number of calls, the type of emergency and at what time the emergencies have taken place.

[0023] The Server Center comprises programming means in order to program the messages in the message transmitting module of each lift, in such a way that the messages are transmitted in each lift according to a date or period of dates, time or time range, geographic area wherein it is located, and/or the state which the lift is in. The state which the lift is in is obtained by means of the operating device thereof, and this state is in terms of whether the doors are opening or closing, the lift is going up or going down, whether there is an overload, etc. and depending on said state different messages are transmitted. For this purpose, the processor of the message transmitting module receives and processes the information contained in the operating device.

[0024] Hence, the connection of the transmitting module to the operating device of the lift allows the transmission of messages of welcome when the doors open or close, as well as to permit the users to be informed whether the lift is going up or down, the floor on which the lift is located, the calls made to the lift from the outside as well as from the inside and the type of trouble. Said connection of the operating device of the lift to the transmitting module permits the transmitting module to know when the emergency button of the operating device has been pushed, in such a way that when the processor of the transmitting module detects the pushing of the emergency button, direct communication with the Alarm Center is carried out.

[0025] The processor of the transmitting module is provided with means so that once the emergency button has been pushed and as a result thereof communication with the Alarm Center has been established, the subsequent pushings of the emergency button are understood as responses to possible questions that have been raised from the Alarm Center. This all permits communication with deaf people, dumb people or deaf-mutes caught in the lift. Thus for example, when a question is raised by the Alarm Center, either by means of the loudspeakers or the screen, the deaf person, the dumb person or the deaf-mute can reply in such a way that pushing the emergency button once means a positive reply, and pushing the emergency button twice means a negative reply. Obviously, any identifying coding of the pushing of the bottom as a reply may be established.

[0026] Another characteristic of the invention is defined by the fact that the computer of the Alarm Center is connected to a video camera, in such a way that the person caught in the lift can see on the screen the operator who is answering his call from the alarm center, can see on the screen written messages and messages in sign language for deaf people, dumb people and deaf-mutes, in other words, the video camera has a double function, as a video camera and/or as a message transmitting means.

[0027] Furthermore, the processor of the transmitting module of each lift is connected to a load restricter in order to transmit a message that reports the existence of an overload and, optionally, a full load.

[0028] In one embodiment of the invention, the processor of the transmitting module of each lift is connected to an outside temperature sensor, in order to be able to transmit a message reporting the average temperature outside the building.

[0029] Therefore, the invention provides a computer network of information in lifts by means of which video messages, audio messages and combinations thereof, as well as the transmission protocols are distributed to the transmitting modules installed in the lifts. Furthermore, direct communication from the inside of the car with an Alarm Center is provided and as of this, communication can be established with deaf people, dumb

people or deaf-mutes, just as it has already been described.

[0030] Creation of a system that permits the personalization of each one of the transmitting modules is achieved by means of the described structure and this constitutes a great advantage.

[0031] Hereinafter and in order to provide a better understanding of this specification and forming an integral part thereof, a series of figures wherein the object of the invention has been represented in an illustrative and non-restrictive manner is attached.

BRIEF DESCRIPTION OF THE FIGURES

[0032]

Figure 1 shows a schematic functional block diagram of the general structure of the system of the invention.

Figure 2 shows a functional block diagram of a possible embodiment of the part of the system included in each one of the lifts.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0033] A description is made hereinafter of the invention based on the above-cited figures.

[0034] The invention consists of a transmitting module (1) that is installed in a plurality of lifts and that has a communication channel that permits it to be connected to an Information Server Center (2) and to an Alarm Center (3); it may be the case that these centers (2) and (3) are the same center, just as it is shown in figure 1.

[0035] The Alarm Center (3) is connected to different emergency services (not represented in the figures), in such a way that when an emergency takes place in a lift, the emergency is reported to the Alarm Center (3) where the lift is identified and a call to the different emergency services is produced so that said services assist the affected lift(s). For this purpose, the Alarm Center (3) as well as the different services are provided with the corresponding communication means.

[0036] Each transmitting module (1) is provided with a processor (4), that by means of a communication adapter (5) can receive and transmit information from and to the Alarm Center (3) and from and to the Information Server Center (2). In the embodiment the Alarm Center (3) and the Information Server (2) are connected with the communication adapter (5) by means of a modem (6) in order to communicate by means of the Integrated Service Digital Network (ISDN). Obviously, the communication can be carried out by means of Ethernet or by means of any other conventional means.

[0037] The communication adapter (5) can be integrated in the processor itself (4), but in the embodiment it has been separated therefrom in order to facilitate the

understanding of the invention.

[0038] The processor (4) of each lift is connected to a memory (7) where the messages to be transmitted along with the transmission profile are stored. These data are previously programmed from the Information Server Center (2) by means of the communication channel. For this purpose the Center (2) has the corresponding programming means.

[0039] The transmitting modules store all the information received in their memory and transmit it as set forth by the protocol. For example: "transmit message no. 1 in the car of the lift when the lift is going up or going down (when it has passengers inside it) during the time range between 10:00 a.m. and 12 noon and message no. 2 outside the lift (next to the pushbuttons for calling the lift) when the lift is going up or going down during the time range between 11:00 a.m. and 2:00 p.m."

[0040] In this way, a system that allows the messages of each one of the transmitters to be personalized is created.

[0041] In order to transmit the messages the processor is based on a voice and sound synthesizer (8), using a loudspeaker (9), which is in turn used together with the microphone (10) by the alarm system as a conventional vocal telephone so that the users of the lift can carry out a vocal communication with the Alarm Center and with the emergency means designated by the Center.

[0042] Furthermore, the processor (4), by means of the communication adapter (5), is connected to the operating device (11) of the lift in such a way that it knows the floor in question, the destination of the lift, whether it is going up or down, whether the button has been pushed inside or outside it, etc.

[0043] Furthermore, the processor (4) is connected to a sensor located in the doors (12) (themselves, or provided for in the operating device) so that it knows the state thereof at all times, in such a way that when the door opens to let someone in the person is welcomed in terms of the programming, the floor and the state of the doors when the lift finishes going up or down.

[0044] It should also be pointed out that the processor (4) is connected, by means of the communication adapter (5), to a load restricter (13) (provided for in the operating device), in such a way that if there is excess weight (and optionally full load) inside the lift, the passengers of the car are informed of this circumstance. With the parameters obtained right before a transmission takes place and the profiles of the previously programmed messages, the processor determines what message to transmit, making a record of said transmission for subsequent control thereof.

[0045] The profiles of the messages recorded in the memory (7) determine the order in which they are transmitted in terms of the programming carried out. Hence, they can be reproduced at a specific time or in a specific time range, on a specific day or interval of dates. Fur-

thermore, said reproduction can be carried out according to the geographic location of the lift, and, obviously, the messages can be programmed individually lift by lift, by geographic areas, by blocks of buildings or any other desired manner.

[0046] The identification of the transmitting module (1) that makes the emergency call is done by means of the identification of the telephone number where the call comes from, by means of CallerID or channel (ISDN) and exchanging this data with the data base of the Alarm Center.

[0047] When the emergency button of the operating device (11) of the lift is pushed, the processor (4) automatically makes one or several correlative calls to the preprogrammed telephone numbers, once the connection has been established and the origin of the call in the Alarm Center (3) has been identified, the alarm code is received and a call to the different emergency services is produced, sending them the record of the lift so that the emergency is attended to in the quickest and most efficient manner possible.

[0048] While the connection with the Alarm Center is established, the system informs the users of the lift of the incidence and a reassuring message is transmitted.

[0049] In an embodiment of the invention, the processor (4) is connected to a video adapter (14), which in turn is connected to a screen (15) in order to transmit the messages by means of images and sound.

[0050] The Alarm Center (3) is connected to a video camera (16) which makes it possible to see on the screen (15) the person who is attending the emergency call. This embodiment permits the person himself who is attending the emergency call to gesticulate messages for deaf people, dumb people or deaf-mutes, in the event that the person caught inside the lift were deaf, so that by means of the invention it is also possible to carry out communication from the Alarm Center with people who have these deficiencies.

[0051] In order to permit a dialogue with deaf people, the emergency button included in the operating device (11) is provided with another function, aside from the one for which it has been designed, that consists of permitting the person caught in the lift to communicate with the emergency center. For this purpose, the processor (4) of the message transmitting module (1), once an emergency call has been made and communication has been established with the Alarm Center (3) just as it has already been described, permits the deaf person, the dumb person or the deaf-mute to answer the questions that may be raised to him by the person in the Alarm Center (3) who is attending to the emergency. For example after having established communication with the Alarm Center since the emergency button has been pushed, if the emergency button is pushed again this represents a positive reply, and if it is pushed twice this represents a negative reply.

[0052] The system of the invention can also be used by blind people, for which purpose a simple text in

Braille is printed next to the emergency button, where the operating of the system is explained. For the rest of the people a conventional text is written, so that these people may also use it.

5 **[0053]** Therefore once an emergency call has been made and the communication with the Alarm Center (3) has been established, the operator of the Alarm Center starts a spoken conversation with the person requesting help, by means of the loudspeakers and the micro-
10 phones. In the event that a reply is not obtained, the process for communicating with a deaf person, a dumb person or a deaf-mute is started, transmitting different written messages, special messages for deaf people, and/or spoken messages, waiting for the reply by
15 means of the emergency button.

[0054] When the transmitting module (1) of a lift is connected for the first time, the module requests the installer to give the access code of the Information Server Center (2), immediately proceeding to establish
20 a link with the module, and, then, listening in order to receive the messages and the programming that are assigned thereto from the Information Server Center.

[0055] If the system loses its message load for any reason (supply failure, etc.) when it is reactivated it proceeds in a manner similar to the first time, recovering its
25 entire programming from the server.

[0056] In an embodiment of the invention, the processor (4) is connected, by means of the communication adapter (5), to an outside temperature sensor (not represented in the figures), in order to inform the users of
30 the temperature outside and that may be transmitted by means of the loudspeaker (9) and/or screen (15), just like the rest of the messages.

[0057] Finally it should be pointed out that obviously
35 the communication adapter (5) may be connected to different interfaces in order to allow the expansion of the system of the invention depending on future needs.

Claims

- 40
1. Communication system for lifts with transmission of recorded information, characterized in that each lift has a message transmitting module (1) that includes a memory (7) for storing messages and transmission protocols, wherein said messages and protocols are programmed by means of a communication channel from some programming means included in an Information Server Center (2); each message transmitting module (1) also
45 having: a processor (4), a communication adapter (5), a modem (6), a voice synthesizer (8), loudspeakers (9), a microphone (10), in order to transmit the messages stored in the memory (7); and the message transmitting module (1) being connected to
50 the operating device (11) of the lift and to an Alarm Center (3) with which it links by means of the communication channel in order to permit the direct communication between the car of the lift and the
- 55

- Alarm Center (3), when the emergency button of the operating device (11) has been pushed.
2. Communication system for lifts with transmission of recorded information, according to claim 1, characterized in that the Alarm Center (3) is based on a computer that has transmitting means in order to transmit the data of the lift, whose alarm button has been pushed, to different emergency services. 5
 3. Communication system for lifts with transmission of recorded information, according to the preceding claims, characterized in that the computer of the Alarm Center (3) has updating means in order to update a data base where the incidences of each lift are gathered and hence the histogram thereof is updated. 10
 4. Communication system for lifts with transmission of recorded information, according to claim 1, characterized in that the Information Server Center (2) is based on a computer that has control means in order to control the transmission of messages and updating means in order to update a data base where the incidences of each lift are gathered and hence the histogram thereof is updated. 15 20
 5. Communication system for lifts with transmission of recorded information, according to claim 1, characterized in that the programming of the messages of each lift is carried out from the programming means of the Server Center (2) for the transmission of the messages depending on the date or period of dates, time or time range, geographic area where it is located, and/or state which the lift is in. 25 30 35
 6. Communication system for lifts with transmission of recorded information, according to claim 5, characterized in that the connection of the transmitting module (1) to the operating device (11) of the lift allows the transmission of messages of welcome, when the doors open or close, as well as the informing of users on which floor the lift is located. 40
 7. Communication system for lifts with transmission of recorded information, according to claim 1, characterized in that the processor (4) of each lift is connected to a load restricter (13) of the lift, in order to transmit a message that reports the situation of an overload and full load. 45 50
 8. Communication system for lifts with transmission of recorded information, according to claim 1, characterized in that the processor (4) of each lift is connected to an outside temperature sensor, so that a message reporting the temperature measured outside the building may be transmitted. 55
 9. Communication system for lifts with transmission of recorded information, according to claim 1, characterized in that means have been provided for so that once the emergency button has been pushed and communication with the Alarm Center (3) has been established, subsequent pushings of the emergency button correspond to responses to questions raised from the Alarm Center (3) in order to permit communication with deaf people, dumb people or deaf-mutes caught in the lift; these means being comprised by the processor (4) of the transmitting module (1), the emergency pushbutton itself and the Alarm Center (3).
 10. Communication system for lifts with transmission of recorded information, according to any of the preceding claims, characterized in that the processor (4) of each lift is connected to a video adapter (14) and the adapter to a screen (15), as well as to the voice synthesizer (8) and the synthesizer to some loudspeakers (9) in order to show messages by means of images and sound.
 11. Communication system for lifts with transmission of recorded information, according to claims 9 and 10, characterized in that the Alarm Center (3) is connected to a video camera (16) in order to allow the image of the operator who is attending the emergency call to be shown on the screen (15); and all of this in such a way that written messages and/or special symbols for deaf people, dumb people or deaf-mutes are transmitted on said screen (15).

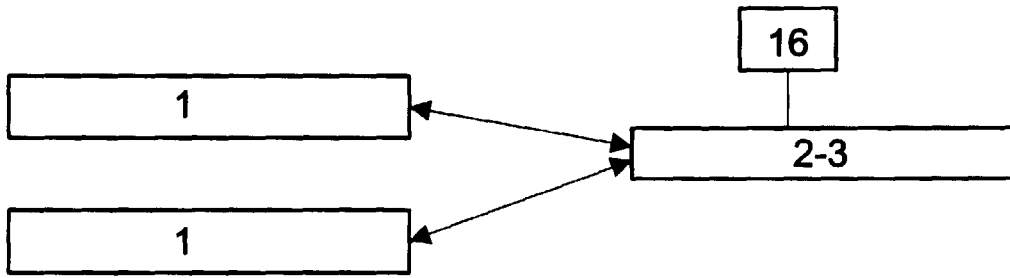


FIG. 1

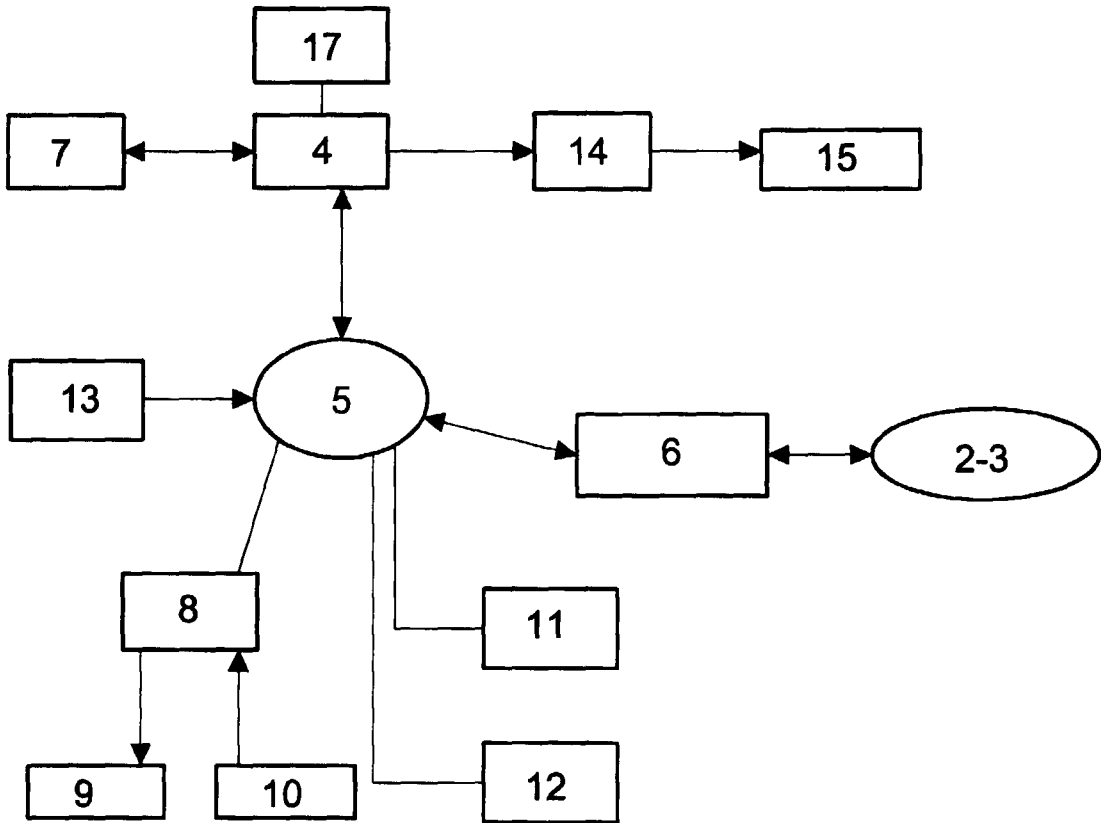


FIG. 2