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**(54) Biological information monitoring system**

System zur Überwachung biologischer Informationen

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(56) References cited:

**EP-A2- 2 428 158**

**JP-A- 2005 229 426**

**US-A1- 2006 183 972**

**US-A1- 2009 171 169**

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## Description

### BACKGROUND OF THE INVENTION

**[0001]** The present invention relates to a biological information monitoring system including a plurality of transmitters to which individual channel information is allocated, which collect biological information from respective living bodies, and which transmit the biological information.

**[0002]** A biological information monitoring system includes a plurality of receivers which, when channel information is set, receive biological information that is collected by a transmitter to which the set channel information is allocated, and which transmits the biological information via a network. The system is configured so that, depending on the settings of the channel information for the receivers, a central monitor collects the biological information from a patient.

**[0003]** When the channel information of a transmitter which is placed for a patient who is not a monitor object is set in the receivers, therefore, there is a possibility that the biological information of the patient who is to be monitored may not be monitored, or that misidentification of patients may occur. As a function of coping with the above situation, it is checked, in the central monitor, only whether the correspondence relationship between the patient and the channel information is adequate or not. This countermeasure is insufficient.

**[0004]** By contrast, JP-A-2010-11281 describes a system in which, in order to obtain a desired image, a plurality of images obtained from a plurality of video receivers are displayed like thumbnail images in an arranged manner on one screen, and the desired image can be selected on the screen. In the system, a desired image or biological information can be obtained without causing an input error. However, it is difficult for the system to cope with duplicate settings of channels.

**[0005]** In order to avoid an erroneous setting of a user ID in a telemeter system, JP-A-2005-229426 describes apparatuses in which, in two radio apparatuses which communicate with each other, default user IDs are set to be identical with the radio identification numbers specific to the respective radio apparatuses. According to the configuration, an erroneous setting of a user ID can be avoided in the initial stage. In a biological information monitoring system in which patients are changed to alter monitor objects with an elapse of time and date, however, an erroneous setting cannot be avoided because the setting of channel information must be altered at each change.

**[0006]** Moreover a prior art document, US 2009/0171169, describes a monitoring network system which includes a plurality of monitoring apparatuses; and a remote monitoring apparatus, connected to the plurality of monitoring apparatuses. At least one of the monitoring apparatuses is configured to acquire biological signals from a patient and includes: a first holder, configured to

hold a first ID; and a transmitter, configured to transmit the biological signal to the remote monitoring apparatus. The remote monitoring apparatus includes: a second holder, configured to hold a second ID and association information for associating a screen area in a display with the second ID; a detector, configured to detect the at least one of the monitoring apparatuses, when the first ID is identical with the second ID; a receiver, configured to receive the biological signal from the at least one of the plurality of monitoring apparatus detected by the detector; and a display controller configured to display the biological signal on the screen area in the display based on the association information.

### SUMMARY

**[0007]** The invention is more clearly defined in the claim 1.

**[0008]** This invention provides a biological information monitoring system in which it is possible to detect that duplicate settings of channel information occur, and therefore a situation where biological information of a desired patient cannot be monitored, or that where misidentification of patients is caused can be adequately prevented from occurring.

**[0009]** One aspect of the invention provides a biological information monitoring system comprising: a transmitter to which first channel information is allocated, the transmitter operable to collect biological information from a living body and operable to output the biological information; a first receiver in which the first channel information is set, the first receiver operable to receive the biological information from the transmitter to which the first channel information is allocated, the first receiver operable to output the biological information; a monitoring apparatus operable to receive the biological information from the first receiver and operable to display the received biological information; a setting unit operable to set the first channel information in the first receiver; a second receiver in which second channel information is set; and a detector operable to determine whether the first channel information set in the first receiver is identical with the second channel information set in the second receiver.

**[0010]** The biological information monitoring system may further include a notifying unit, when the detector determines that the first channel information set in the first receiver is identical with the second channel information set in the second receiver, operable to perform notification of duplicate settings.

**[0011]** The biological information monitoring system may further include an alarm outputting unit, in response to the notification performed by the notifying unit, operable to output an alarm. The setting unit may be disposed in the monitoring apparatus, the detector and the notifying unit may be disposed in the first receiver, and the alarm outputting unit may be disposed in the monitoring apparatus.

**[0012]** The biological information monitoring system may further include an alarm outputting unit, in response to the notification performed by the notifying unit, operable to output an alarm. The setting unit may be disposed in the monitoring apparatus, the detector and the notifying unit may be disposed in a computer connected to a network, and the alarm outputting unit may be disposed in the monitoring apparatus.

**[0013]** The biological information monitoring system may further include an alarm outputting unit, in response to the notification performed by the notifying unit, operable to output an alarm. The setting unit, the detector, the notifying unit and the alarm outputting unit may be disposed in the monitoring apparatus.

**[0014]** The biological information monitoring system may further include a forcible setting unit, when the detector determines that the first channel information set in the first receiver is identical with the second channel information set in the second receiver, operable to set the determination to be valid or invalid.

#### BRIEF DESCRIPTION OF THE DRAWINGS

##### **[0015]**

Fig. 1 is a block diagram illustrating the configuration of an embodiment of the biological information monitoring system of the invention.

Fig. 2 is a block diagram illustrating the configuration of an embodiment of a receiver in the biological information monitoring system of the invention.

Fig. 3 is a view illustrating an example of information stored in a storing unit disposed in the embodiment of the receiver in the biological information monitoring system of the invention.

Fig. 4 is a block diagram illustrating the configuration of an embodiment of a central monitor in the biological information monitoring system of the invention.

Fig. 5 is a view illustrating an example of information stored in a table disposed in an embodiment of the central monitor in the biological information monitoring system of the invention.

Figs. 6A and 6B are views illustrating examples of information displayed on a display of the central monitor in the biological information monitoring system of the invention.

#### DETAILED DESCRIPTION OF EMBODIMENTS

**[0016]** Hereinafter, an embodiment of the biological information monitoring system of the invention will be described with reference to the accompanying drawings. In the figures, the identical components are denoted by the same reference numerals, and duplicated description is omitted. Fig. 1 is a diagram of an embodiment of the biological information monitoring system of the invention. The system has two sets of two central monitors 11, 12 and 21, 22 placed on, for example, the first and second

floors, respectively. The central monitors 11, 12, 21, 22 are connected to a LAN 10 which is a network that performs communication via IP protocol.

**[0017]** For example, four receivers 15-11 to 15-14 on the first floor, and four receivers 15-21 to 15-24 on the second floor are connected to the LAN 10. Moreover, transmitters 1-1 to 1-n are attached to patients P1-1 to P1-n, and transmitters 2-1 to 2-m are attached to patients P2-1 to P2-m, respectively.

**[0018]** The transmitters 1-1 to 1-n, 2-1 to 2-m are allocated with respective individual channel information, collect biological information from respective patients, and transmit the biological information. Electrodes or the like which detect biological information are adhered to the patients P1-1 to P1-n, P2-1 to P2-m, and connected to the transmitters 1-1 to 1-n, 2-1 to 2-m through lead wires, respectively. The transmitters can collect various kinds of biological information such as electrocardiogram data, respiration data, the blood pressure, the SpO<sub>2</sub>, and CO<sub>2</sub>.

**[0019]** Each of the above-described receivers 15-11 to 15-14, 15-21 to 15-24 is configured to, receive setting of channel information, receive biological information that is collected by a transmitter to which the set channel information is allocated, and output the biological information via the LAN 10 that is a network. The central monitors 11, 12, 21, 22 receive biological information output from the receivers 15-11 to 15-14, 15-21 to 15-24, and output the waveform and value of the received biological information.

**[0020]** The receivers 15-11 to 15-14, 15-21 to 15-24 have identical or functionally identical or similar components, and have the configuration of a receiver 15 shown in Fig. 2. Each of the receivers 15 includes a receiving unit 31 which receives a signal sent from a transmitter. A signal received by the receiving unit 31 is fetched into a signal processor 32, and undergoes necessary processes. The necessary processes basically include digitization for transmission to the LAN 10, and the like. Depending on the setting on the side of the central monitor, the processes may include a process of setting an alarm, or a signal process such as the arrhythmia analysis.

**[0021]** The receiver 15 further includes a channel information storing unit 33, a detector 34, a notifying unit 35, a communication processor 36, and a LAN interface 37. In the channel information storing unit 33, channel information indicating the maximum number (in the embodiment, eight) of transmitters from which the receiver 15 can collect channel information is stored in correspondence with, for example, a bed ID. As shown in Fig. 3, the channel information storing unit 33 stores channel information of transmitters which collect biological information from patients to whom beds having bed IDs of Bed 1 to Bed 8 for the own apparatus are allocated, and the IP address of a central monitor in which the channel information is set. The IP address of the own apparatus is stored in the lowest area.

**[0022]** The detector 34 collects channel information which is set in the other receivers, and determines wheth-

er the channel information set in the channel information storing unit 33 included in the receiver (own receiver) 15 is identical with the collected channel information set in the other receivers. In other words, the detector 34 detects settings of the same channel information (duplicate settings). For example, the collection of channel information may be performed after every elapse of a predetermined time period. The collected channel information of the other receivers is stored in a storage area for other apparatuses in the channel information storing unit 33 shown in Fig. 3, together with the bed IDs. When the detector 34 detects settings of the same channel information, the notifying unit 35 notifies of the duplicate settings by using the IP address of the central monitor which sets the channel information, as a destination address. The IP address is stored in the channel information storing unit 33. In response to the notification from the notifying unit 35, an alarm generator 43 generates an audible alarm, and a visible alarm is displayed in a corresponding area of a screen of a display 42.

**[0023]** The LAN interface 37 performs communication via IP protocol through the LAN 10. The communication processor 36 performs processes such as formatting of data to be transmitted, and decomposition of received data.

**[0024]** The central monitors 11, 12, 21, 22 have identical or functionally identical or similar components, and have the configuration of a central monitor 40 shown in Fig. 4. Namely, the central monitors have the configuration where the display 42, the alarm generator 43, an inputting unit 44, and a LAN interface 45 are connected to a main unit 41 which is configured by a computer or the like. The display 42 is configured by a displaying apparatus such as an LED or an LCD, and can display the waveforms and values of various kinds of biological information. The alarm generator 43 can include a speaker or the like which generates the audible alarm.

**[0025]** The inputting unit 44 can include a keyboard and a pointing device such as a mouse, so that various data and commands can be input through the inputting unit. The LAN interface 45 performs communication via IP protocol through the LAN 10.

**[0026]** The main unit 41 includes a signal processing unit 51, a display setting information table 52, a display controlling unit 53, a setting unit 54, and a forcible setting unit 55. The signal processing unit 51 performs processes such as formatting of data to be transmitted, and decomposition of received data.

**[0027]** The display setting information table 52 is a table in which, for example, various kinds of information that is to be displayed on the display 42, and that is related to biological information for 16 areas are set. As shown in Fig. 5, for example, the table is configured so that the name of a patient, a patient ID, the IP address of a receiver which collects biological information, and Bed ID/channel information are stored for each area number.

**[0028]** The display controlling unit 53 causes biological information which is sent from a receiver of an IP address

stored in the display setting information table 52, which arrives through the LAN interface 45, and which is separated by the signal processing unit 51, to be displayed in a corresponding area of the screen of the display 42, based on the stored contents of the display setting information table 52. Fig. 6A illustrates a display example of biological information and the like which are displayed in a certain area. The patient name 201, the bed ID 202, and the like are displayed together with the waveform and value of the biological information. It is determined whether the information output from the receiver indicates notification information or biological information. In the case of outputting biological information, the waveform and the value are displayed as shown in Fig. 6A. In the case of outputting notification information, a visible alarm indicative of duplicated channel information is displayed in a corresponding area of the screen of the display 42 as shown in Fig. 6B.

**[0029]** The setting unit 54 sets, in a receiver, the channel information of a transmitter which collects biological information to be received by a central monitor that is a monitoring apparatus. The IP address of a receiver which collects biological information, and Bed ID/channel information are registered in an area of the display setting information table 52, whereby a setting into the receiver is performed.

**[0030]** In the case where settings of the same channel information are detected by the detector 34 of a receiver, the forcible setting unit 55 sets the settings valid in response to an operation through the inputting unit 44. In the case where settings of the same channel information are detected by the detector 34, when the settings are made invalid by the forcible setting unit 55, the setting unit 54 does not perform a setting of the latter channel information (the channel information which is to be set at this time), and, when the settings are made valid by the forcible setting unit 55, performs a setting of the latter channel information. In the case where settings of the same channel information are detected, namely, the storing of the channel information into the corresponding area of the display setting information table 52 is suspended.

**[0031]** In the above-described configuration, the forcible setting unit 55 is disposed in each of the central monitors. Alternatively, the forcible setting unit 55 maybe disposed only in required central monitors. The monitoring and notification of overlapping of channel information are performed in the receiver 15. The invention is not limited to this. For example, each central monitor may include the channel information storing unit 33, the detector 34, and the notifying unit 35 to have the monitoring and notification functions. Alternatively, a computer such as a personal computer may include the channel information storing unit 33, the detector 34, and the notifying unit 35, and connected to the LAN 10. The computer may perform the monitoring and notification of overlapping of channel information.

**[0032]** In any one of the biological information moni-

toring systems having the above-described configurations, channel information which is set in the receiver is collected, settings of the same channel information is detected, and, when settings of the same channel information are detected, the duplicate settings are notified. In the case where duplicate settings of channel information occur, therefore, the system can detect and notify of the occurrence.

**[0033]** According to an aspect of the invention, the biological information monitoring system collects channel information which is set in the receiver, detects settings of the same channel information, and, when settings of the same channel information are detected, notifies of the duplicate settings. In the case where duplicate settings of channel information occur, therefore, the system can detect and notify of the occurrence.

**[0034]** According to an aspect of the invention, the biological information monitoring system sets the detection to be valid or invalid, when settings of the same channel information are detected. Therefore, a plurality of monitoring apparatuses can perform monitoring while obtaining biological information which is collected by transmitters of the same channel, and the system can be conveniently operated.

## Claims

1. A biological information monitoring system comprising:

a first transmitter (1-1 to 1-n ; 2-1 to 2-n) to which first channel information (1001-1008) is allocated, the first transmitter collecting biological information from a first patient (P1-1 to P1-n ; P2-1 to P2-n) and outputting the first biological information;

a second transmitter (1-1 to 1-n ; 2-1 to 2-n) to which second channel information (2001-2008) is allocated, the second transmitter collecting biological information from a second patient (P1-1 to P1-n ; P2-1 to P2-n) and operable to output the second biological information;

a first receiver (15-11 to 15-14 ; 15-21 to 15-24) in which the first channel information (1001-1008) is stored,

a second receiver (15-11 to 15-14 ; 15-21 to 15-24) in which the second channel information (2001-2008) is stored;

a central monitoring apparatus (11, 12, 21, 22) displaying the received first or second biological information;

**characterized in that** each receiver (15-11 to 15-14; 15-21 to 15-24) comprises:

a detector (34) adapted to collect the channel information set in the other receiver and determining whether the first channel infor-

mation is identical with the second channel information, and

a notifying unit (35), when the detector (34) determines that the first channel information set in the first receiver is identical with the second channel information set in the second receiver, performing notification of duplicate settings to the central monitoring apparatus;

**and in that**

the first receiver (15-11 to 15-14 ; 15-21 to 15-24) in which is stored a destination address of the central monitoring apparatus (11, 12, 21, 22) in which the first channel information is set, receives the first biological information directly from the first transmitter to which the first channel information is allocated, the first receiver outputting the first biological information on a local network (10);

the second receiver (15-11 to 15-14 ; 15-21 to 15-24) in which is stored a destination address of the central monitoring apparatus (11, 12, 21, 22) in which the second channel information is set, receives the second biological information directly from the second transmitter to which the second channel information is allocated, the second receiver outputting the second biological information on the local network (10);

the central monitoring apparatus (11, 12, 21, 22) sets in the first and second receivers the first and second channel information and receives said first or second biological information output from said first or second receiver via the local network (10).

2. The biological information monitoring system according to claim 1, further comprising an alarm outputting unit, in response to the notification performed by the notifying unit, outputting an alarm, wherein the detector and the notifying unit are disposed in the first receiver, and the alarm outputting unit is disposed in the monitoring apparatus.
3. The biological information monitoring system according to claim 1, further comprising an alarm outputting unit, in response to the notification performed by the notifying unit, outputting an alarm, wherein the detecting unit and the notifying unit are disposed in a computer connected to the local network, and the alarm outputting unit is disposed in the monitoring apparatus.
4. The biological information monitoring system according to claim 1, further comprising an alarm outputting unit, in response to the notification performed

by the notifying unit, outputting an alarm, wherein the detector, the notifying unit and the alarm outputting unit are disposed in the monitoring apparatus.

5. The biological information monitoring system according to any one of claims 1 to 4, further comprising a forcible setting unit, when the detector determines that the first channel information set in the first receiver is identical with the second channel information set in the second receiver, setting the determination to be valid or invalid.

## Patentansprüche

1. System zur Überwachung biologischer Informationen, umfassend:

einen ersten Sender (1-1 bis 1-n; 2-1 bis 2-n), dem erste Kanalinformationen (1001-1008) zugewiesen sind, wobei der erste Sender biologische Informationen von einem ersten Patienten (P1-1 bis P1-n; P2-1 bis P2-n) sammelt und die ersten biologischen Informationen ausgibt, einen zweiten Sender (1-1 bis 1-n; 2-1 bis 2-n), dem zweite Kanalinformationen (2001-2008) zugewiesen sind, wobei der zweite Sender biologische Informationen von einem zweiten Patienten (P1-1 bis P1-n; P2-1 bis P2-n) sammelt und betrieben werden kann, um die zweiten biologischen Informationen auszugeben, einen ersten Empfänger (15-11 bis 15-14; 15-21 bis 15-24), in dem die ersten Kanalinformationen (1001-1008) gespeichert sind, einen zweiten Empfänger (15-11 bis 15-14; 15-21 bis 15-24), in dem die zweiten Kanalinformationen (2001-2008) gespeichert sind, eine zentrale Überwachungsvorrichtung (11, 12, 21, 22), die die empfangenen ersten oder zweiten biologischen Informationen anzeigt, **dadurch gekennzeichnet, dass** jeder Empfänger (15-11 bis 15-14; 15-21 bis 15-24) umfasst:

einen Detektor (34), der ausgebildet ist, um die in dem anderen Empfänger gesetzten Kanalinformationen zu sammeln und zu bestimmen, ob die ersten Kanalinformationen identisch mit den zweiten Kanalinformationen sind, und eine Benachrichtigungseinheit (35), die, wenn der Detektor (34) bestimmt, dass die in dem ersten Empfänger gesetzten ersten Kanalinformationen identisch mit den in dem zweiten Empfänger gesetzten zweiten Kanalinformationen sind, eine Benachrichtigung von doppelten Setzungen an die zentrale Überwachungsvorrichtung durchführt, und dadurch, dass:

der erste Empfänger (15-11 bis 15-14; 15-21 bis 15-24), in dem eine Zieladresse der zentralen Überwachungsvorrichtung (11, 12, 21, 22) mit den darin gesetzten ersten Kanalinformationen gespeichert ist, die ersten biologischen Informationen direkt von dem ersten Sender, dem die ersten Kanalinformationen zugewiesen sind, empfängt, wobei der erste Empfänger die ersten biologischen Informationen an ein lokales Netzwerk (10) ausgibt, der zweite Empfänger (15-11 bis 15-14; 15-21 bis 15-24), in dem eine Zieladresse der zentralen Überwachungsvorrichtung (11, 12, 21, 22) mit den darin gesetzten zweiten Kanalinformationen gespeichert ist, die zweiten biologischen Informationen direkt von dem zweiten Sender, dem die zweiten Kanalinformationen zugewiesen sind, empfängt, wobei der zweite Empfänger die zweiten biologischen Informationen an das lokale Netzwerk (10) ausgibt, und die zentrale Überwachungsvorrichtung (11, 12, 21, 22) in den ersten und zweiten Empfängern die ersten und zweiten Kanalinformationen setzt und die ersten oder zweiten biologischen Informationen empfängt, die von dem ersten oder zweiten Empfänger über das lokale Netzwerk (10) ausgegeben werden.

2. System zur Überwachung biologischer Informationen nach Anspruch 1, das weiterhin eine Alarmausgabeeinheit umfasst, die in Reaktion auf die durch die Benachrichtigungseinheit durchgeführte Benachrichtigung einen Alarm ausgibt, wobei:

der Detektor und die Benachrichtigungseinheit in dem ersten Empfänger vorgesehen sind, und die Alarmausgabeeinheit in der Überwachungsvorrichtung vorgesehen ist.

3. System zur Überwachung biologischer Informationen nach Anspruch 1, das weiterhin eine Alarmausgabeeinheit umfasst, die in Reaktion auf die durch die Benachrichtigungseinheit durchgeführte Benachrichtigung einen Alarm ausgibt, wobei:

die Erfassungseinheit und die Benachrichtigungseinheit in einem Computer vorgesehen sind, der mit dem lokalen Netzwerk verbunden ist, und die Alarmausgabeeinheit in der Überwachungsvorrichtung vorgesehen ist.

4. System zur Überwachung biologischer Informationen nach Anspruch 1, das weiterhin eine Alarmausgabeeinheit umfasst, die in Reaktion auf die durch die Benachrichtigungseinheit durchgeführte Benachrichtigung einen Alarm ausgibt, wobei:

der Detektor, die Benachrichtigungseinheit und die Alarmausgabereinheit in der Überwachungs-  
vorrichtung vorgesehen sind.

5. System zur Überwachung biologischer Informationen nach einem der Ansprüche 1 bis 4, das weiterhin eine Zwangssetzeinheit umfasst, die, wenn der Detektor bestimmt, dass die in dem ersten Empfänger gesetzten ersten Kanalinformationen identisch mit den in dem zweiten Empfänger gesetzten zweiten Kanalinformationen sind, die Bestimmung als gültig oder ungültig setzt.

## Revendications

1. Système de surveillance d'informations biologiques comprenant :

un premier transmetteur (1-1 à 1-n ; 2-1 à 2-n) auquel des premières informations de canal (1001-1008) sont attribuées, le premier transmetteur collectant des informations biologiques d'un premier patient (P1-1 à P1-n ; P2-1 à P2-n) et produisant les premières informations biologiques ;

un second transmetteur (1-1 à 1-n ; 2-1 à 2-n) auquel des secondes informations de canal (2001-2008) sont attribuées, le second transmetteur collectant des informations biologiques d'un second patient (P1-1 à P1-n ; P2-1 à P2-n) et étant exploitable pour produire les secondes informations biologiques ;

un premier récepteur (15-11 à 15-14 ; 15-21 à 15-24) dans lequel les premières informations de canal (1001-1008) sont stockées,

un second récepteur (15-11 à 15-14 ; 15-21 à 15-24) dans lequel les secondes informations de canal (2001-2008) sont stockées ;

un appareil de surveillance central (11, 12, 21, 22) affichant les premières ou secondes informations biologiques reçues ;

**caractérisé en ce que** chaque récepteur (15-11 à 15-14 ; 15-21 à 15-24) comprend :

un détecteur (34) adapté à collecter les informations de canal configurées dans l'autre récepteur et déterminant si les premières informations de canal sont identiques aux secondes informations de canal, et

une unité de notification (35), lorsque le détecteur (34) détermine que les premières informations de canal configurées dans le premier récepteur sont identiques aux secondes informations de canal configurées dans le second récepteur, réalisant une notification des configurations en double à

l'appareil de surveillance central ;

**et en ce que**

le premier récepteur (15-11 à 15-14 ; 15-21 à 15-24) dans lequel est stockée une adresse de destination de l'appareil de surveillance central (11, 12, 21, 22) dans lequel les premières informations de canal sont configurées, reçoit les premières informations biologiques directement du premier transmetteur auquel les premières informations de canal sont attribuées, le premier récepteur produisant les premières informations biologiques sur un réseau local (10) ;

le second récepteur (15-11 à 15-14 ; 15-21 à 15-24) dans lequel est stockée une adresse de destination de l'appareil de surveillance central (11, 12, 21, 22) dans lequel les secondes informations de canal sont configurées, reçoit les secondes informations biologiques directement du second transmetteur auquel les secondes informations de canal sont attribuées, le second récepteur produisant les secondes informations biologiques sur le réseau local (10) ;

l'appareil de surveillance central (11, 12, 21, 22) configure dans les premier et second récepteurs les premières et secondes informations de canal et reçoit lesdites premières ou secondes informations biologiques produites par ledit premier ou second récepteur via le réseau local (10).

2. Système de surveillance d'informations biologiques selon la revendication 1, comprenant en outre une unité de production d'alarme, en réponse à la notification réalisée par l'unité de notification, produisant une alarme, dans lequel le détecteur et l'unité de notification sont disposés dans le premier récepteur, et l'unité de production d'alarme est disposée dans l'appareil de surveillance.

3. Système de surveillance d'informations biologiques selon la revendication 1, comprenant en outre une unité de production d'alarme, en réponse à la notification réalisée par l'unité de notification, produisant une alarme, dans lequel l'unité de détection et l'unité de notification sont disposées dans un ordinateur raccordé au réseau local, et l'unité de production d'alarme est disposée dans l'appareil de surveillance.

4. Système de surveillance d'informations biologiques selon la revendication 1, comprenant en outre une unité de production d'alarme, en réponse à la notification réalisée par l'unité de notification, produisant une alarme, dans lequel

le détecteur, l'unité de notification et l'unité de production d'alarme sont disposés dans l'appareil de surveillance.

5. Système de surveillance d'informations biologiques selon l'une quelconque des revendications 1 à 4, comprenant en outre une unité de configuration de force, lorsque le détecteur détermine que les premières informations de canal configurées dans le premier récepteur sont identiques aux secondes informations de canal configurées dans le second récepteur, configurant la validité ou l'invalidité de la détermination.

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FIG. 1

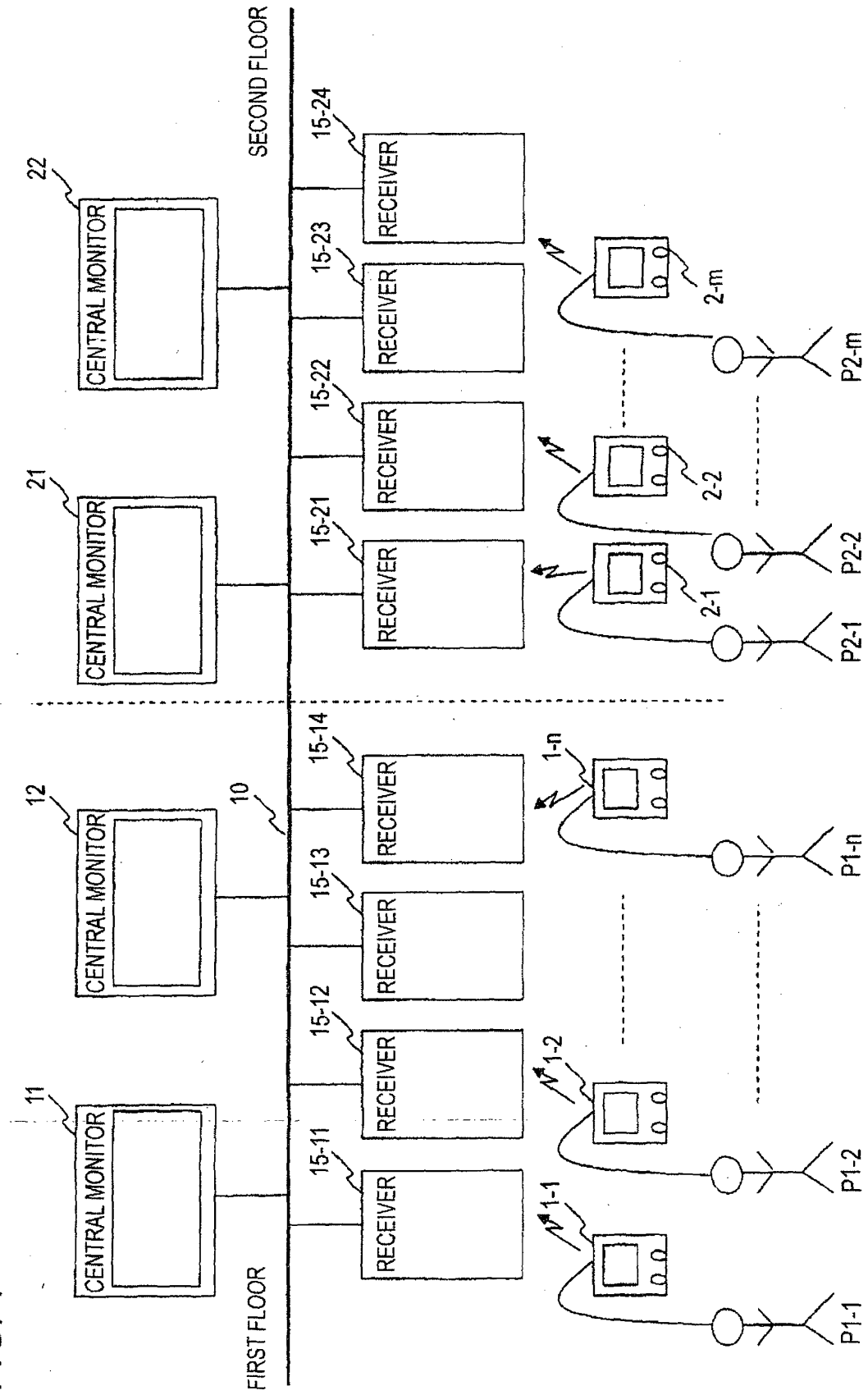


FIG. 2

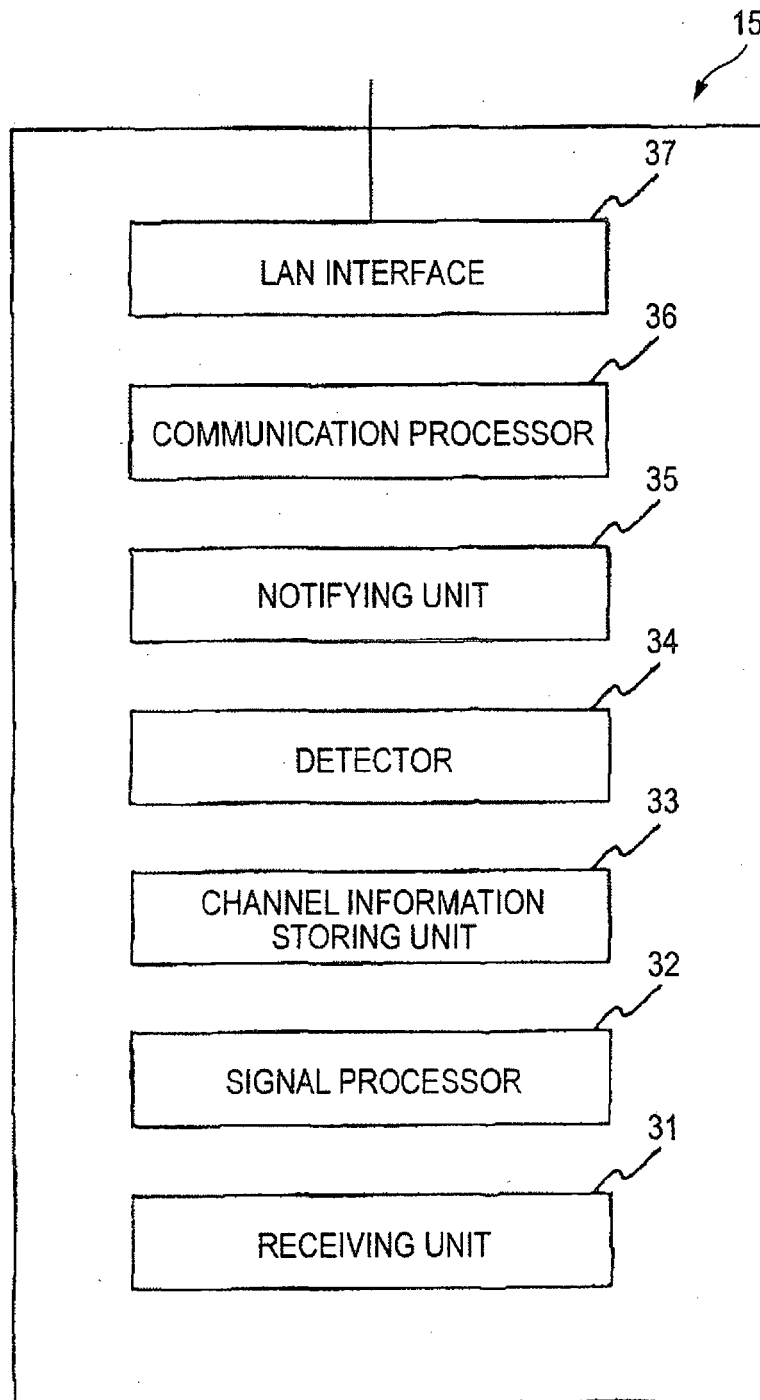


FIG. 3

| STORAGE AREA FOR OWN APPARATUS                              |                                                             | STORAGE AREAS FOR OTHER APPARATUSES                         |                                                             |     |
|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|-----|
| BED ID/CHANNEL INFORMATION<br>IP ADDRESS OF CENTRAL MONITOR | BED ID/CHANNEL INFORMATION<br>IP ADDRESS OF CENTRAL MONITOR | BED ID/CHANNEL INFORMATION<br>IP ADDRESS OF CENTRAL MONITOR | BED ID/CHANNEL INFORMATION<br>IP ADDRESS OF CENTRAL MONITOR | ... |
| BED 1/1001<br>IP ADDRESS OF CENTRAL MONITOR                 | BED 11/2001<br>IP ADDRESS OF CENTRAL MONITOR                | BED 21/3001<br>IP ADDRESS OF CENTRAL MONITOR                | BED 81/6001<br>IP ADDRESS OF CENTRAL MONITOR                | ... |
| BED 2/1002<br>IP ADDRESS OF CENTRAL MONITOR                 | ...                                                         | ...                                                         | ...                                                         | ... |
| ...                                                         | ...                                                         | ...                                                         | ...                                                         | ... |
| ...                                                         | ...                                                         | ...                                                         | ...                                                         | ... |
| ...                                                         | ...                                                         | ...                                                         | ...                                                         | ... |
| ...                                                         | ...                                                         | ...                                                         | ...                                                         | ... |
| ...                                                         | ...                                                         | ...                                                         | ...                                                         | ... |
| BED 8/1008<br>IP ADDRESS OF CENTRAL MONITOR                 | BED 18/2008<br>IP ADDRESS OF CENTRAL MONITOR                | BED 28/3008<br>IP ADDRESS OF CENTRAL MONITOR                | BED 88/6008<br>IP ADDRESS OF CENTRAL MONITOR                | ... |
| IP ADDRESS OF OWN APPARATUS                                 | ...                                                         | ...                                                         | ...                                                         | ... |

FIG. 4

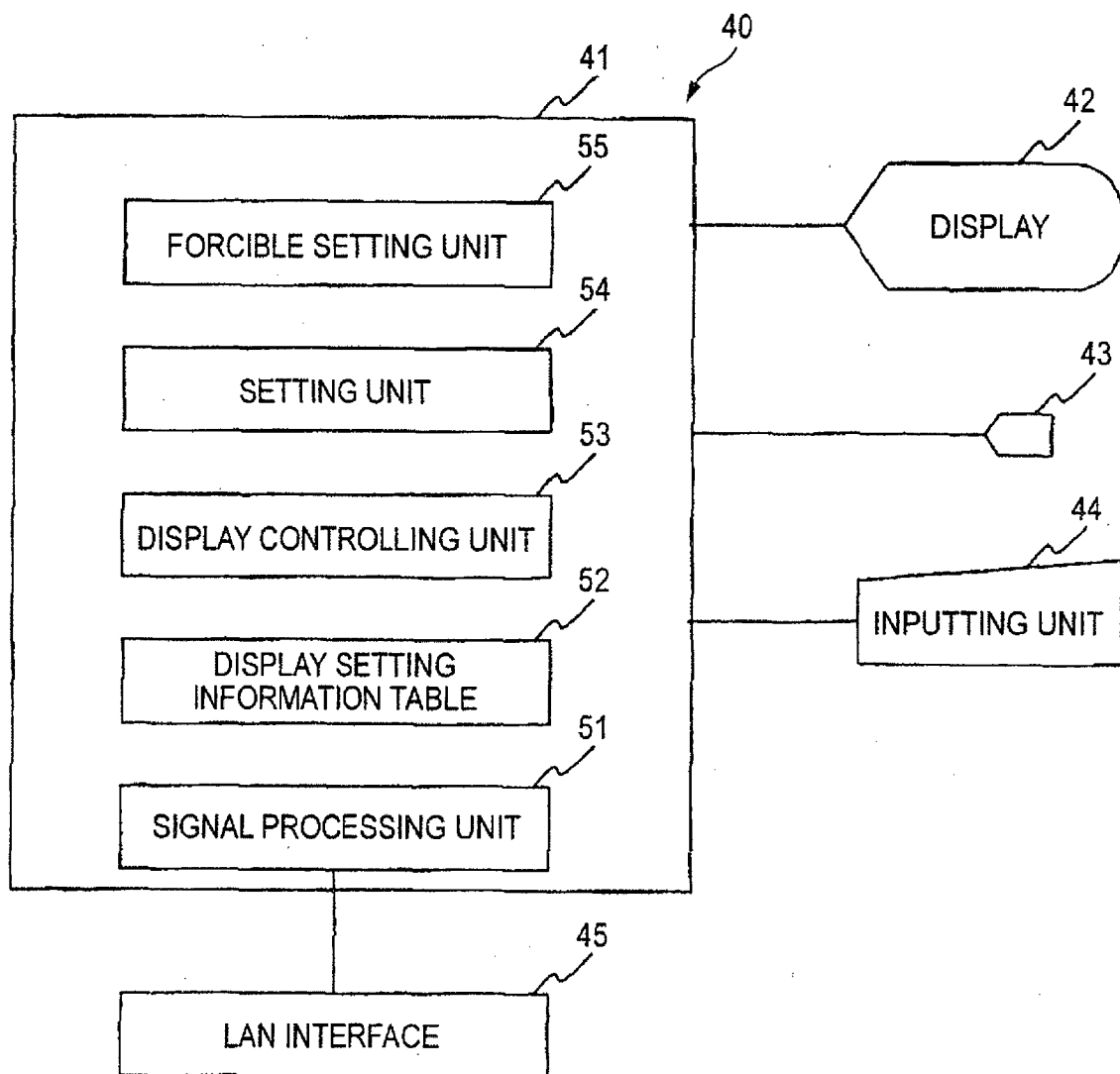


FIG. 5

| AREA NO. | PATIENT NAME<br>PATIENT ID | IP ADDRESS OF RECEIVING DESTINATION<br>BED ID/CHANNEL INFORMATION | AREA NO. | PATIENT NAME<br>PATIENT ID | IP ADDRESS OF RECEIVING DESTINATION<br>BED ID/CHANNEL INFORMATION |
|----------|----------------------------|-------------------------------------------------------------------|----------|----------------------------|-------------------------------------------------------------------|
| 1        |                            |                                                                   | 9        |                            |                                                                   |
| 2        |                            |                                                                   | 10       |                            |                                                                   |
|          |                            |                                                                   |          |                            |                                                                   |
| 8        |                            |                                                                   | 16       |                            |                                                                   |

FIG. 6A

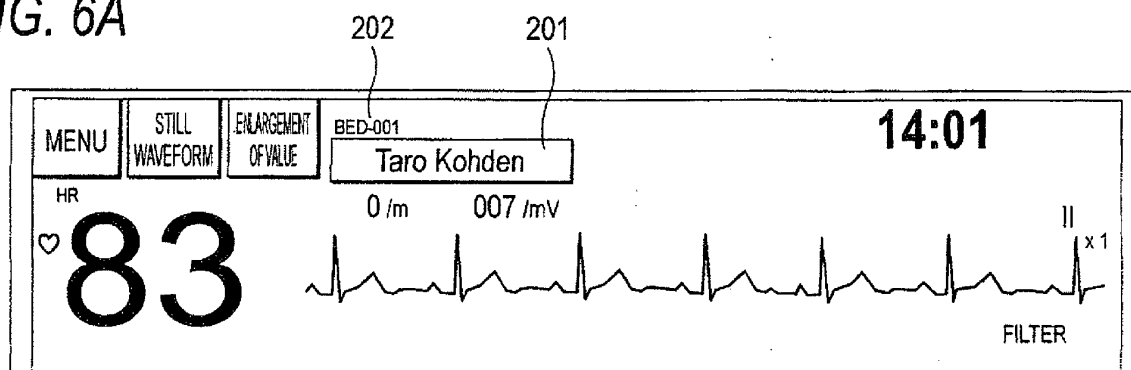
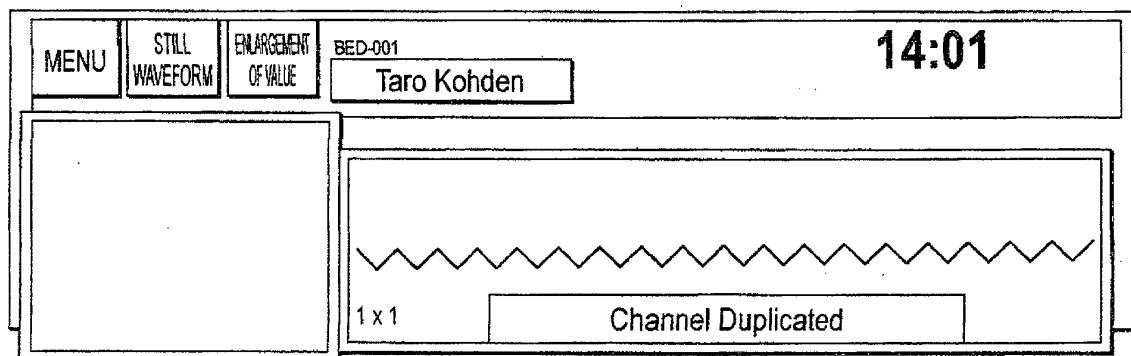


FIG. 6B



**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- JP 2010011281 A [0004]
- JP 2005229426 A [0005]
- US 20090171169 A [0006]

|                |                                                                        |         |            |
|----------------|------------------------------------------------------------------------|---------|------------|
| 专利名称(译)        | 生物信息监测系统                                                               |         |            |
| 公开(公告)号        | <a href="#">EP2540217B1</a>                                            | 公开(公告)日 | 2015-01-14 |
| 申请号            | EP2012173347                                                           | 申请日     | 2012-06-25 |
| [标]申请(专利权)人(译) | 日本光电工业株式会社                                                             |         |            |
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| 当前申请(专利权)人(译)  | 日本光电公司                                                                 |         |            |
| [标]发明人         | ENOMOTO YOSHINORI                                                      |         |            |
| 发明人            | ENOMOTO, YOSHINORI                                                     |         |            |
| IPC分类号         | A61B5/0205 A61B5/021 A61B5/117 A61B5/1455 H04L12/28 A61B5/00 A61B5/024 |         |            |
| CPC分类号         | A61B5/0002 A61B5/0205 A61B5/021 A61B5/14552 A61B5/743 H04L12/2823      |         |            |
| 优先权            | 2011145613 2011-06-30 JP                                               |         |            |
| 其他公开文献         | EP2540217A1                                                            |         |            |
| 外部链接           | <a href="#">Espacenet</a>                                              |         |            |

#### 摘要(译)

一种生物信息监测系统，包括：发射器，分配有第一信道信息，发射器从活体收集生物信息并输出生物信息；第一接收器，其中设置第一信道信息，第一接收器从分配了第一信道信息的发送器接收生物信息，第一接收器输出生物信息；监控装置，接收来自第一接收器的生物信息并显示接收的生物信息；设置单元，设置第一接收器中的第一通道信息；第二接收器，其中设置第二信道信息；检测器确定第一信道信息是否与第二信道信息相同。

