

## 100 Documents

| Publication numbers              | Title                                                                                                                                              | Current assignees                                   |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <a href="#">WO2017208204 A1</a>  | Method and device for detecting apnoea                                                                                                             | UNIVERSITY EIA, ...                                 |
| <a href="#">WO2015185706 A1</a>  | Device, system and method for detecting apnoea of a subject                                                                                        | PHILIPS                                             |
| <a href="#">US20150190088 A1</a> | Apnea analysis system and method                                                                                                                   | COVIDIEN                                            |
| <a href="#">US20180103896 A1</a> | Apparatus and method for detecting abnormal respiration                                                                                            | ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE |
| <a href="#">JP2005204896 A</a>   | Cellular phone with apneustic breathing warning function                                                                                           | YAMAHA                                              |
| <a href="#">AU--26997 A0</a>     | Administration of CPAP Treatment Pressure in Presence of Apnea                                                                                     | RESMED                                              |
| <a href="#">WO201087862 A1</a>   | A method and device for the prevention of sudden unexpected death in epilepsy (sudep)                                                              | NEUROSTREAM TECHNOLOGIES GENERAL PARTNERSHIP        |
| <a href="#">US20130213399 A1</a> | Respiration system                                                                                                                                 | DRAEGERWERK                                         |
| <a href="#">WO200936327 A1</a>   | Adherent device for respiratory monitoring and sleep disordered breathing                                                                          | MEDTRONIC MONITORING                                |
| <a href="#">US20040044276 A1</a> | Apnea detection system                                                                                                                             | PRECISION PULSUS                                    |
| <a href="#">US9533114 B1</a>     | Integrated Diagnostic and Therapeutic System and Method for Improving Treatment of Subject with Complex and Central Sleep Apnea                    | CLEVELAND MEDICAL DEVICES                           |
| <a href="#">WO2009154456 A1</a>  | A flexible electronic system for producing a stimulation signal to the human body.                                                                 | KERPHOS                                             |
| <a href="#">WO2017119638 A1</a>  | Real-time sleep disorder monitoring apparatus                                                                                                      | CHONNAM NATIONAL UNIVERSITY                         |
| <a href="#">WO200596924 A1</a>   | Non-invasive method and device for detecting inspiratory effort                                                                                    | RESEARCH FOUNDATION OF SUNY                         |
| <a href="#">US8478389 B1</a>     | System for processing physiological data                                                                                                           | VIVAQUANT                                           |
| <a href="#">US20030000522 A1</a> | Centralized hospital monitoring system for automatically detecting upper airway instability and for preventing and aborting adverse drug reactions | LYNN ERIC N, ...                                    |
| <a href="#">WO200666280 A1</a>   | System for monitoring or treating nervous system disorders                                                                                         | MEDTRONIC                                           |
| <a href="#">WO200825080 A1</a>   | Distinguishing closed and open respiratory airway apneas by complex admittance values                                                              | RESMED                                              |
| <a href="#">US20180042502 A1</a> | Episodical and Continuous ECG Monitoring                                                                                                           | HUAMI                                               |
| <a href="#">US20170071478 A1</a> | Wearable biometric measurement device                                                                                                              | ANHUI HUAMI INFORMATION TECHNOLOGY, ...             |
| <a href="#">US20150073291 A1</a> | Apnea and hypopnea identification for continuous positive                                                                                          | BREATHE TECHNOLOGIES                                |

| Publication numbers               | Title                                                                                                 | Current assignees                           |
|-----------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------|
|                                   | airway pressure therapy                                                                               |                                             |
| <a href="#">US20150238101 A1</a>  | Vcg vector loop bifurcation                                                                           | ZOLL MEDICAL                                |
| <a href="#">US20150088020 A1</a>  | Wearable electrocardiography and physiology monitoring ensemble                                       | BARDY DIAGNOSTICS                           |
| <a href="#">WO2013109892 A1</a>   | System and method for measuring movement of a body part                                               | REST DEVICES                                |
| <a href="#">EP2653108 A1</a>      | Apnea determining program, apnea determining apparatus, and apnea determining method                  | FUJITSU                                     |
| <a href="#">ES2630834 A1</a>      | Method for obtaining useful data associated with heart rate variability pattern                       | UNIVERSIDAD DE SEVILLA                      |
| <a href="#">US20070149860 A1</a>  | Microprocessor system for the analysis of physiologic and financial datasets                          | LYNN ERIC N, ...                            |
| <a href="#">EP2653107 A1</a>      | Apnea determining program, apnea determining device, and apnea determining method                     | FUJITSU                                     |
| <a href="#">US20150157269 A1</a>  | Capacitance enhanced physiological measurements                                                       | COVIDIEN                                    |
| <a href="#">US20100191136 A1</a>  | System, pad and method for monitoring a sleeping person to detect an apnea state condition            | WOLFORD DANETTE K                           |
| <a href="#">DE102007020038 A1</a> | Detection of an apnoea by means of a signal dependent on blood pressure                               | FRAUNHOFER                                  |
| <a href="#">WO2010103542 A2</a>   | Ecg device with impulse and channel switching adc noise filter and error corrector for derived leads  | COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH |
| <a href="#">US20170093849 A1</a>  | Method, apparatus and system for biometric identification                                             | HUAMI                                       |
| <a href="#">IL-186768 A</a>       | System for detecting apnea                                                                            | SHAKED RAHAMIM, ...                         |
| <a href="#">US20150018700 A1</a>  | Systems for safe and remote outpatient ECG monitoring                                                 | MEDICALGORITHMICS                           |
| <a href="#">WO2014165834 A1</a>   | Devices and methods for airflow diagnosis and restoration                                             | INTELLIGENT WIDGETS                         |
| <a href="#">WO2011120936 A1</a>   | Regulatable intraoral mandibular advancement device, for preventing snoring and sleep apnoea          | LABORATORIO ORTOPLUS                        |
| <a href="#">JP61228831 A</a>      | Apnea detector                                                                                        | KONICA MINOLTA                              |
| <a href="#">US20120310101 A1</a>  | Wide QRS detector                                                                                     | CARDIAC PACEMAKERS                          |
| <a href="#">JP6181902 B1</a>      | Apnea detection device                                                                                | E3                                          |
| <a href="#">WO2008116318 A1</a>   | Breathing sound analysis for estimation of air flow rate                                              | TELECOMMUNICATIONS RESEARCH LABORATORY, ... |
| <a href="#">WO201413999 A1</a>    | Dementia differentiation device                                                                       | UNIVERSITY OF TOKYO                         |
| <a href="#">US20110270112 A1</a>  | Multi-function health monitor with integrated cellular module                                         | APPLIED CARDIAC SYSTEMS                     |
| <a href="#">US20160089089 A1</a>  | Systems and methods for digital predictive disease exacerbation and pre-emptive treatment             | AEDIO                                       |
| <a href="#">WO9728838 A1</a>      | Apparatus for optimizing the continuous positive airway pressure for treating obstructive sleep apnea | NEW YORK UNIVERSITY                         |

| Publication numbers              | Title                                                                                                                                   | Current assignees            |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <a href="#">WO200173394 A2</a>   | Method and apparatus for determining physiological characteristics                                                                      | KINDERLIFE INSTRUMENTS, ...  |
| <a href="#">US20180085021 A1</a> | System and method for cardiac monitoring using rate-based sensitivity levels                                                            | MEDTRONIC MONITORING         |
| <a href="#">US20140128758 A1</a> | Electrocardiogram signal detection                                                                                                      | ALIVECOR                     |
| <a href="#">WO2010127900 A1</a>  | Device for detecting blood oxygen saturation                                                                                            | ROBERT BOSCH                 |
| <a href="#">IL-147502 A</a>      | Self-adaptive system for the analysis of biomedical signals of a patient                                                                | WIDEMED TECHNOLOGIES         |
| <a href="#">WO200518447 A1</a>   | Apparatus and method for cordless recording and telecommunication transmission of three special ecg leads and their processing          | NEWCARDIO                    |
| <a href="#">WO2009112977 A1</a>  | Ecg monitoring system with configurable alarm limits                                                                                    | PHILIPS ELECTRONICS          |
| <a href="#">WO2009112973 A1</a>  | Ecg monitoring system with a charging docking station                                                                                   | PHILIPS ELECTRONICS          |
| <a href="#">US20160022164 A1</a> | Detecting fiducial points in physiological signals                                                                                      | VIVAQUANT                    |
| <a href="#">IL-137045 A</a>      | Apparatus and method for non-invasive monitoring of heart performance                                                                   | CARDIOWATCH                  |
| <a href="#">EP-586286 A1</a>     | Wireless transmission system for medical data                                                                                           | THOMSON CSF                  |
| <a href="#">EP2289411 A1</a>     | Noninvasive method and system for monitoring physiological characteristics and athletic performance                                     | ADIDAS                       |
| <a href="#">US20180028144 A1</a> | Electronic Acoustic Stethoscope with ECG                                                                                                | CHEN GUANGREN, ...           |
| <a href="#">WO201893131 A1</a>   | Device for measuring sleep apnea and method therefor                                                                                    | BILAB                        |
| <a href="#">US20140171769 A1</a> | Systems and methods for distinguishing between central apnea and obstructive apnea                                                      | COVIDIEN                     |
| <a href="#">US20050107681 A1</a> | Wireless patient monitoring device for magnetic resonance imaging                                                                       | MEDRAD                       |
| <a href="#">WO2009112975 A1</a>  | Watertight cardiac monitoring system                                                                                                    | PHILIPS ELECTRONICS          |
| <a href="#">EP2777497 A1</a>     | Apparatus and method for detection of sleep disordered breathing                                                                        | MICRO POWER ELECTRONICS, ... |
| <a href="#">EP2904964 A1</a>     | Assembly including a medical device with kinaesthetic stimulation for non-invasive assessment of the sympathovagal balance of a patient | UNIVERSITE DE RENNES 1, ...  |
| <a href="#">GB201411046 D0</a>   | Seizure detection                                                                                                                       | LOTHIAN HEALTH BOARD         |
| <a href="#">US20170188971 A1</a> | Electrocardiogram (ecg) authentication method and apparatus                                                                             | SAMSUNG ELECTRONICS          |
| <a href="#">US20170251939 A1</a> | Modular electrocardiogram device with limb-leads and expandable chest-leads                                                             | GENERAL ELECTRIC             |
| <a href="#">US20130123654 A1</a> | Apnea detector and system                                                                                                               | DIAPERTECH                   |
| <a href="#">WO201801929 A1</a>   | Processing apparatus for processing a physiological signal                                                                              | PHILIPS                      |
| <a href="#">WO201023641 A2</a>   | Wireless medical monitoring system                                                                                                      | ELCAM MEDICAL                |

| Publication numbers              | Title                                                                                                          | Current assignees                          |
|----------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------|
|                                  |                                                                                                                | AGRICULTURAL<br>COOPERATIVE ASS            |
| <a href="#">EP3170450 A1</a>     | Patch including an external floating high-pass filter and an electrocardiograph (ecg) patch including the same | SAMSUNG ELECTRONICS                        |
| <a href="#">US9585583 B1</a>     | Myogram determination from ecg signal                                                                          | MORTARA INSTRUMENT, ...                    |
| <a href="#">CN106175770 A</a>    | Method and system for judging apnea during sleep                                                               | SOUTH CHINA NORMAL<br>UNIVERSITY           |
| <a href="#">US20020188214 A1</a> | System and process for analyzing a medical condition of a user                                                 | MONEBO TECHNOLOGIES                        |
| <a href="#">JP10127585 A</a>     | Method and apparatus for measuring optical properties of surface state of skin                                 | KAO                                        |
| <a href="#">US20060149144 A1</a> | Airway instability detection system and method                                                                 | LYNN LAWRENCE A                            |
| <a href="#">US20100079292 A1</a> | Microprocessor system for the analysis of physiologic datasets                                                 | LYNN LAWRENCE ALLAN                        |
| <a href="#">US20030158466 A1</a> | Microprocessor system for the analysis of physiologic and financial datasets                                   | LYNN LAWRENCE ALLAN                        |
| <a href="#">WO2011130541 A2</a>  | Measurements of fatigue level using heart rate variability data                                                | UNIVERSITY OF TEXAS                        |
| <a href="#">US20170086696 A1</a> | Quantitative heart testing                                                                                     | HEART TEST<br>LABORATORIES                 |
| <a href="#">CN102949770 A</a>    | Method and device for external diaphragm pacing and synergistic aspiration with respirator                     | ZHANG HONGXUAN                             |
| <a href="#">WO200766343 A2</a>   | Doppler motion sensor apparatus and method of using same                                                       | CARDIO ART<br>TECHNOLOGIES                 |
| <a href="#">WO201317718 A2</a>   | Method and apparatus for obtaining cardiovascular information by measuring between two extremities             | UNIVERSITAT<br>POLITECNICA DE<br>CATALUNYA |
| <a href="#">US20180092554 A1</a> | Wearable and unobtrusive multi-sensor array and method for pulse wave velocity imaging                         | CHINESE UNIVERSITY OF<br>HONG KONG         |
| <a href="#">BE-808078 A</a>      | Method of treating heart attack patients prior to the establishment of qualified direct contact personal care  | BRUNSWICK<br>TECHNOLOGIES, ...             |
| <a href="#">JP2005304941 A</a>   | Sleep state detector                                                                                           | PANASONIC ELECTRIC<br>WORKS                |
| <a href="#">WO200563323 A1</a>   | Mechanical ventilation in the presence of sleep disordered breathing                                           | RESMED                                     |
| <a href="#">WO201007488 A1</a>   | Systems and methods for computing a physiological parameter using continuous wavelet transforms                | NELLCOR PURITAN<br>BENNETT, ...            |
| <a href="#">WO2002101681 A1</a>  | Device and system for detecting and monitoring cardiovascular diseases in a patient using mobile technology    | GRUPO IT DEUSTO                            |
| <a href="#">US20170231597 A1</a> | Networked Electronic Stethoscope                                                                               | HOWARD NEWTON                              |

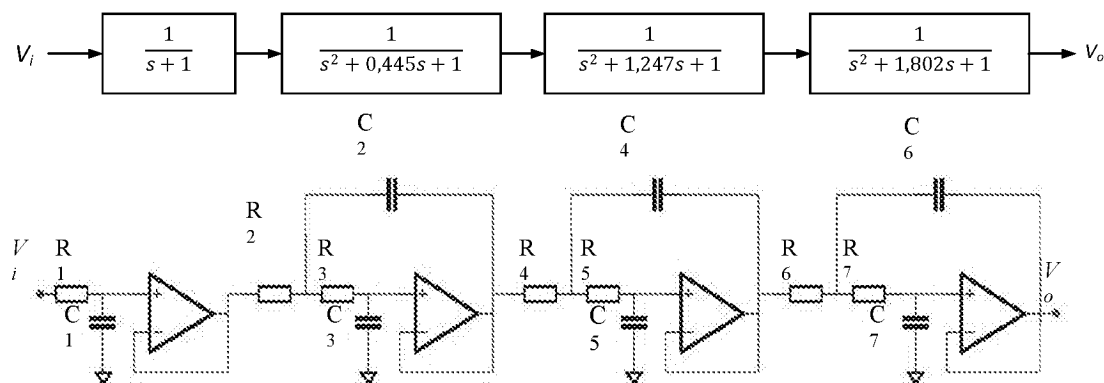
| Publication numbers              | Title                                                                                   | Current assignees                     |
|----------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------|
| <a href="#">US20160360986 A1</a> | Wearable device electrocardiogram                                                       | CHRONISENSE MEDICAL                   |
| <a href="#">WO200247747 A1</a>   | Apparatus for stroke patient assessment and treatment                                   | RESMED                                |
| <a href="#">IT8422247 D0</a>     | Multiple wavelength light photometer for non-invasive monitoring                        | SCLAVO                                |
| <a href="#">FI9201203 A0</a>     | Device for simultaneous diagnosis and quantitative analysis of apnea and other diseases | MAP MEDIZINTECHNIK FUR ARZT & PATIENT |
| <a href="#">WO2013110136 A1</a>  | Discrimination of cheyne-stokes breathing patterns                                      | RESMED                                |
| <a href="#">US20160235319 A1</a> | Two electrode apparatus and methods for twelve lead ECG                                 | ALIVECOR                              |
| <a href="#">WO2012135062 A1</a>  | Selection of optimal channel for rate determination                                     | ZOLL MEDICAL                          |
| <a href="#">US20160120464 A1</a> | Discrimination of cheyne-stokes breathing patterns by use of oximetry signals           | RESMED                                |
| <a href="#">WO2011146482 A1</a>  | Wearable ambulatory medical device with multiple sensing electrodes                     | ZOLL MEDICAL                          |
| <a href="#">IT2015UB2047 A1</a>  | Customizable monitoring system for correlated vital signs                               | XEOS                                  |

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**Title**

(WO2017208204)

Method and device for detecting apnoea

**Images****Fig 3****Abstract**

(WO2017208204)

The invention relates to a method and non-invasive device for detecting apnoea, the device comprising: a) means for detecting EMGdi, FC and SpO2 signals; b) a module for conditioning the EMGdi, FC and SpO2 signals, which is connected to the means for detecting the EMGdi, FC and SpO2 signals; c) a signal processing module connected to the module for conditioning the EMGdi and FC signals; d) a processor; e) an analogue-to-digital converter connected to the signal processing module and to the processor; f) a memory connected to the processor; and g) a power source that powers the mentioned components. The method comprises two steps, a step of training and a step of detecting. During the step of training, the processor calculates the data confidence limits in an interval, using the data extracted from the EMGdi, FC and SpO2 signals and stored in the memory. During the step of detecting, the data stored in the memory and extracted from the EMGdi, FC and SpO2 signals are compared to the data confidence limits calculated in the training step. According to the result of the comparison, the detection of obstructive, central or mixed apnoea is indicated, the presence of apnoea being detected early and confirmed by means of SpO2.

**Inventors**

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**Latest standardized assignees - inventors removed**

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**Publication dates**

2017-12-07

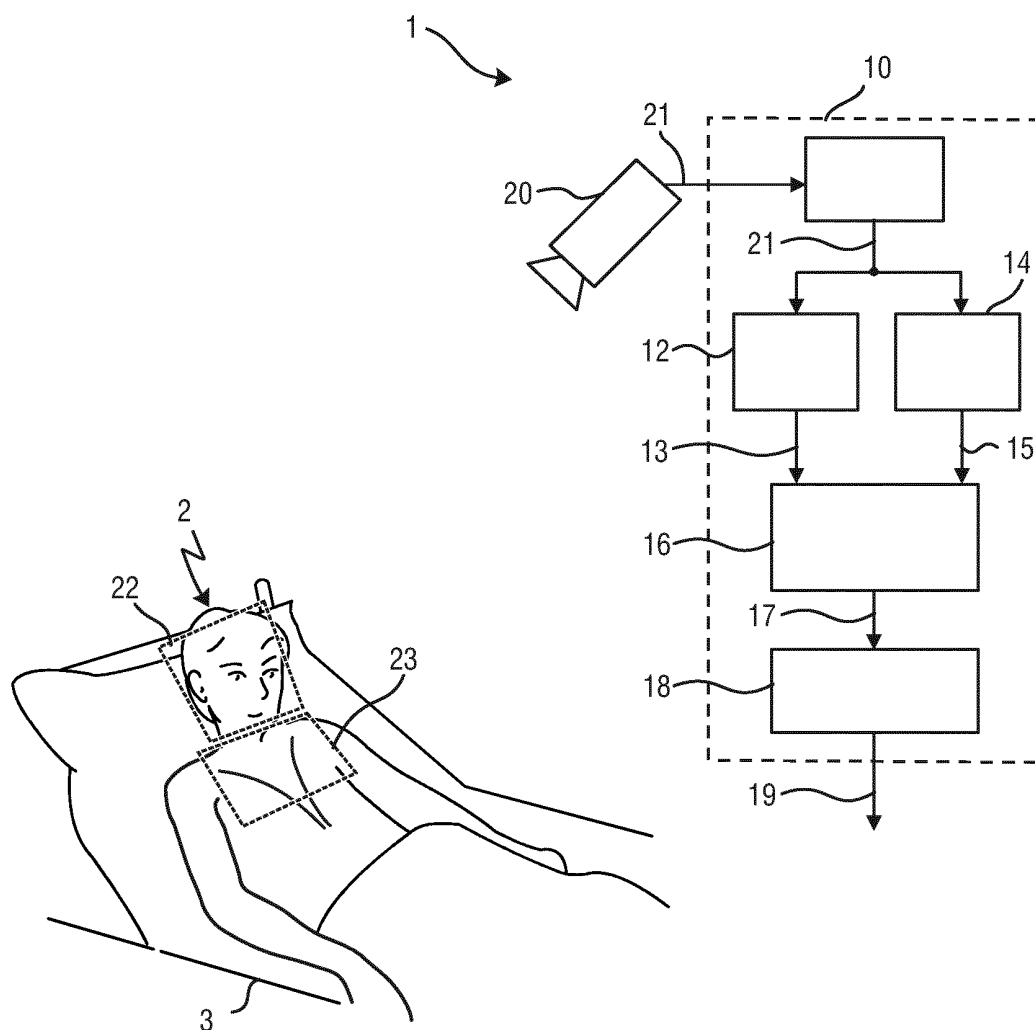
Family 2/100 - FAMPAT - ©Questel

**Title**

(EP3151728)

Device, system and method for detecting apnoea of a subject

## Images



## Abstract

(EP3151728)

The present invention relates to device, system and method for unobtrusively and reliably detecting apnoea of a subject (2). The proposed device comprises an input unit (11) for receiving image data of subject, said image data including a sequence of images over time, a cardiac activity extraction unit (12) for extracting from said image data a cardiac activity signal representing the subject's cardiac activity from a skin area of the subject using remote photoplethysmography, a motion signal extraction unit (14) for extracting from said image data a motion signal representing motion of a subject's body part caused by breathing of the subject, an analysis unit (16) for determining the similarity between said cardiac activity signal and said motion signal, and an decision unit (18) for detecting apnoea of the subject based on the determined similarity.

## Inventors

JEANNE VINCENT

Latest standardized assignees - inventors removed

PHILIPS

## Publication dates

2015-12-10

2017-01-13

2017-02-15

2017-04-12

2017-05-04

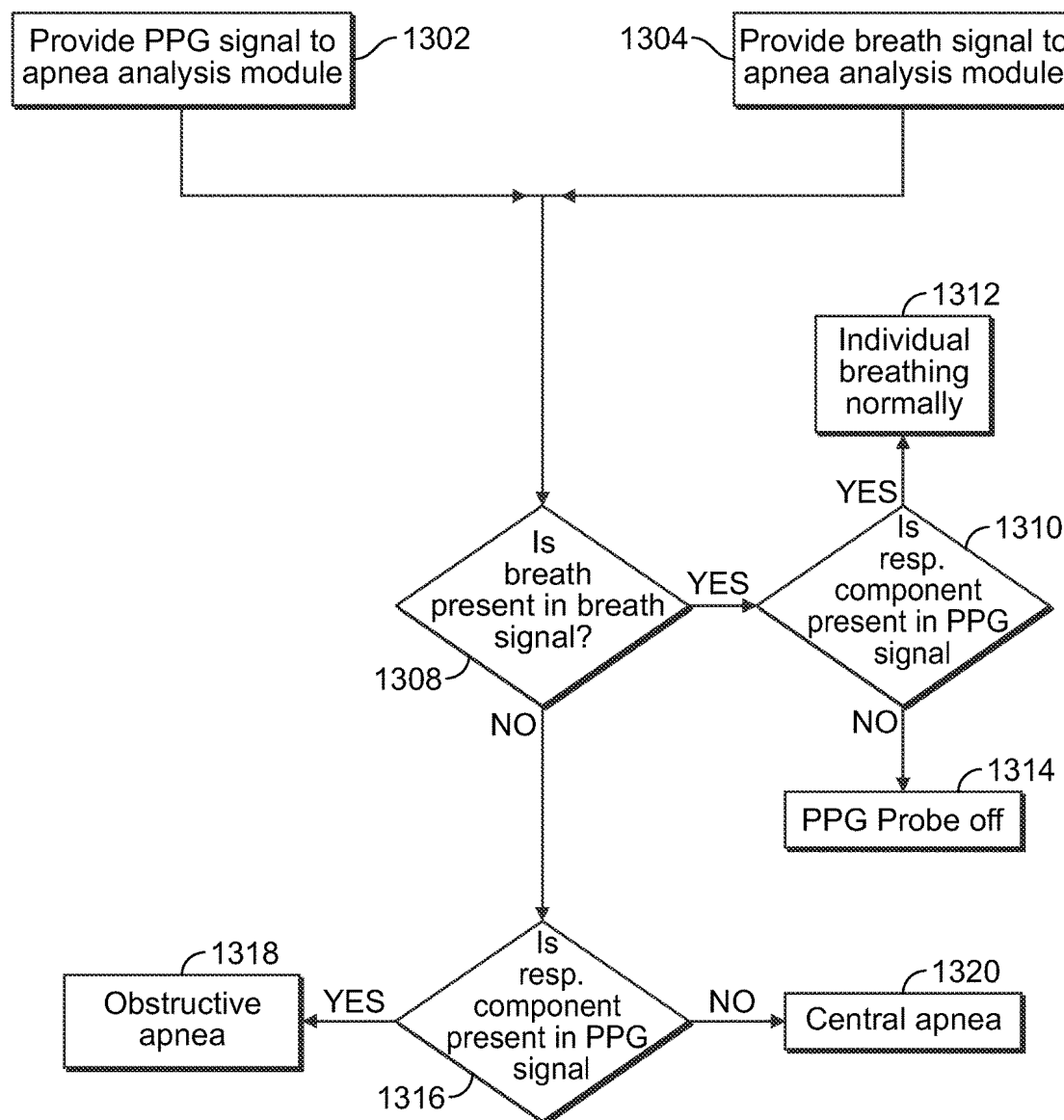
2017-06-22

Family 3/100 - FAMPAT - ©Questel

**Title**

(WO2015105787)

Apnea analysis system and method

**Images****Abstract**

(WO2015105787)

An apnea analysis system may include a photoplethysmographic (PPG) sub-system, a breath detection sub-system, and an apnea analysis module. An apnea analysis system includes a photoplethysmographic (PPG) sub-system, a breath detection sub-system, and an apnea analysis module. The PPG sub-system is configured to be operatively connected to an individual and output a PPG signal from the individual. The breath detection sub-system is configured to be operatively connected to the individual and output a breath signal from the individual. The apnea analysis module is in communication with the PPG sub-system and the breath detection sub-system. The apnea analysis module analyzes the breath signal and a respiratory component of the PPG signal and, based on the analysis, identifies a presence of apnea, differentiates between obstructive apnea and central apnea, and provides an indication of the identified apnea.

**Inventors**

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COVIDIEN

**Publication dates**

2015-07-09

2015-07-16

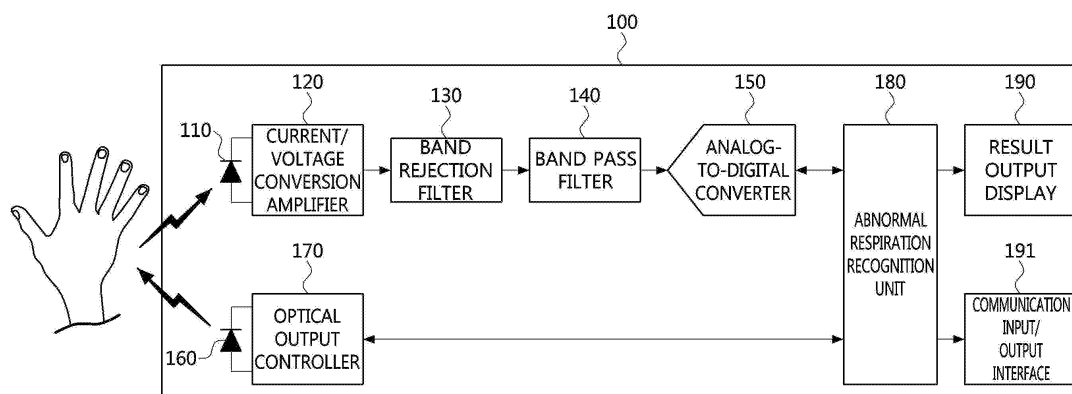
2017-12-26

Family 4/100 - FAMPAT - ©Questel

**Title**

(US20180103896)

Apparatus and method for detecting abnormal respiration

**Images****Abstract**

(US20180103896)

An abnormal respiration detection apparatus includes a sensor for sensing a PPG signal from an optical signal reflected and received from a user's body; a band pass filter for extracting a signal of a required band from the PPG signal; an analog-to-digital converter for performing a digital conversion on the filtered PPG signal; and an abnormal respiration recognition unit deriving a respiration rate signal from the digital-converted PPG signal, deriving a plurality of respiration rate characteristic values through a time axis analysis on the derived respiration rate signal, and detecting an abnormal respiration using the derived plurality of respiration rate characteristic values. The embodiments can be utilized to monitor the survival of elders who live alone, soldiers isolated in a military operation, persons isolated in disaster and accident sites, thereby contributing to public and social safety and building of welfare society and nation.

**Inventors**

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**Latest standardized assignees - inventors removed**

ELECTRONICS &amp; TELECOMMUNICATIONS RESEARCH INSTITUTE

**Publication dates**

2018-04-19

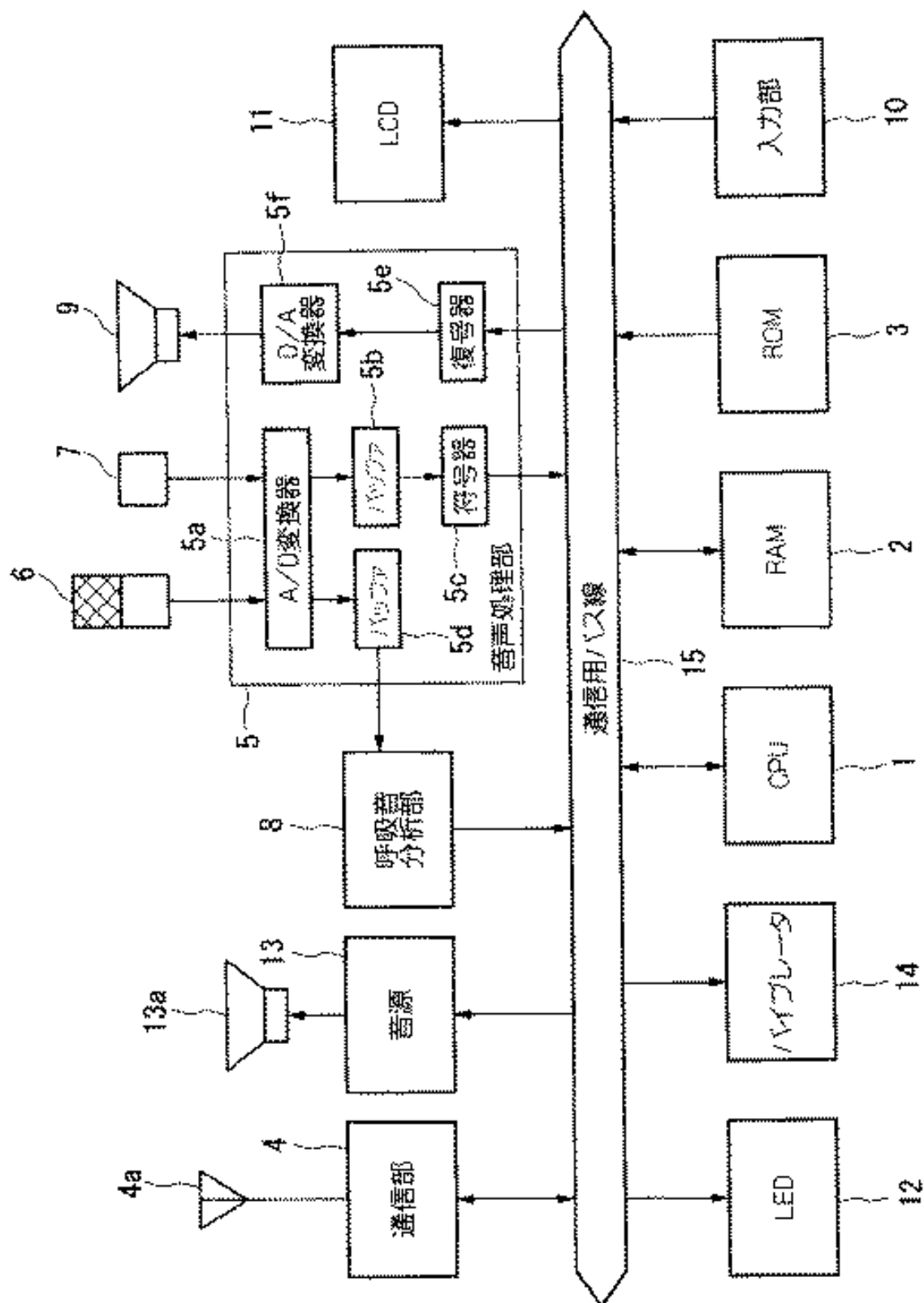
2018-04-26

Family 5/100 - FAMPAT - ©Questel

**Title**

(JP2005204896)

Cellular phone with apneustic breathing warning function

**Images****Abstract**

(JP2005204896)

**PROBLEM TO BE SOLVED:** To provide a cellular phone with an apneustic breathing warning function, assisting awakening from sleep from the outside when a user has apneustic breathing during sleep.

**SOLUTION:** In this cellular phone, speech communication is performed by a radio communication function of a communicating part 4. The cellular phone includes: a voice processing part 5 to which a detection microphone 7 for detecting user's breathing sound or a speech communication microphone 6 is connected; a sound source 13, a vibrator 14 or a communicating part 4 for informing that the user is in the apneustic breathing condition; a breathing sound analyzing part 8 for analyzing the intervals of user's breathing sound to detect the user condition of apneustic breathing over a predetermined period of time; and a CPU 1 for operating the sound source 13, the vibrator 14 or the communication part 4 when the apneustic breathing over the predetermined period of time. When the user is in the apneustic breathing condition, the user himself or the third party other than the user is informed of that the user is in the apneustic breathing condition by sound, vibration or communication.

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#### Inventors

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**Latest standardized assignees - inventors removed**

YAMAHA

#### Publication dates

2005-08-04

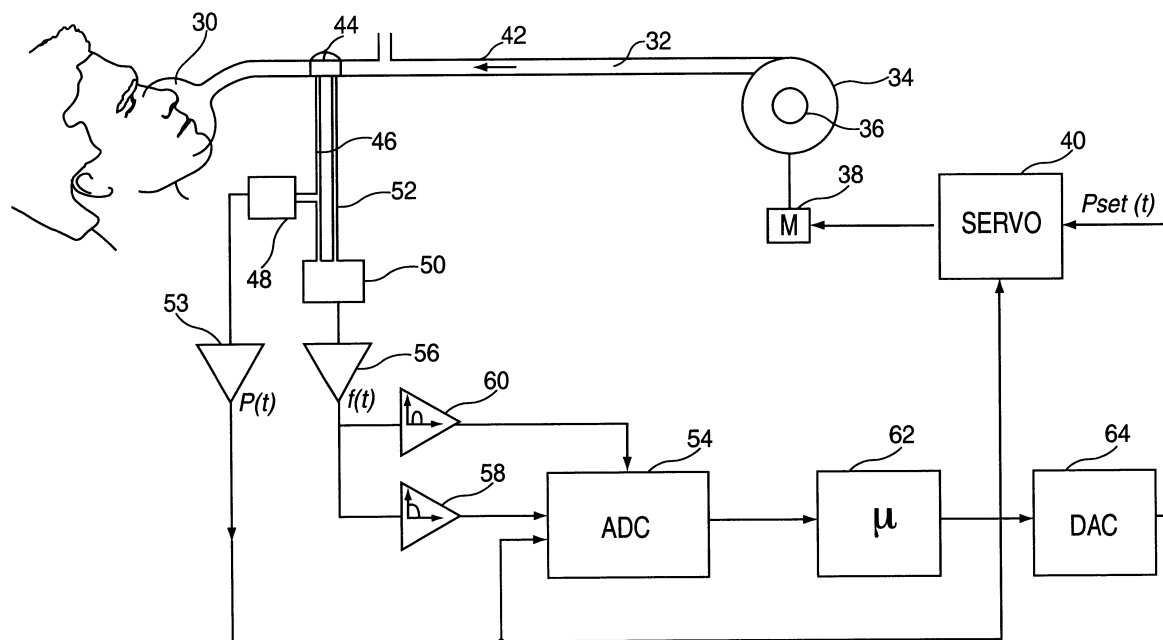
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#### Title

(EP1502618)

Administration of CPAP Treatment Pressure in Presence of Apnea

#### Images



#### Abstract

(EP1502618)

CPAP treatment apparatus comprises: a controllable flow generator operable to produce breathable gas at a pressure elevated above atmosphere; a gas delivery tube coupled to the flow generator; a patient mask coupled to the tube to receive said breathable gas from the generator and provide said gas, at a desired treatment pressure, to the patient's airway; a controller operable to receive input signals and to control operation of said flow generator and hence the treatment pressure; and sensor means located at the flow generator, in the delivery tube or at the mask that generates a

signal input to said controller from which patient respiratory airflow is determined; and wherein said controller is operable to determine the occurrence of an apnea from a reduction in said respiratory airflow, determine the duration of said apnea, and cause said flow generator to increase CPAP treatment pressure by an increment that is an increasing function of said apnea duration and a decreasing function of the treatment pressure immediately prior to said apnea. <IMAGE>

**Inventors**

BERTHON-JONES MICHAEL

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**Latest standardized assignees - inventors removed**

RESMED

**Publication dates**

1997-12-04

1999-05-20

1999-05-31

1999-06-03

2000-08-23

2001-03-15

2001-08-02

2001-11-20

2002-03-13

2002-04-09

2003-01-07

2003-03-28

2003-04-03

2004-10-27

2004-10-27

2004-11-15

2004-11-16

2004-12-02

2005-02-02

2005-04-14

2005-11-03

2006-01-24

2006-02-02

2006-04-05

2006-04-15

2006-05-18

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2009-02-12

2012-07-17

2012-09-13

2013-08-20

2014-04-01

2014-06-19

2016-12-27

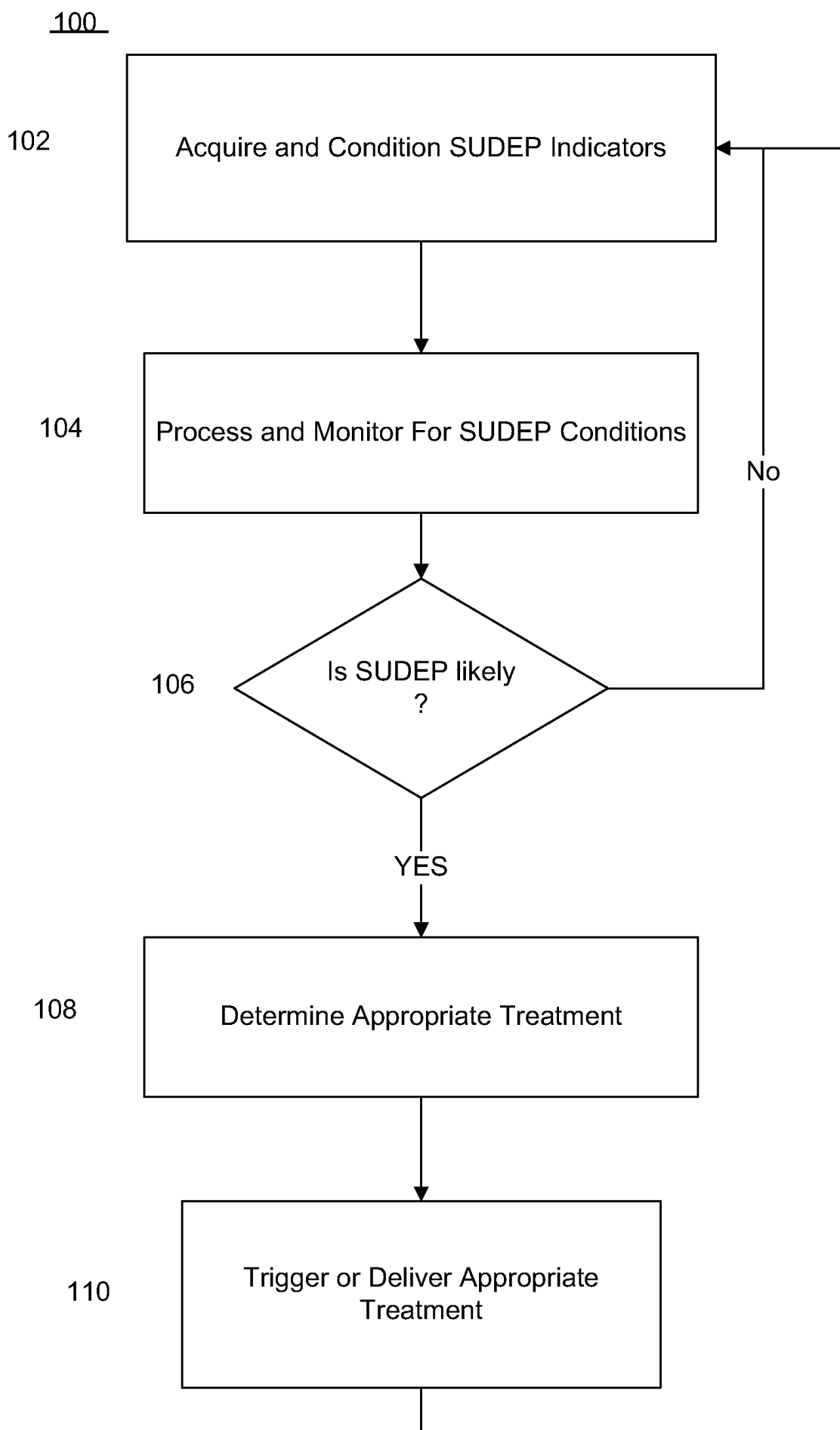
Family 7/100 - FAMPAT - ©Questel

**Title**

(EP2391264)

A method and device for the prevention of sudden unexpected death in epilepsy (sudep)

## Images



(EP2391264)

A method and system for circumventing sudden unexpected death in epilepsy (SUDEP) by monitoring a plurality of indicators related to the likelihood of SUDEP, processing and monitoring these indicators for conditions predisposing to SUDEP, selecting a preconfigured treatment to treat the existing set of high-risk conditions, and delivering or triggering apnea and/or seizure treatment of a preventive or therapeutic nature to prevent SUDEP.

**Inventors**

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**Latest standardized assignees - inventors removed**

NEUROSTREAM TECHNOLOGIES GENERAL PARTNERSHIP

**Publication dates**

2010-08-05

2010-08-05

2010-08-05

2011-12-07

2013-12-25

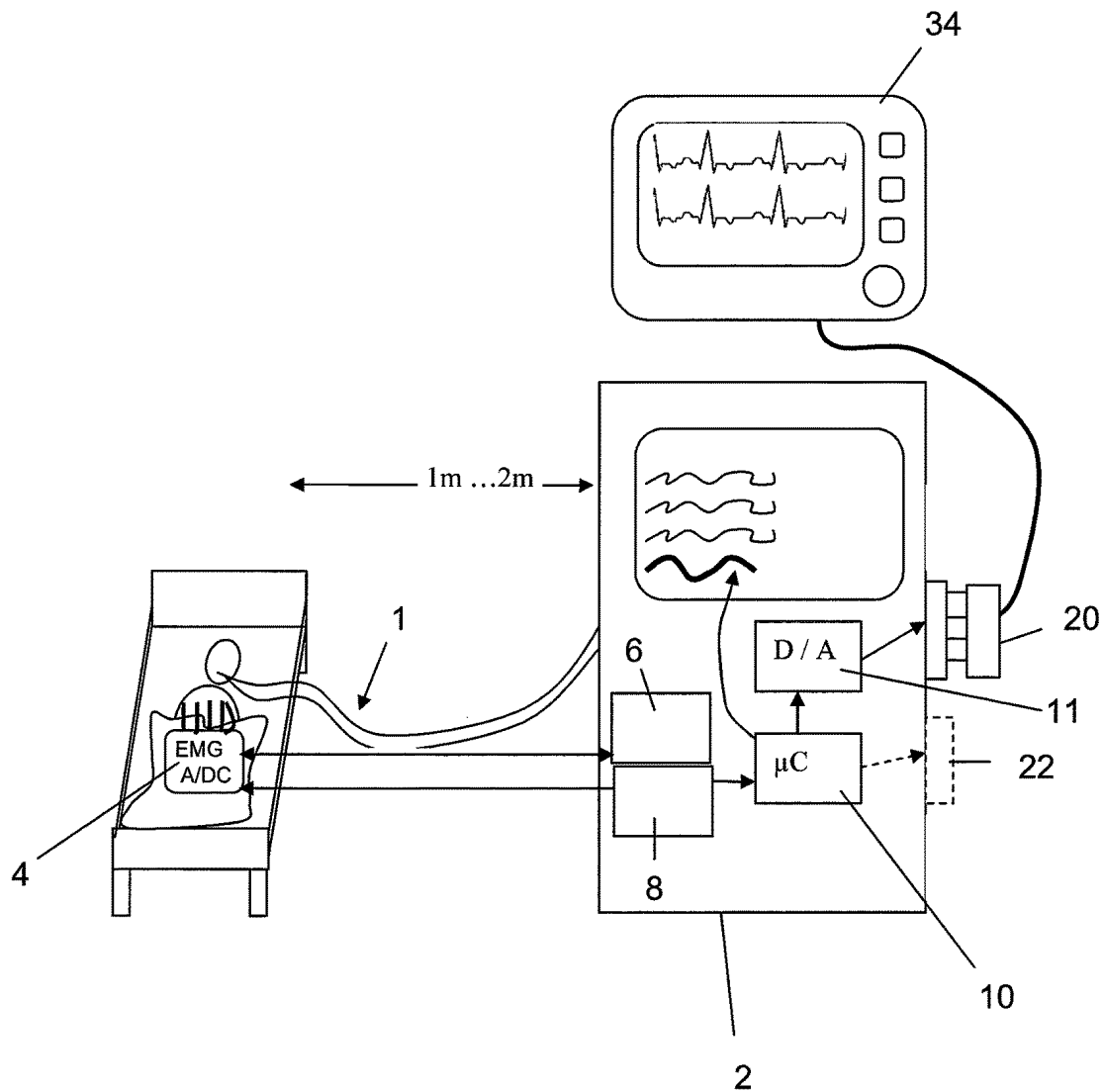
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**Title**

(US9968749)

Respiration system

**Images**



### Abstract

(US9968749)

A respiration system for noninvasive respiration includes a respiration drive, which is controlled by a control device, and includes a patient module (4) with electrodes for picking up electrode signals from the surface of the chest of a patient. The control device is set up to suppress ECG signals in the electrode signals in order to obtain electromyographic signals (EMG signals) representing the breathing effort and to control the respiration drive as a function of the EMG signals. Provisions are made for deriving ECG signals from the electrode signals before said ECG signals are suppressed and for making data representative of the ECG available for display.

### Inventors

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**Latest standardized assignees - inventors removed**

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### Publication dates

2013-08-22

2013-08-22

2013-08-23

2013-09-11

2016-08-10

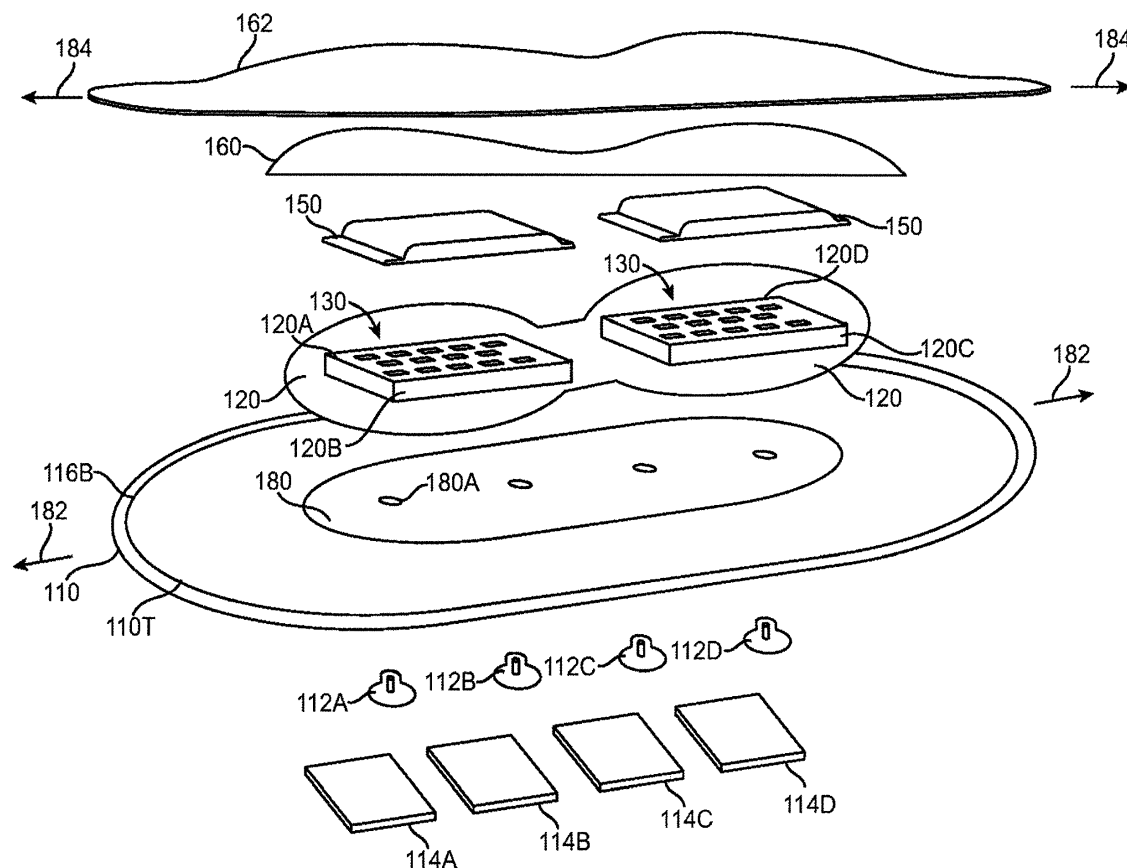
2018-05-15

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**Title**

(EP2200512)

Adherent device for respiratory monitoring and sleep disordered breathing

**Images****Abstract**

(EP2200512)

A respiratory monitoring system is provided. A measuring system is provided that includes, (i) an adherent device configured to be coupled to a patient, the adherent device including a plurality of sensors that monitor respiratory status, at least one of the sensors configured to monitor the patient's respiration, and (ii) a wireless communication device coupled to the plurality of sensors and configured to transfer patient data directly or indirectly from the plurality of sensors to a remote monitoring system. A remote monitoring system is coupled to the wireless communication device.

**Inventors**

AMURTHUR BADRI

BLY MARK J

LIBBUS IMAD

MANICKA YATHEENDHAR D

**Latest standardized assignees - inventors removed**

MEDTRONIC MONITORING

**Publication dates**

2009-03-19

2009-03-19

2009-03-19

2010-06-30

2012-08-21

2012-11-01

2013-11-26

2014-04-01

2014-09-25

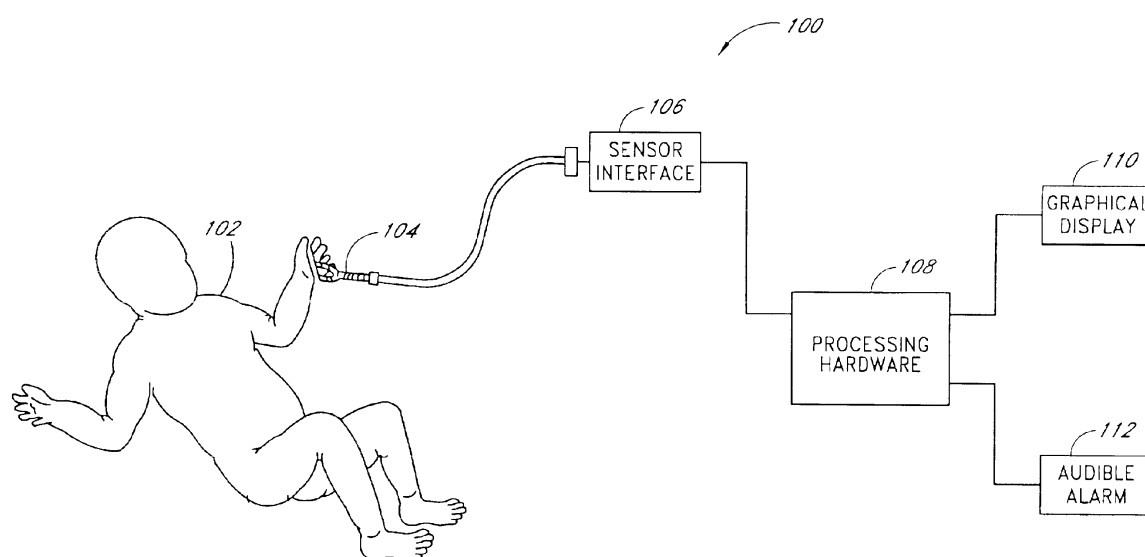
2014-11-06

Family 10/100 - FAMPAT - ©Questel

**Title**

(US7828739)

Apnea detection system

**Images****Abstract**

(US7828739)

A method and apparatus are described for utilizing a source of vascular pulse waveform data from a patient for the purpose of measuring pulsus paradoxus. The arterial pulse waveform data source described is a pulse oximeter plethysmograph but can be any similar waveform data source, including an intra-arterial transducer, external blood pressure transducer, or plethysmograph. Through incorporation of measurements of values, such as an area under a pulse waveform curve, that are time-domain functions of a change in amplitude of the pulse waveform over a duration of the waveform, embodiments of the present invention represent a significant improvement upon previously described methods of measuring pulsus paradoxus.

**Inventors**

ARNOLD DONALD H

**Latest standardized assignees - inventors removed**

PRECISION PULSUS

**Publication dates**

2004-03-04

2005-03-22

2005-05-19

2006-05-16

2006-08-24

2010-11-09

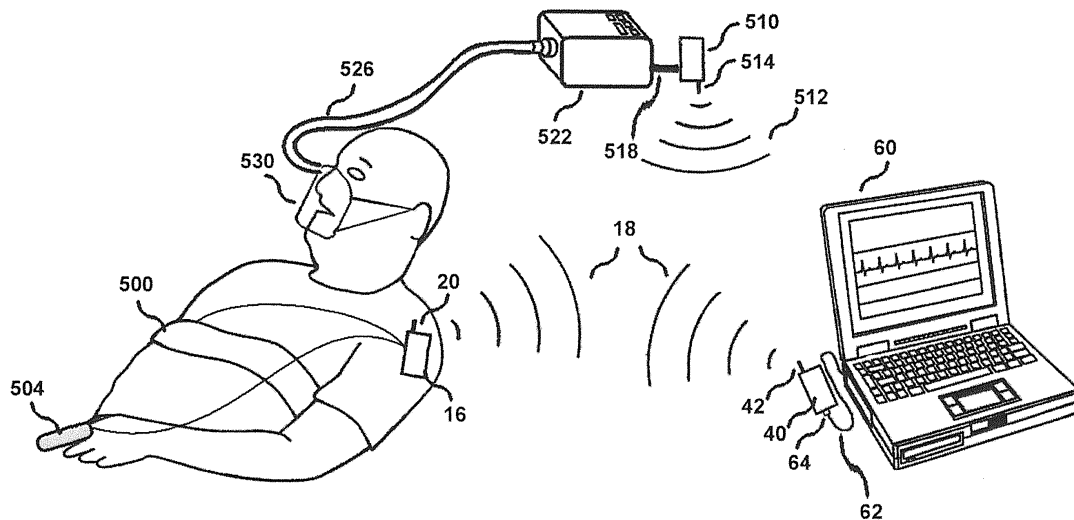
Family 11/100 - FAMPAT - ©Questel

## Title

(US9533114)

Integrated Diagnostic and Therapeutic System and Method for Improving Treatment of Subject with Complex and Central Sleep Apnea

## Images



## Abstract

(US9533114)

The present invention relates to an integrated sleep diagnosis and treatment device, and more particularly to an integrated apnea diagnosis and treatment device. The present invention additionally relates to methods of sleep diagnosis and treatment. The sleep disorder treatment system of the present invention can use a diagnosis device to perform various forms of analysis to determine or diagnose a subject's sleeping disorder or symptoms of a subject's sleep disorder, and using this analysis or diagnosis can with or in some embodiments without human intervention treat the subject either physically or chemically to improve the sleeping disorder or the symptoms of the sleeping disorder. The diagnostic part of the system can use many different types of sensors and methods for diagnosing the severity of the symptoms of or the sleep disorder itself. The treatment part of the system can use a device to physically or chemically treat the subject's symptoms or sleep disorder itself.

## Inventors

KAYYALI HANI

BISHOP DANIEL

KOLKOWSKI BRIAN M

## Latest standardized assignees - inventors removed

CLEVELAND MEDICAL DEVICES

## Publication dates

2017-01-03

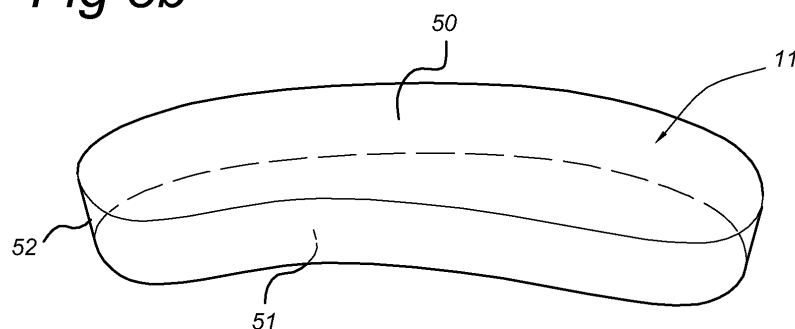
Family 12/100 - FAMPAT - ©Questel

## Title

(WO2009154456)

A flexible electronic system for producing a stimulation signal to the human body.

## Images

*Fig 3b***Abstract**

(WO2009154456)

An implantable electronic system has electronics (12), a detection device (16) and a stimulation device (17) within a casing (11). The electronics (12) receive detected parameter values from the detection device (16) relating to one or more functions of a human body. A controller (20) processes the parameter values and generates a control signal for the stimulation device (17) based on the detected parameter values in accordance with the predetermined function. The casing (11) is made of a flexible material. The casing (11) is made of a flexible biocompatible material, and has an upper surface (50) and a lower surface (51) which are substantially parallel to one another and connected to one another by means of a side surface (52).

**Inventors**

DE VOS GERRIT JOHANNIS

**Latest standardized assignees - inventors removed**

KERPHOS

**Publication dates**

2009-12-23

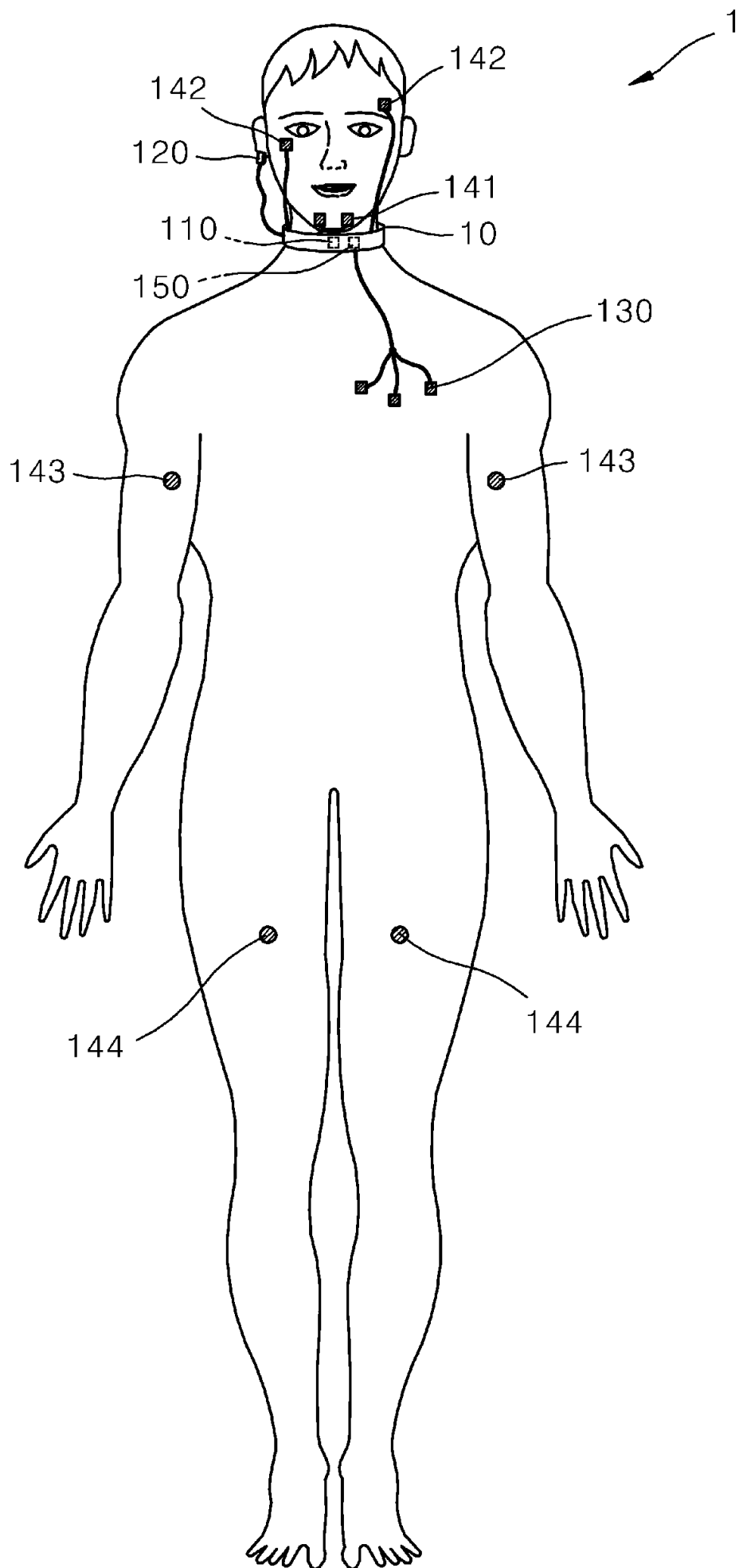
Family 13/100 - FAMPAT - ©Questel

**Title**

(WO2017119638)

Real-time sleep disorder monitoring apparatus

**Images**



**Abstract**

(WO2017119638)

The present invention relates to a real-time sleep disorder monitoring apparatus comprising: a main terminal body formed in a band form so as to be worn around the neck of a user; a sensor unit for detecting biometric data including breathing signals while the user wearing the main terminal body sleeps; a stimulus generation unit capable of applying a stimulus to the user wearing the main terminal body; and a terminal control unit for controlling the stimulus generation unit such that the stimulus is applied to the user if the biometric data detected by the sensor unit corresponds to a set stimulus application condition. Configured as such, the real-time sleep disorder monitoring apparatus, which is worn around the neck, can overcome disadvantages such as wearing inconvenience, which is caused by the many wires conventional polysomnography (PSG) devices have, and high costs resulting from the required absolute involvement of an expert, can particularly induce immediate escape from a critical sleep disorder through real-time monitoring during sleep, and thus provides the advantage of preventing a serious accident.

**Inventors**

WON YONG GWAN

**Latest standardized assignees - inventors removed**

CHONNAM NATIONAL UNIVERSITY

**Publication dates**

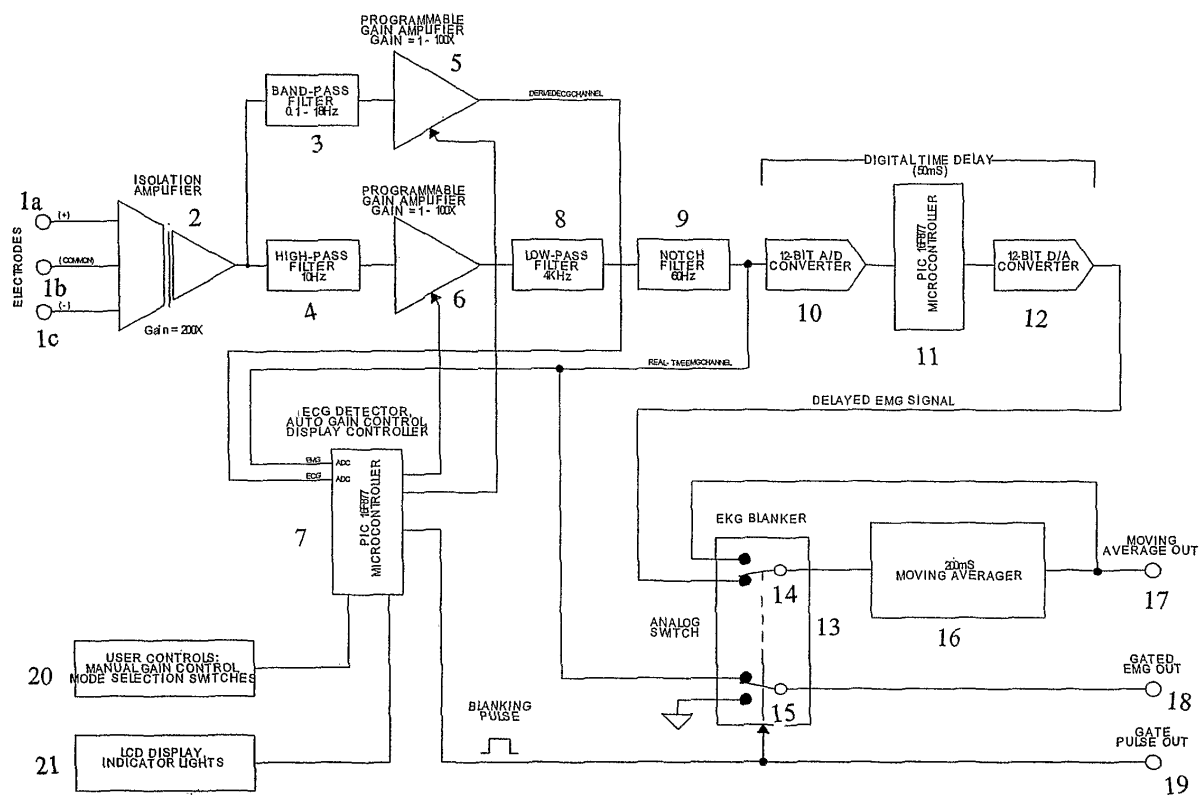
2017-07-13

Family 14/100 - FAMPAT - ©Questel

**Title**

(EP1729636)

Non-invasive method and device for detecting inspiratory effort

**Images****Abstract**

(EP1729636)

The present invention discloses the diagnosis and treatment of breathing disorders in sleeping and waking subjects. An electrical device is described which may be used for monitoring and processing of a diaphragmatic electromyogram signal as an indicator of inspiratory effort. Some sleep disorders manifest themselves with an increased inspiratory effort. This invention improves upon the current use of diaphragmatic electromyogram signals in the diagnosis of sleep disorders by

effectively eliminating concomitant electrocardiogram signals. The electrical device also comprises a system for monitoring and recording of data by a patient (i.e., at home) such that a breathing disorder may be later diagnosed by a clinician.

**Inventors**

GOLD AVRAM R

CHERNYAVSKIY IGOR

WARD CHARLES

**Latest standardized assignees - inventors removed**

RESEARCH FOUNDATION OF SUNY

**Publication dates**

2005-10-20

2005-10-20

2005-10-20

2006-12-13

Family 15/100 - FAMPAT - ©Questel

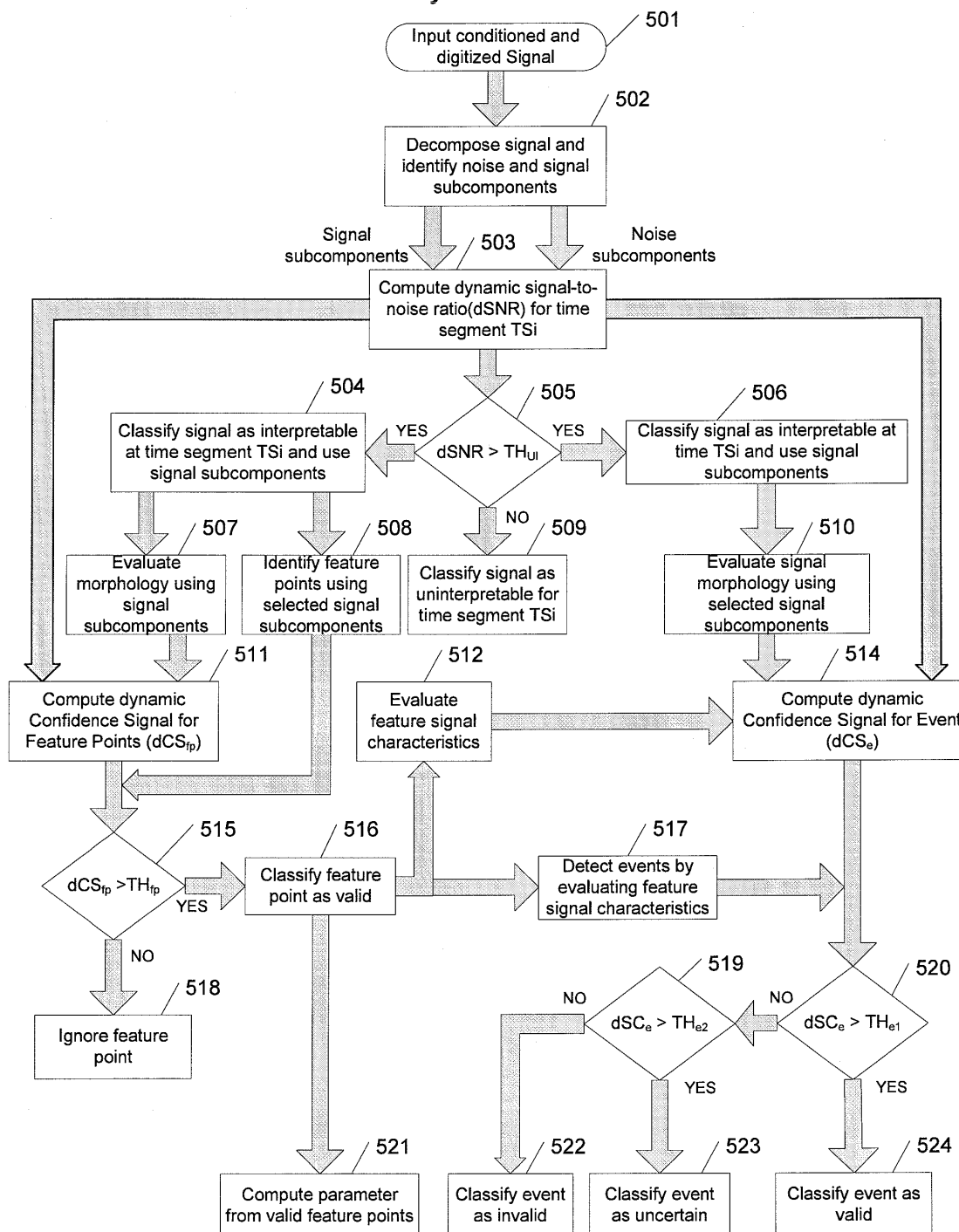
**Title**

(US9339202)

System for processing physiological data

**Images**

# Identification and Validity Evaluation of Feature Points and Events



## Abstract

(US9339202)

Physiological signals such as ECG signals are obtained from a patient. In accordance with one or more embodiments, an apparatus, system and/or method is directed to at least two ECG sensing electrodes that adhere to remote locations on a patient and sense ECG signals from the patient. An amplifier circuit amplifies the sensed ECG signals to provide amplified ECG signals, and a digitizing circuit digitizes the amplified ECG. A computing circuit processes the digitized ECG signals (e.g., by removing noise). A battery powers the aforesaid circuits, and a housing houses the battery and aforesaid circuit. A fastener mechanically fastens and electrically couples the housing to one of the electrodes, and the other electrodes are coupled to the amplifier via a flexible insulated lead wire.

## Inventors

BROCKWAY MARINA

BROCKWAY BRIAN

Latest standardized assignees - inventors removed

VIVAQUANT

Publication dates

2013-07-02

2013-10-31

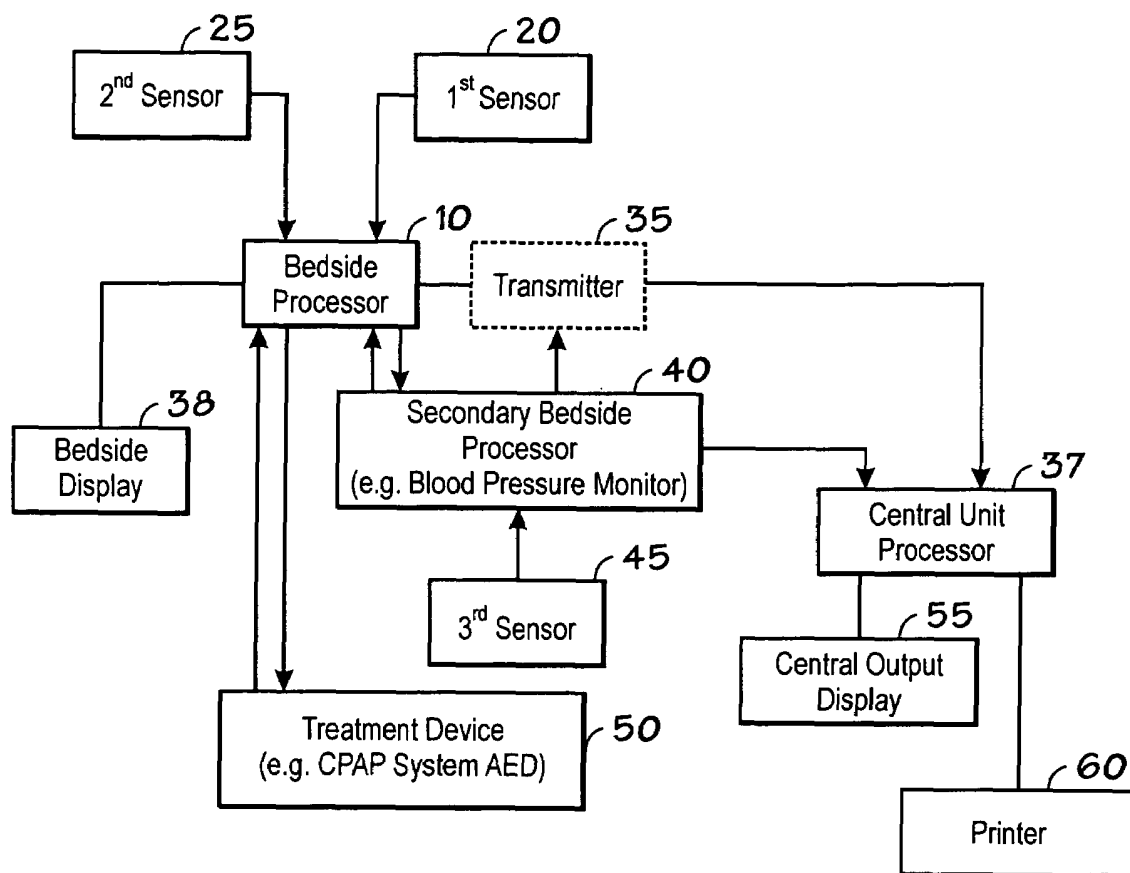
2016-05-17

Family 16/100 - FAMPAT - ©Questel

**Title**

(US9031793)

Centralized hospital monitoring system for automatically detecting upper airway instability and for preventing and aborting adverse drug reactions

**Images****Abstract**

(US9031793)

A system and method for the automatic diagnosis of obstructive sleep apnea in a centralized hospital critical care monitoring system for the monitoring of a plurality of patients in at least one of a critical care, step down, and cardiac ward by telemetry. The system includes a central processor having a display, and a plurality of telemetry units for mounting with patients, each of the telemetry units has a plurality of sensors for connection with each patient, the telemetry unit is capable of the transmission of multiple signals derived from the sensors to the central processor, in one preferred embodiment the method comprising steps of programming the system to analyze the signals and to automatically identify the presence and severity of obstructive sleep apnea and to provide an indication of the identification.

**Inventors**

LYNN LAWRENCE A

LYNN ERIC N

**Publication dates**

2003-01-02

2006-07-13

2006-07-25

2006-08-31

2006-10-19

2011-08-25

2012-05-29

2012-12-27

2014-10-14

2015-05-12

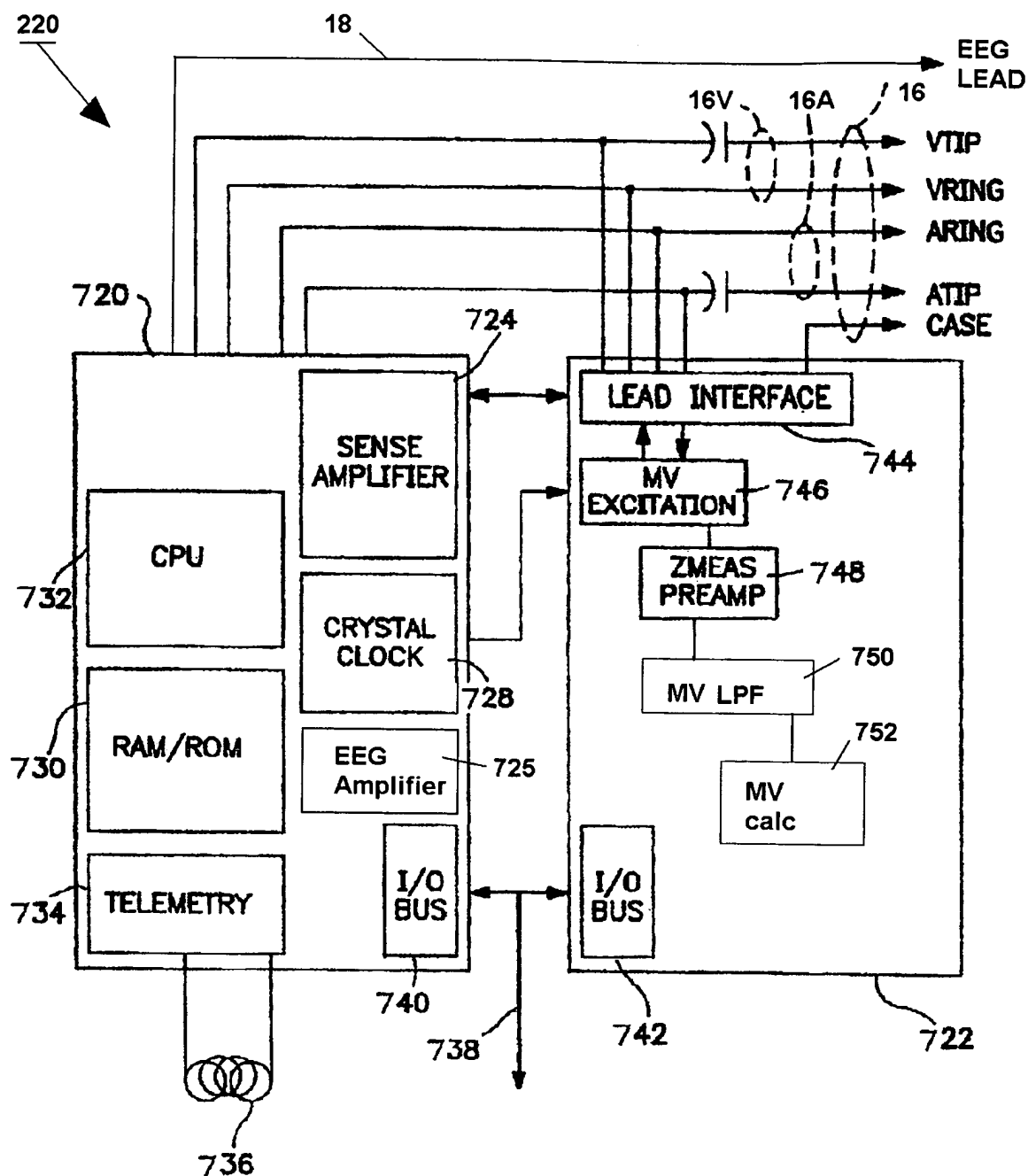
Family 17/100 - FAMPAT - ©Questel

**Title**

(EP1833558)

System for monitoring or treating nervous system disorders

**Images**



### Abstract

(EP1833558)

A medical device system for comparing a cardiopulmonary signal to a brain signal. In one embodiment of the invention, a medical device system is provided that includes a brain monitoring element, respiratory monitoring element and a processor. The processor is configured to receive a brain signal from the brain monitoring element and a respiratory signal from the respiratory monitoring element. The processor is further configured to compare the brain signal to the respiratory signal. Methods of comparing a brain signal to a cardiopulmonary signal are also provided.

### Inventors

GIFTAKIS JONATHON E

GRAVES NINA M

Latest standardized assignees - inventors removed

MEDTRONIC

### Publication dates

2006-06-22

2006-06-22

2006-06-22

2006-06-22  
2006-06-22  
2006-06-22  
2006-08-17  
2006-08-17  
2006-08-31  
2006-10-05  
2007-09-19  
2007-09-19  
2007-10-11  
2007-10-11  
2007-10-11  
2007-10-11  
2007-11-08  
2007-11-08  
2007-11-08  
2007-11-15  
2007-11-15  
2008-02-07  
2011-01-04  
2011-01-19  
2011-02-15  
2011-03-03  
2011-04-14  
2011-05-05  
2011-05-17  
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2011-05-24  
2011-10-05  
2011-10-15  
2011-10-18  
2011-10-18  
2011-11-29  
2012-01-31  
2012-01-31  
2012-02-07  
2012-02-07  
2012-06-26  
2012-06-26  
2012-07-03  
2013-07-16  
2014-06-03  
2014-06-24

Family 18/100 - FAMPAT - ©Questel

**Title**

(EP3056236)

Distinguishing closed and open respiratory airway apneas by complex admittance values

**Images**

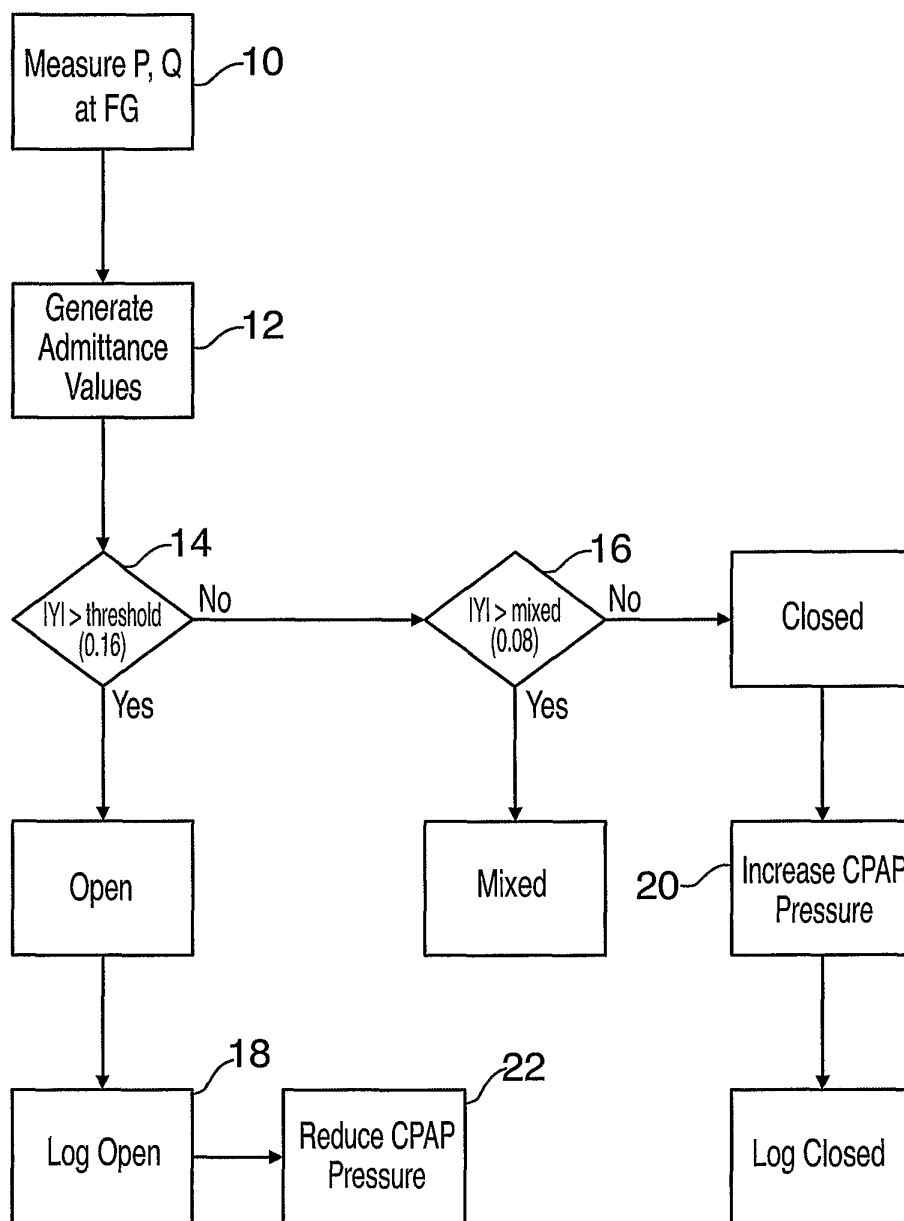


FIG. 1

**Abstract**

(EP3056236)

The present invention relates to a patency detection system for determining patency of an airway of a patient, the system comprising, a controller means for controlling a flow generator to generate airflow in an oscillatory pressure waveform at known frequency and magnitude for delivery to the patient's airway calculating complex admittance values (12) of respiratory air flow of the patient from said airway in response to the oscillatory pressure waveform and determining the patency of the airway by determining whether the complex admittance values are in a region of complex values characteristic of patency (14, 16).

**Inventors**

BASSIN DAVID JOHN

OATES JOHN DAVID

HUBY RONALD JAMES

GOELDI BENRIAH

**Latest standardized assignees - inventors removed**

RESMED

**Publication dates**

2008-03-06  
2008-03-06  
2009-05-13  
2009-08-19  
2009-12-31  
2010-01-21  
2011-11-30  
2012-05-10  
2012-08-31  
2013-01-30  
2013-02-22  
2013-06-06  
2014-08-29  
2015-05-12  
2015-06-25  
2015-07-02  
2016-03-09  
2016-07-06  
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2016-12-14  
2017-03-21  
2017-05-18  
2017-10-10  
2018-03-29

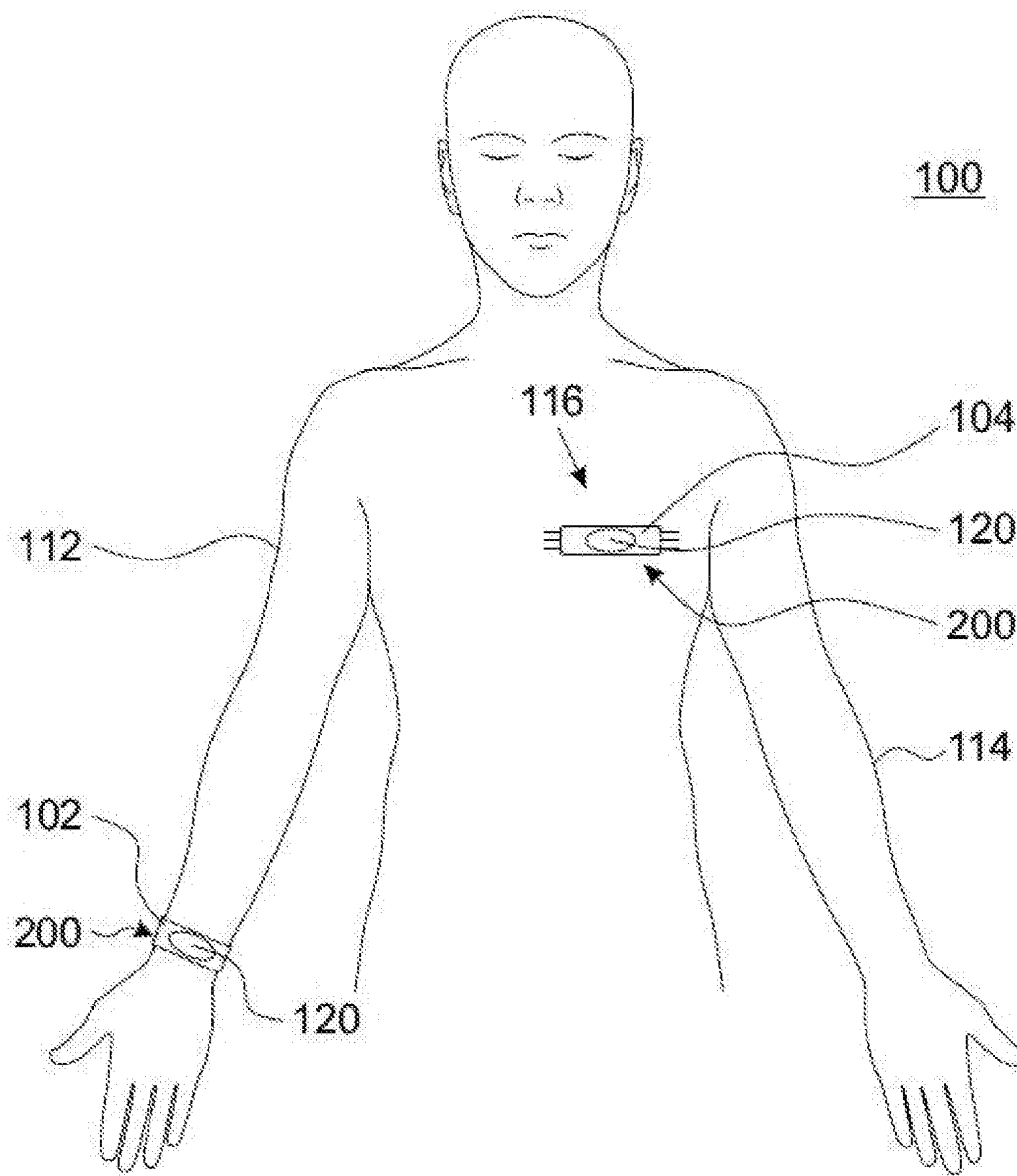
Family 19/100 - FAMPAT - ©Questel

**Title**

(US20180042502)

Episodical and Continuous ECG Monitoring

**Images**

**Abstract**

(US20180042502)

Monitoring heart activity using a wearable device, including receiving, from the wearable device, an electrocardiograph (ECG) signal and a motion signal associated with an individual upon contact with the wearable device; in response to receiving the ECG signal and the motion signal associated with the individual, determining, by a computing device, a position of the wearable device in contact with the individual; and determining, by the computing device, a heart activity monitoring mode for operating the wearable device, based on the position of the wearable device in contact with the individual.

**Inventors**

WANG FEI

WANG YUANXIANG

**Latest standardized assignees - inventors removed**

HUAMI

**Publication dates**

2018-02-15

2018-02-23

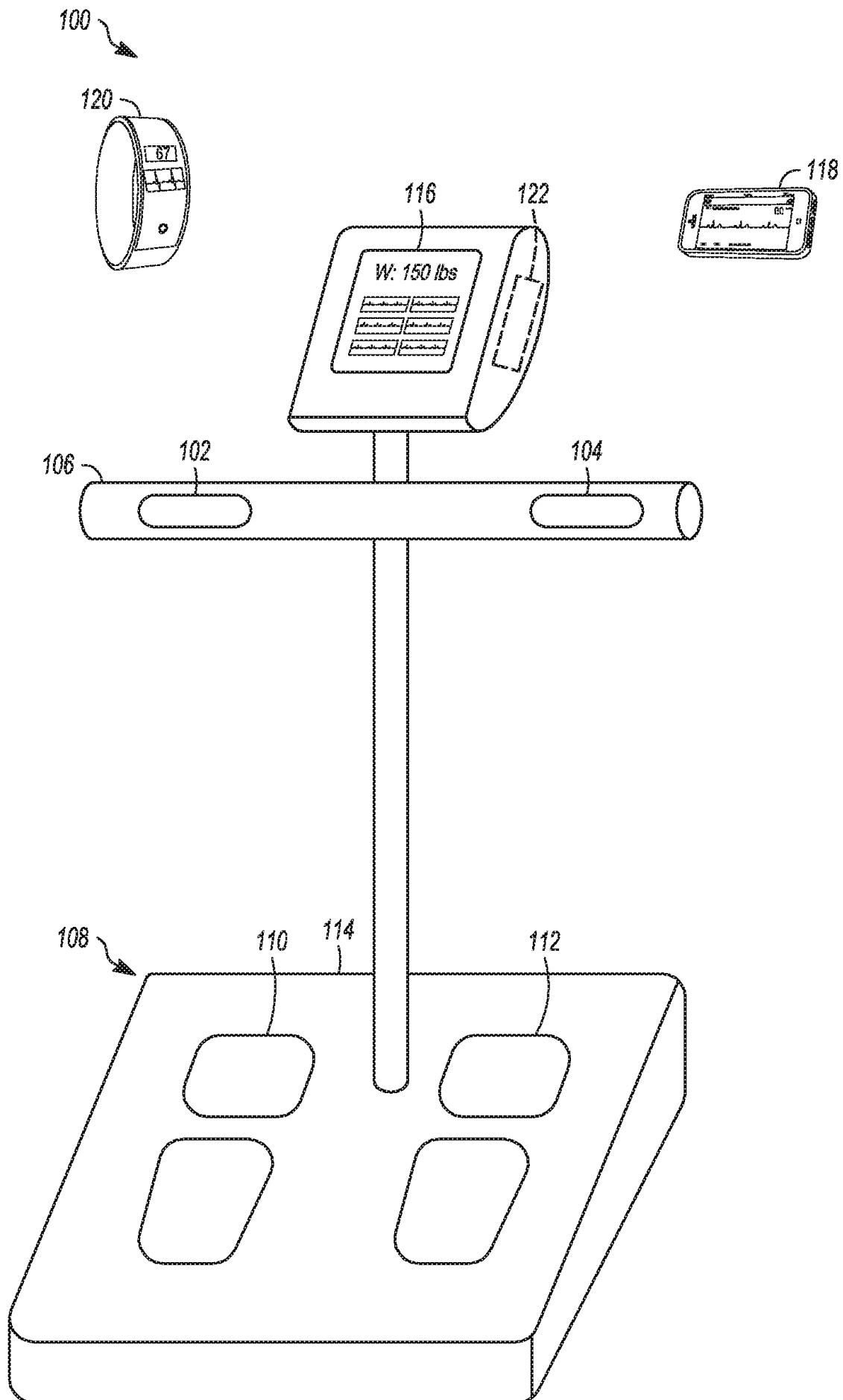
Family 20/100 - FAMPAT - ©Questel

**Title**

(US20170071483)

Wearable biometric measurement device

## Images



**Abstract**

(US20170071483)

A wearable biometric measurement device includes a ring body having interior and exterior surfaces, an electrocardiogram component including first and second electrodes wherein a single lead electrocardiogram is formed upon contact with the first electrode and the second electrode, a pulse oximeter component including a light emitter and a photodetector wherein the photodetector receives one or more signals transmitted by the light emitter, and a communication component. A system for measuring and processing biometric data includes a wearable biometric measurement device, a monitor device, and a server. A method for measuring biometric data using a wearable biometric measurement device includes pre-processing biometric signals, feature extraction on the signals, and event prediction with respect to the signals.

**Inventors**

WANG FEI

CHEN TING

**Latest standardized assignees - inventors removed**

ANHUI HUAMI INFORMATION TECHNOLOGY

HUAMI

**Publication dates**

2017-03-16

2017-03-16

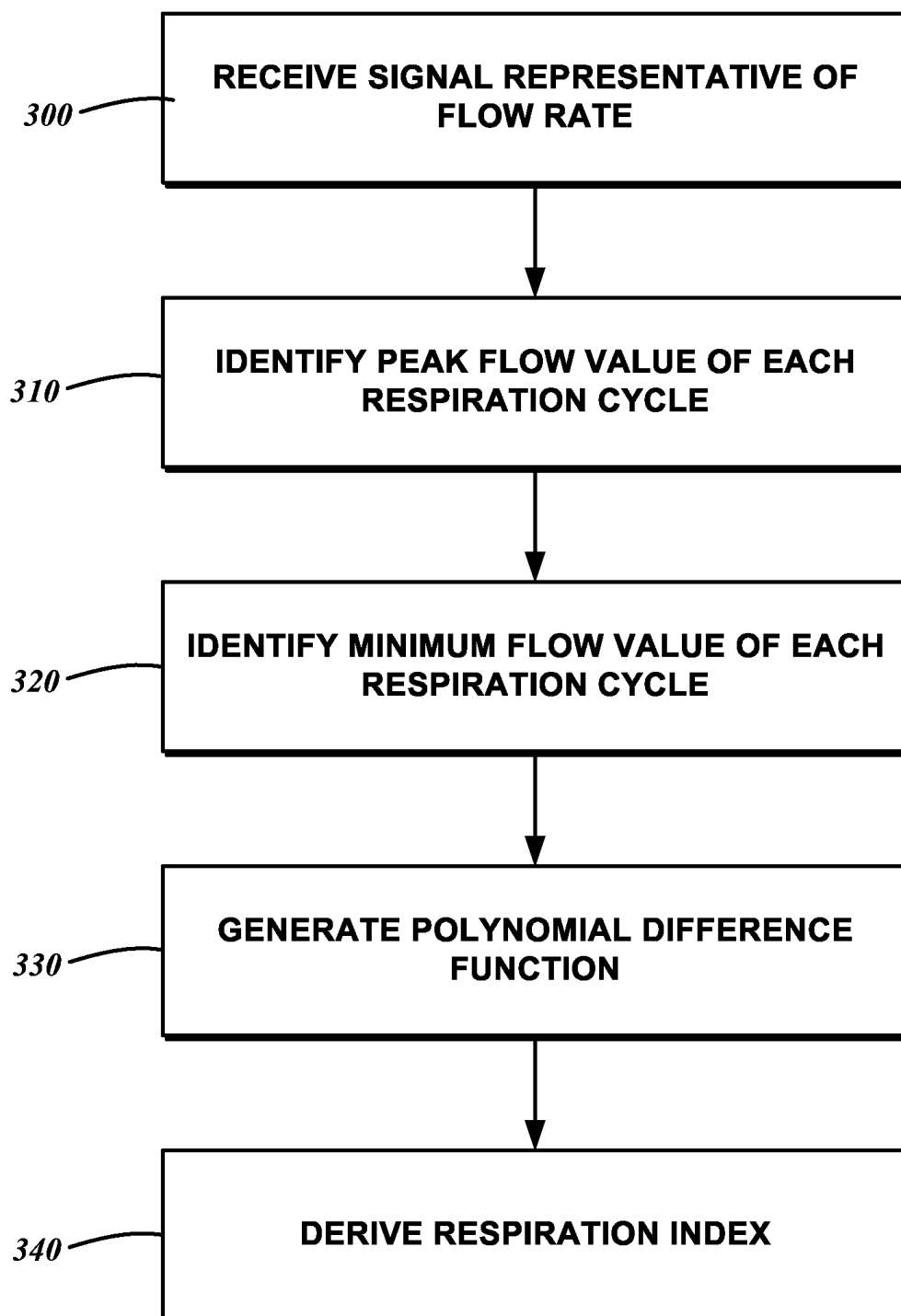
Family 21/100 - FAMPAT - ©Questel

**Title**

(EP3041407)

Apnea and hypopnea identification for continuous positive airway pressure therapy

**Images**

**Abstract**

(EP3041407)

The identification of obstructed breathing, including an apnea condition and a hypopnea condition, is disclosed. A signal representative of a flow rate of therapeutic gas being delivered to the patient is received. A peak flow value and a minimum flow value over a predetermined time window encompassing a plurality of respiration cycles is derived. A polynomial difference equation from the peak flow values and the minimum flow values is generated, and a respiration index from a minimum of the polynomial difference equation is derived. The apnea and/or hypopnea condition is indicated based upon a comparison of the respiration index to a predefined obstruction threshold over a predefined obstruction time period.

**Inventors**

BALOA WELZIEN LEONARDO ALBERTO

BAMBRILLA ENRICO

AHMAD SAMIR S

**Latest standardized assignees - inventors removed**

BREATHE TECHNOLOGIES

**Publication dates**

2015-03-12

2015-03-12

2016-07-13

2017-04-12

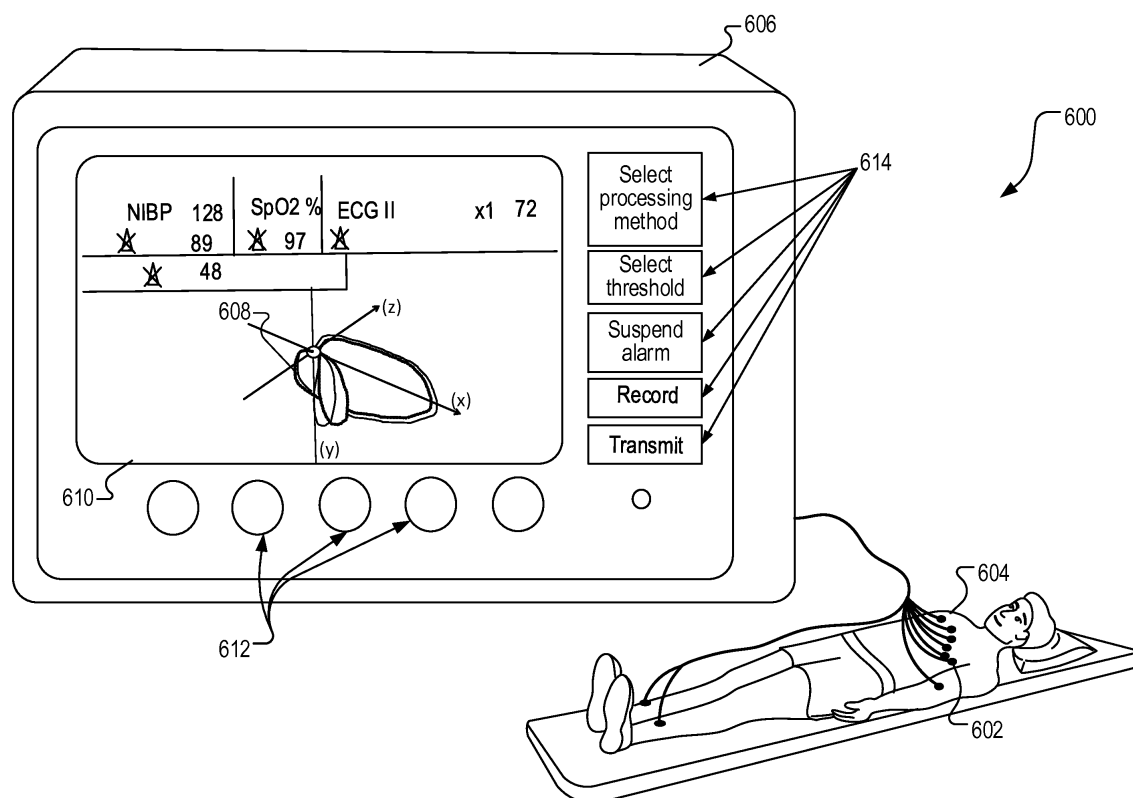
2017-06-06

Family 22/100 - FAMPAT - ©Questel

**Title**

(EP3110316)

Vcg vector loop bifurcation

**Images****Abstract**

(EP3110316)

A system for determining T wave bifurcation that includes three or more ECG leads configured to receive an ECG signal and a first computing device including a processor coupled to a memory, the processor and the memory configured to perform operations including: generating at least two orthogonal ECG vectors based on the ECG signal of a patient, processing the at least two orthogonal ECG vectors to determine a loop trajectory of at least a portion of the ECG signal, identifying a trajectory bifurcation by comparing the loop trajectory to a control loop trajectory for a plurality of cardiac cycles, and determining an indicator of a cardiac event based on the trajectory bifurcation.

**Inventors**

WENG BINWEI

HERKEN ULRICH

FREEMAN GARY A

**Latest standardized assignees - inventors removed**

ZOLL MEDICAL

**Publication dates**

2015-08-27

2015-09-03

2017-01-04

2017-01-17

2017-04-27

2017-10-25

Family 23/100 - FAMPAT - ©Questel

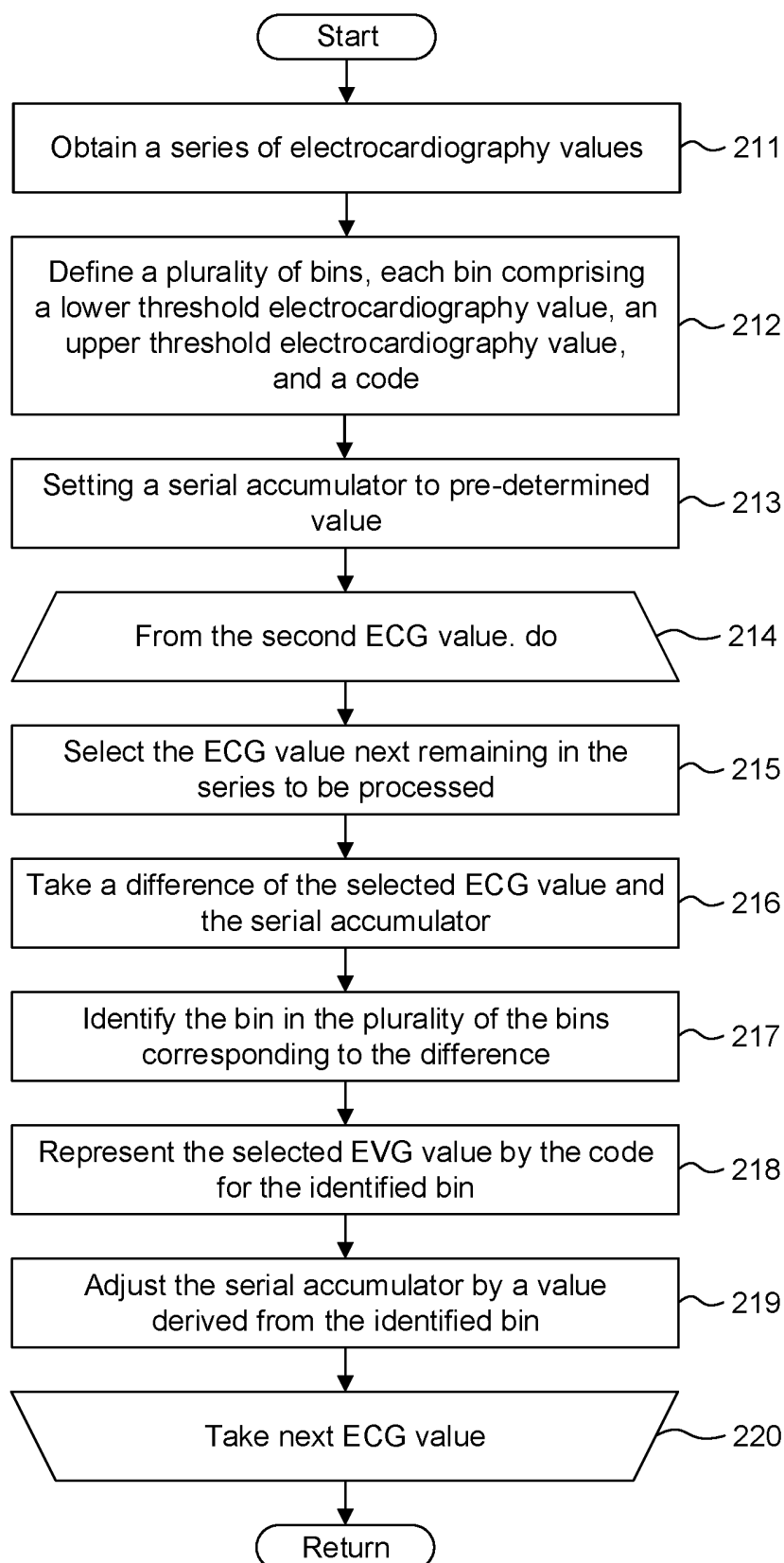
**Title**

(EP3307151)

Wearable electrocardiography and physiology monitoring ensemble

**Images**

210

**Abstract**

(EP3307151)

A wearable electrocardiography monitoring ensemble (300) is provided, which includes a garment (301) made of a compressible and elastomeric material. The garment (301) is wearable about an upper region of the torso (305) and further includes an internal structure (302) forming a compressive bias circumferential to the torso (305). The ensemble (300) also

includes an electrode assembly (313) provided on an inside surface of the garment (301) on an underside of the internal structure (302).The electrode assembly (313) has a pair of electrocardiography electrodes (309, 310), a pair of terminated electrical connections (311, 312) that are each coupled to one of the electrocardiography electrodes (309, 310), and a backing (20) to which the electrocardiography electrodes (309, 310) are affixed.The wearable monitoring ensemble (300) creates a more natural experience for wearers and can be used to produce an expanded dataset for diagnosis because the ensemble (300) can collect data during activities of daily living and can capture cardiovascular events outside of clinical observation, which is otherwise not practicable, especially for athletes.

**Inventors**

BARDY GUST H

HANDFELT MARK

BISHAY JON MIKALSON

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**Latest standardized assignees - inventors removed**

BARDY DIAGNOSTICS

**Publication dates**

2015-03-26

2015-03-26

2015-03-26

2015-03-26

2015-03-26

2015-03-26

2015-03-26

2015-03-26

2015-03-26

2015-03-26

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2016-01-14

2016-01-14

2016-01-14

2016-03-24

2016-03-24

2016-03-24

2016-05-24

2016-06-02

2016-06-14

2016-07-07

2016-07-28

2016-08-03

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2017-09-07  
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2017-11-08  
2017-11-09  
2017-11-09  
2017-11-21  
2017-11-30

2017-11-30

2017-11-30

2017-12-28

2018-01-17

2018-01-25

2018-02-27

2018-03-15

2018-04-18

2018-05-01

2018-05-01

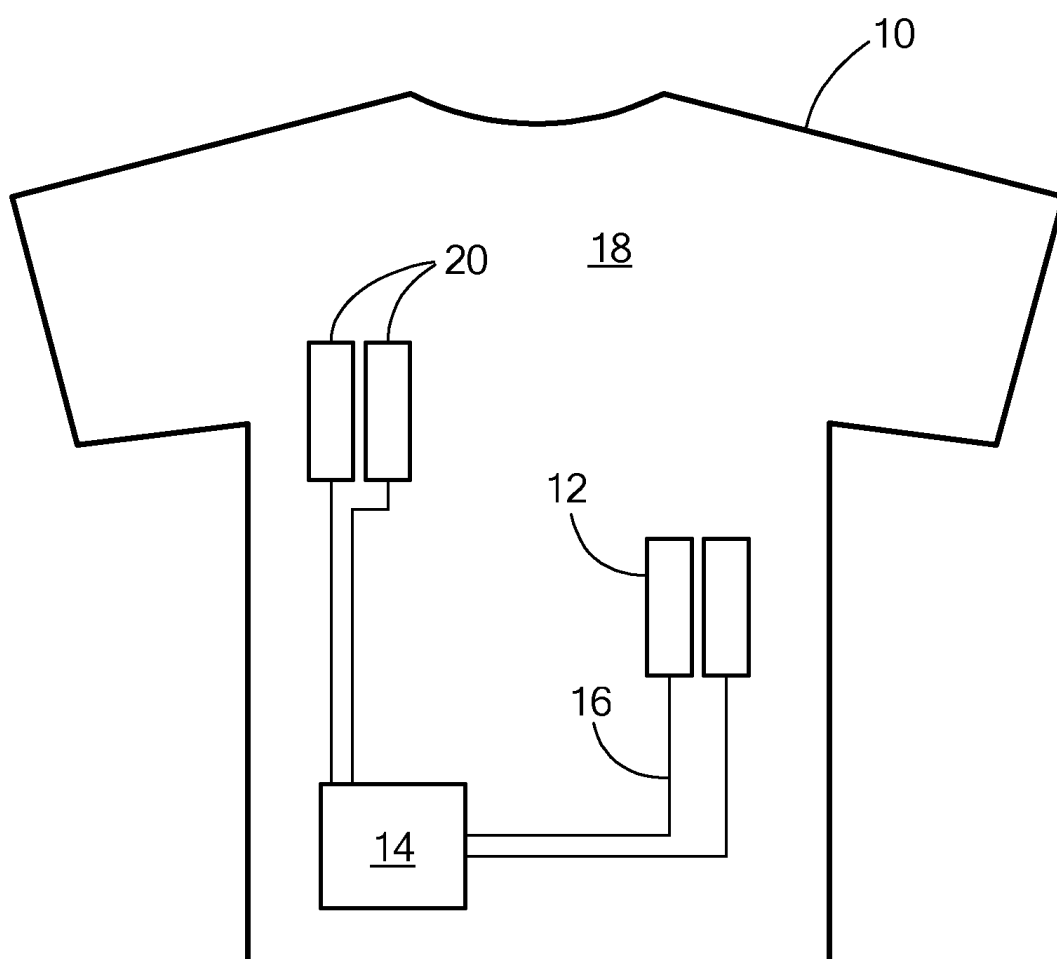
2018-05-01

Family 24/100 - FAMPAT - ©Questel

**Title**

(WO2013109892)

System and method for measuring movement of a body part

**Images****Abstract**

(WO2013109892)

A device and method for measuring movement of a body part of a subject. The method illustratively includes mounting on the body part, via at least one dielectric, at least two conductive elements in a manner as to define a fixed spacing between

the elements and wherein the distance between the conductive elements and the body part varies with movement of the body part.Changes are measured in capacitance between the elements and the body part that result from movement of the body part.Data associated with the changes in capacitance is transmitted to a personal computing device

**Inventors**

LIPOMA THOMAS

BELLO PABLO

DARLING CARSON

HE CHAO

**Latest standardized assignees - inventors removed**

REST DEVICES

**Publication dates**

2013-07-25

2013-08-01

2014-08-28

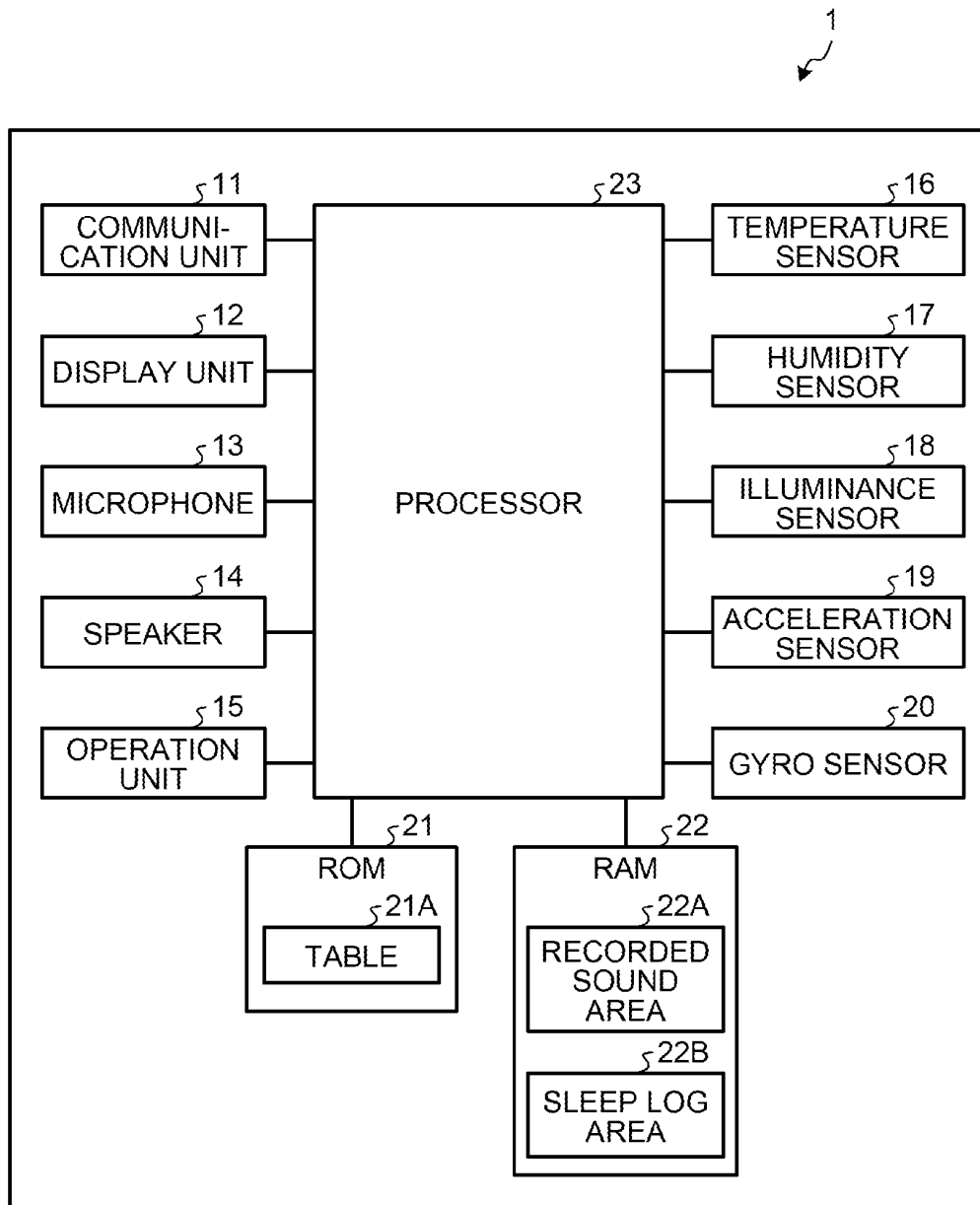
Family 25/100 - FAMPAT - ©Questel

**Title**

(EP2653108)

Apnea determining program, apnea determining apparatus, and apnea determining method

**Images**

**Abstract**

(EP2653108)

A portable terminal (1) includes a breath determining unit(31) that determines, when sounds having similar frequency components have been periodically detected in picked-up sounds, the detected sounds to be breath sounds. The portable terminal further includes a snore determining unit(32) that determines, sound pressure of a determined breath sound has exceeded a first level threshold, the breath sound to be a snore sound. The portable terminal further includes an apnea determining unit(33) that determines, when a silent interval has been detected between consecutive snore sounds determined, the detected silent interval to be an apnea state.

**Inventors**

NISHIDA ASAKO

**Latest standardized assignees - inventors removed**

FUJITSU

**Publication dates**

2013-10-23

2013-10-24

2013-10-30

2013-11-28

2016-06-29

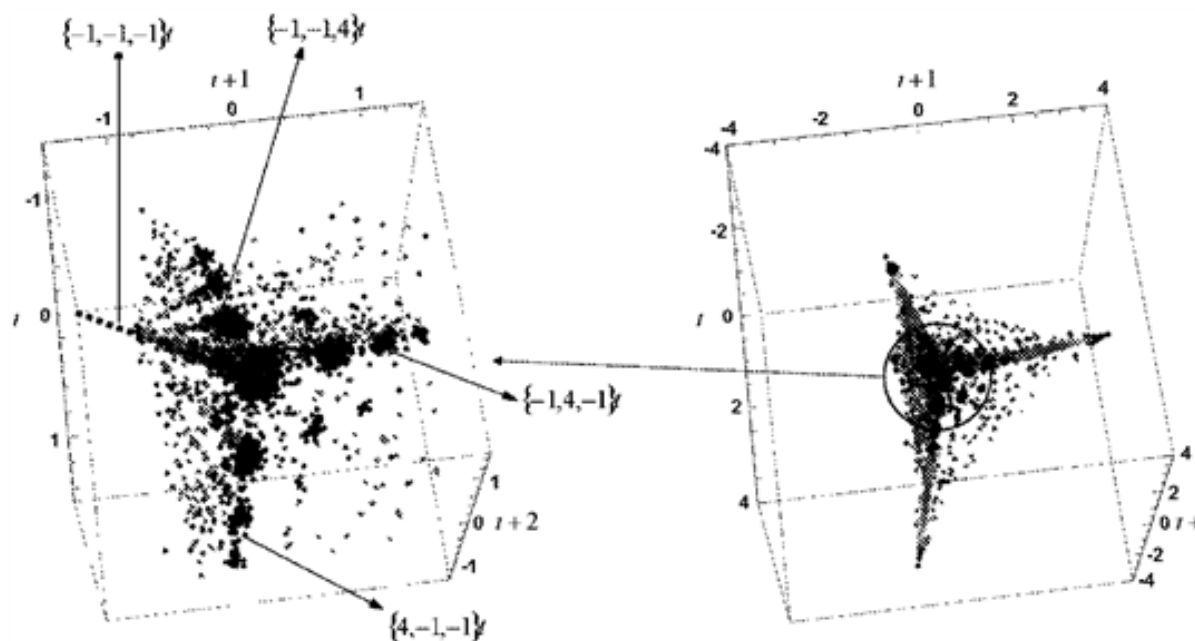
2017-06-15

Family 26/100 - FAMPAT - ©Questel

**Title**

(WO2017144763)

Method for obtaining useful data associated with heart rate variability pattern

**Images****FIG 1****Abstract**

(WO2017144763)

The invention relates to a method for providing a description, graphical representation and graphical identification of the specific operating patterns of quasi-periodic cyclic systems, such as, but not limited to, reciprocating combustion engines, rotary machines or biological organs, such as the heart. The invention also relates to a method for calculating an indicator evaluating the heart health or condition of an individual, as well as for diagnosing and issuing prognoses relating to the operation, pathological state or standard of health of a machine or organism comprising a motor or organ that operates cyclically, and to provide a description, compact graphical representation and graphical identification of the specific operating patterns of dynamic systems, e.g. economic systems such as the stock market.

**Inventors**

GAÑÁN CALVO ALFONSO MIGUEL

**Latest standardized assignees - inventors removed**

UNIVERSIDAD DE SEVILLA

**Publication dates**

2017-08-24

2017-08-31

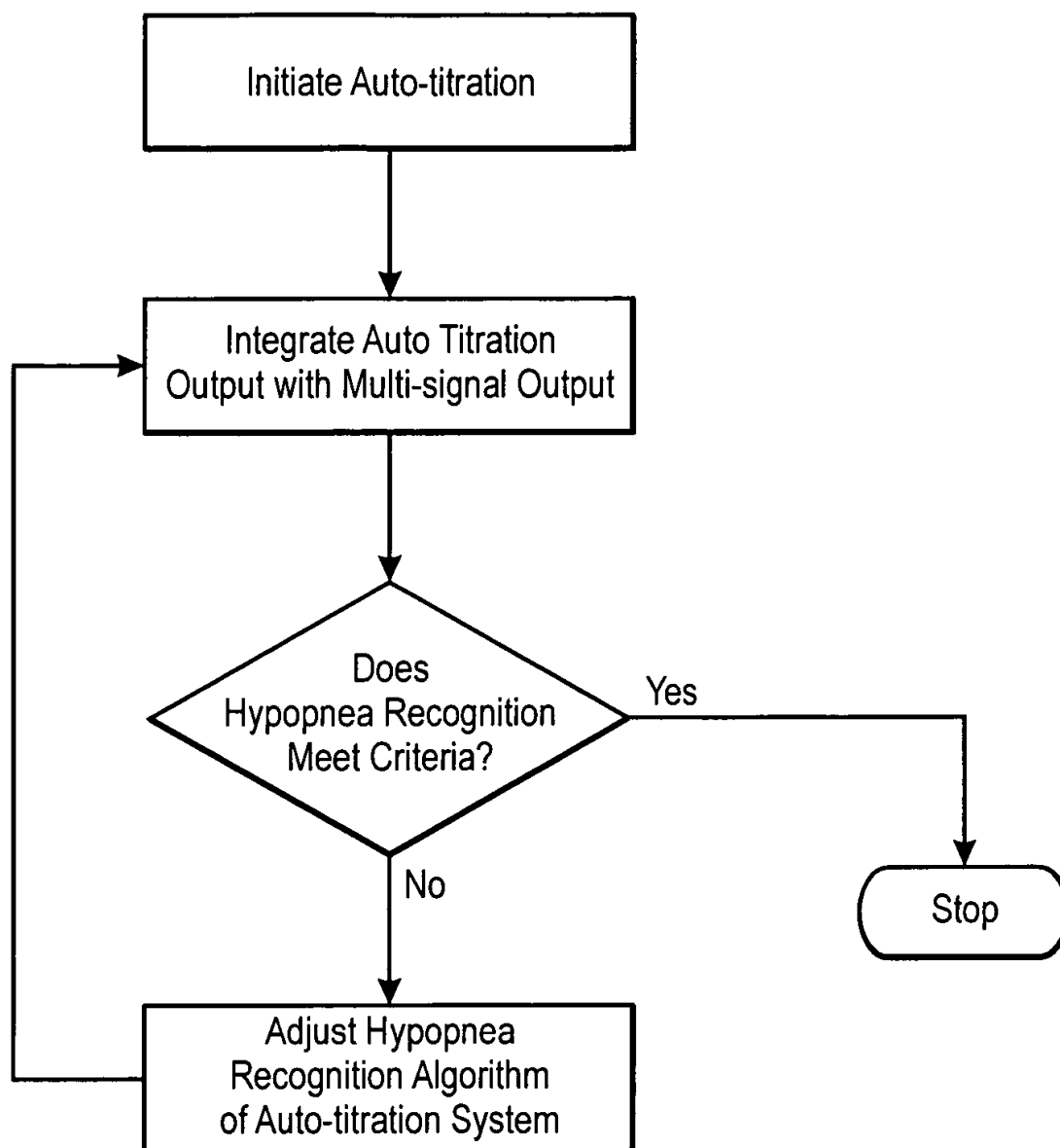
Family 27/100 - FAMPAT - ©Questel

**Title**

(US8152732)

Microprocessor system for the analysis of physiologic and financial datasets

**Images**

**Abstract**

(US8152732)

A system and method for organization and analysis of complex and dynamically interactive time series is disclosed. One example comprises a processor based system for relational analysis of physiologic signals for providing early recognition of catastrophic and pathologic events such as pathophysiologic divergence. The processor is programmed to identify pathophysiologic divergence of at least one of first and second physiologic parameters in relationship to the other and to output an indication of the divergence. An object-based method of iterative relational processing waveform fragments in the time domain is described wherein each more complex waveform object inherits the characteristics of the waveform objects from which it is derived. The first physiologic parameter can be the amplitude and frequency of the variation in chest wall impedance or nasal pressure and the second parameter can be a measure or indication of the arterial oxygen saturation.

**Inventors**

LYNN LAWRENCE A

LYNN ERIC N

**Publication dates**

2007-06-28

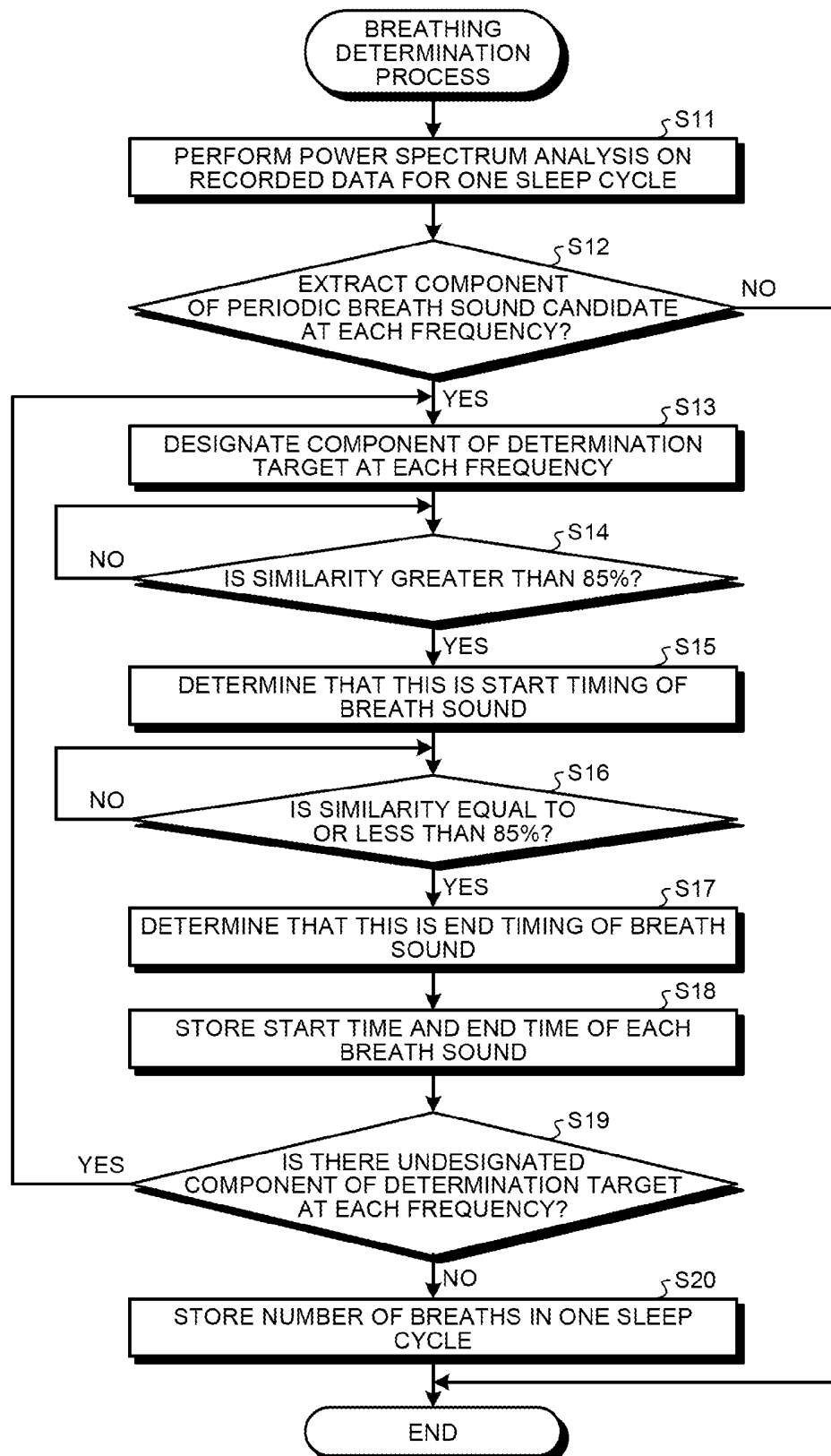
2012-04-10

Family 28/100 - FAMPAT - ©Questel

**Title**

(EP2653107)

Apnea determining program, apnea determining device, and apnea determining method

**Images**

**Abstract**

(EP2653107)

A portable terminal(1) includes a breath determining unit(31) that, when having detected sounds having similar frequency components periodically in picked-up sounds by a microphone while an object person is being asleep, determines the sounds to be breath sounds.The terminal includes a snore determining unit(32) that, when the sound pressure of the breath sounds is greater than a first level threshold value, determines the sounds to be a snoring sound.The terminal includes a body motion determining unit(34) that determines whether a body motion is detected after the breath sounds are determined.The terminal further includes an apnea determining unit(33) that determines whether a silent interval is detected from a period of time between timings of the breath sound and the body motion when the body motion is detected and that determines the silent interval to be an apnea state when the silent interval is detected.

**Inventors**

NISHIDA ASAKO

**Latest standardized assignees - inventors removed**

FUJITSU

**Publication dates**

2013-10-23

2013-10-24

2013-10-30

2013-10-31

2016-01-20

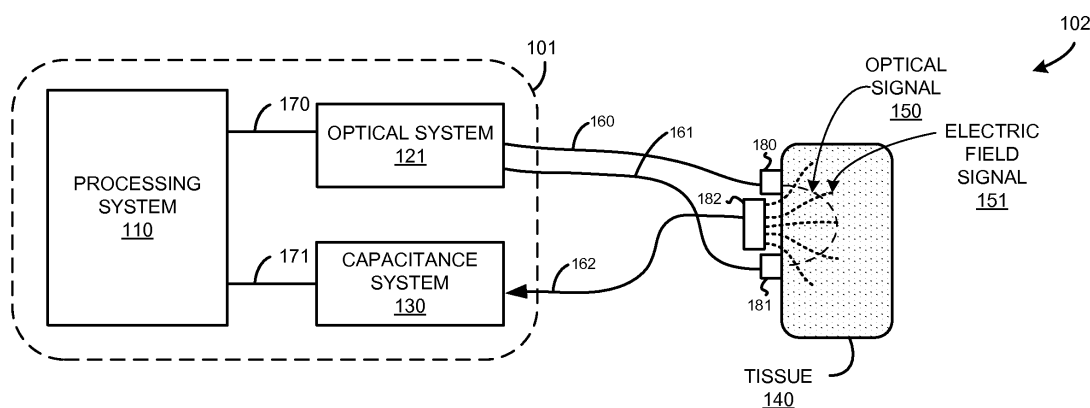
2016-06-29

Family 29/100 - FAMPAT - ©Questel

**Title**

(WO201585046)

Capacitance enhanced physiological measurements

**Images****Abstract**

(WO201585046)

Systems, methods, apparatuses, and software for measuring and determining physiological parameters of a patient are presented.In one example, a physiological measurement system includes a physiological sensor system configured to detect a physiological signal representative of one or more physiological parameters associated with a patient.The measurement system also includes a capacitance system configured to apply one or more electric field signals to the patient and determine a capacitance signal.The measurement system also includes a processing system configured to reduce a noise level in the physiological signal based on at least the capacitance signal.

**Inventors**

LISOGURSKI DANIEL

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SCHLOTTAU FRISO

**Latest standardized assignees - inventors removed**

COVIDIEN

**Publication dates**

2015-06-11

2015-06-11

2016-10-11

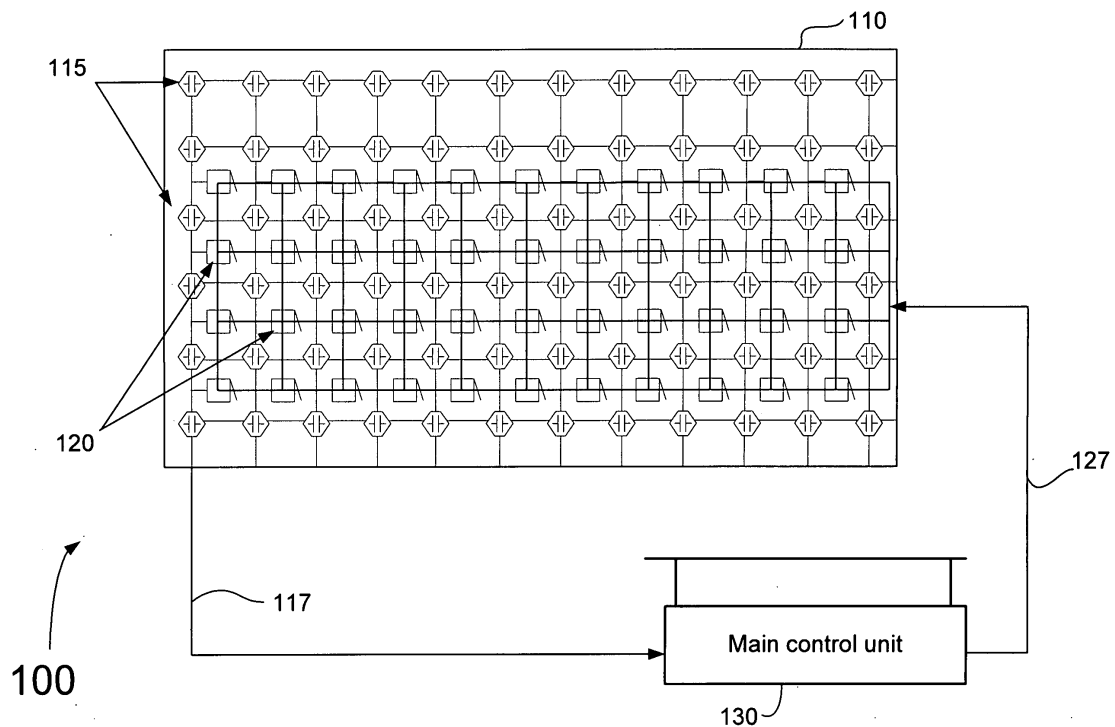
2016-12-29

Family 30/100 - FAMPAT - ©Questel

**Title**

(US20100191136)

System, pad and method for monitoring a sleeping person to detect an apnea state condition

**Images****Abstract**

(US20100191136)

A system, pad and method of monitoring a sleeping person to detect an apnea state condition enables the person to be subject to a tactile action. In the system, a pad is provided beneath the person, and a plurality of independent position sensors are arranged within the pad for measuring movement of the person at different locations. A main control unit in electrical communication with the position sensors, and a plurality of independent vibration devices are arranged within the pad and in electrical communication with the main control unit. The main control unit is configured to receive signals from the position sensors indicative of a stoppage of breathing in the person for a given duration, and to transmit control signals to cause the vibration devices to generate a tactile action in the pad so as to jog the person out of the apnea state.

**Inventors**

WOLFORD DANETTE K

**Publication dates**

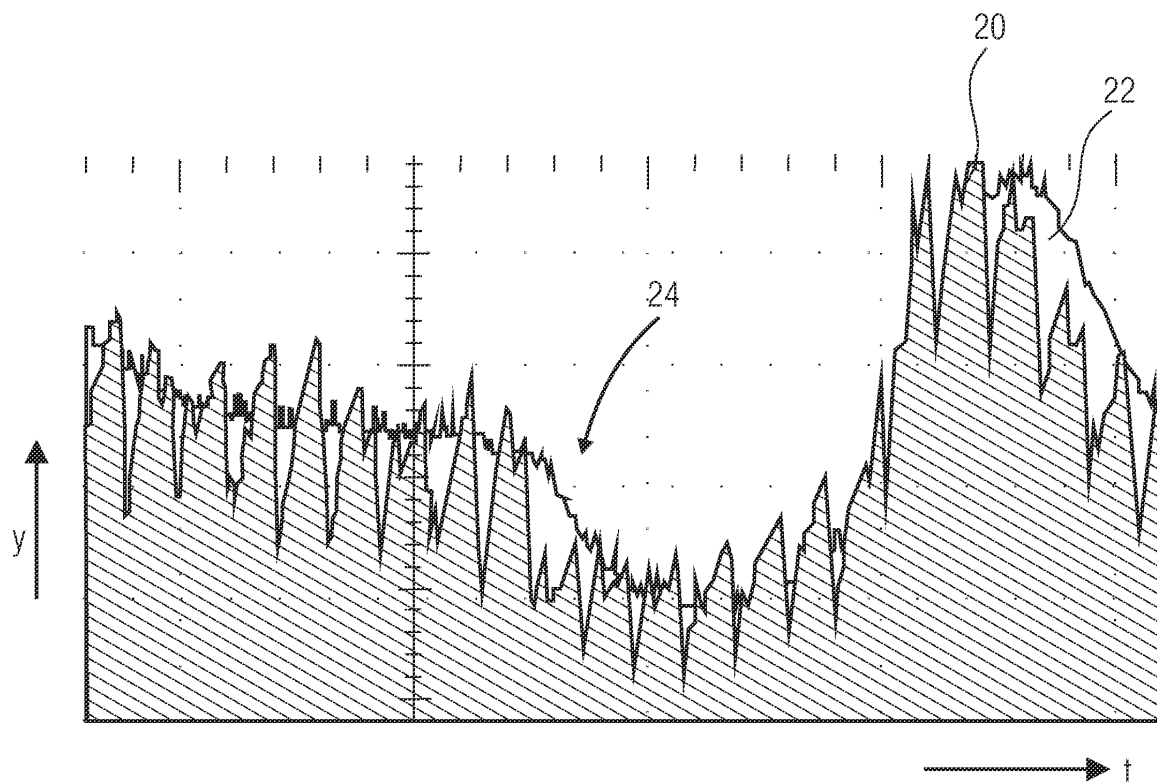
2010-07-29

Family 31/100 - FAMPAT - ©Questel

**Title**

(EP2162061)

Detection of an apnoea by means of a signal dependent on blood pressure

**Images****Abstract**

(EP2162061)

An apnoea can be detected when a change in the signal curve for a pulse wave signal for a pulse wave signal which is already recorded depending on blood pressure fulfils a given detection criterion.

**Inventors**

MOERSDORF HANS-JOACHIM

ASCHENBRENNER STEFAN

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**Latest standardized assignees - inventors removed**

FRAUNHOFER

**Publication dates**

2008-10-30

2008-11-13

2010-03-17

2010-05-13

2012-05-02

2012-05-15

2012-09-18

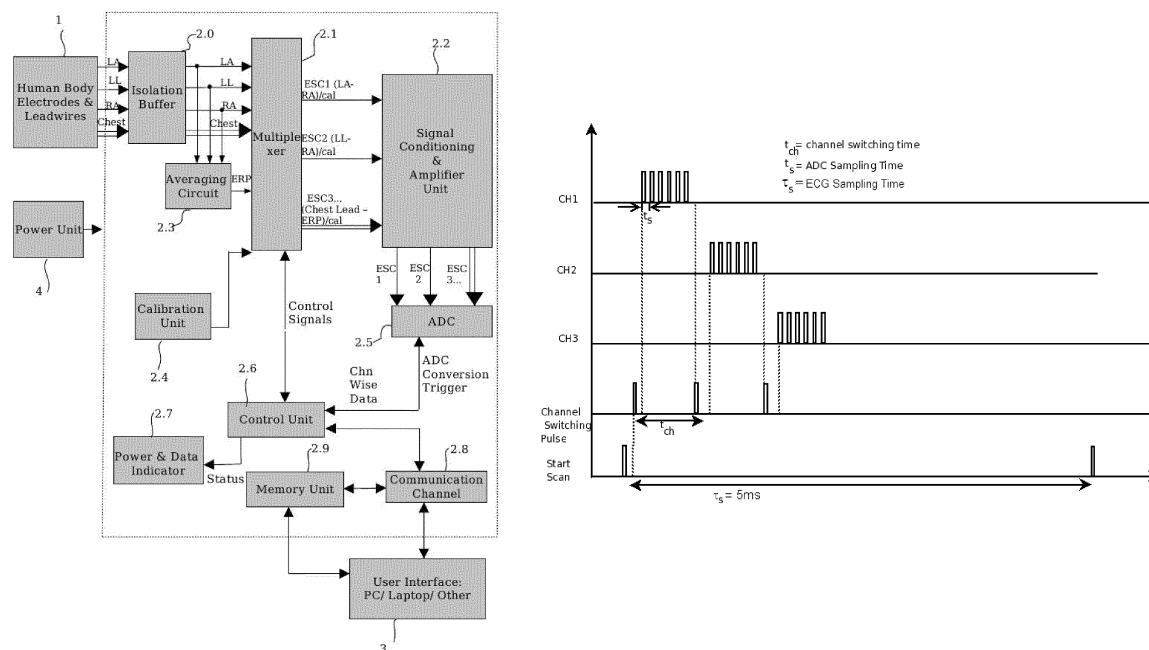
Family 32/100 - FAMPAT - ©Questel

**Title**

(WO2010103542)

Ecg device with impulse and channel switching adc noise filter and error corrector for derived leads

## Images



## Abstract

(WO2010103542)

The present invention provides a device and method for filtering impulsive noise and channel switching noise at ADC (2,5) in an ECG device with multiplexed ESCs. The filtering is based on an implementation of Burst Sampling technique also a method for correcting errors in derived leads caused by time delays due to sequential sampling of different ECG signals is also provided. Real time digital FIR filters are used for removing other types of noise in ECG signals. The ECG device is compact and light weight and includes features of self calibration, clip detection and drawing of power from USB port of a PC, batteries or an external power source. The ECG monitoring device of the present invention measures real time ECG signals with automated data recording, data storage and retrieval, data transmission/ transfer to an external system, along with parameter extraction for ECG analysis in an efficient manner for quick and reliable ECG measurement, in an extremely cost effective manner.

## Inventors

MEHROTRA RAVI

MOHD ANSARI IMRAN

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CHADHA DEEPTI

SHARMA ANJALI

**Latest standardized assignees - inventors removed**

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

## Publication dates

2010-09-16

2010-10-01

2011-01-14

2011-04-14

2011-10-28

2011-12-29

2012-04-18

2014-05-20

2014-10-22

2015-11-01

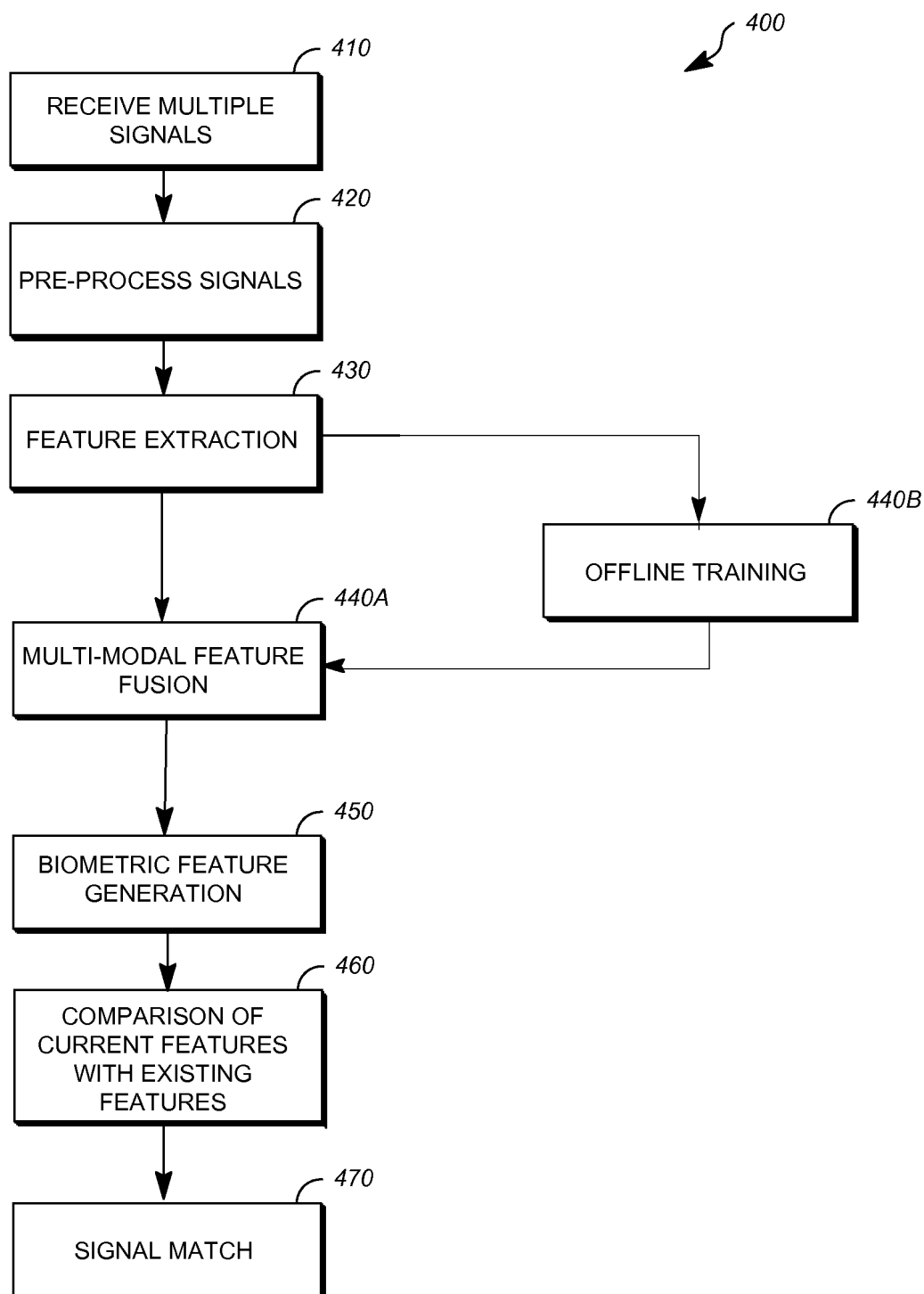
2017-04-14

Family 33/100 - FAMPAT - ©Questel

**Title**

(WO201758595)

Method, apparatus and system for biometric identification

**Images****Abstract**

(WO201758595)

A method and apparatus for processing a biometric measurement signal include receiving a biometric measurement record

associated with a biometric measurement generated by contact with a single individual and extracting, by the computing device and for the biometric measurement record, feature data including periodic features extracted from the biometric measurement record. The method and apparatus further include determining, by the computing device, pairing data comprising similarity values for a plurality of candidate pairs between the feature data and defined profiles associated with a known individual, where at least one of the similarity values is determined between a periodic feature of the feature data and a defined profile associated with the known individual. The method and apparatus further include determining whether a match exists between the single individual and the known individual based on a combination of the similarity values determined for the plurality of candidate pairs.

**Inventors**

WANG FEI

CHEN TING

**Latest standardized assignees - inventors removed**

HUAMI

**Publication dates**

2017-03-30

2017-03-30

2017-03-30

2017-04-06

2017-04-06

2017-10-10

2017-11-21

2017-12-21

2018-03-08

2018-04-17

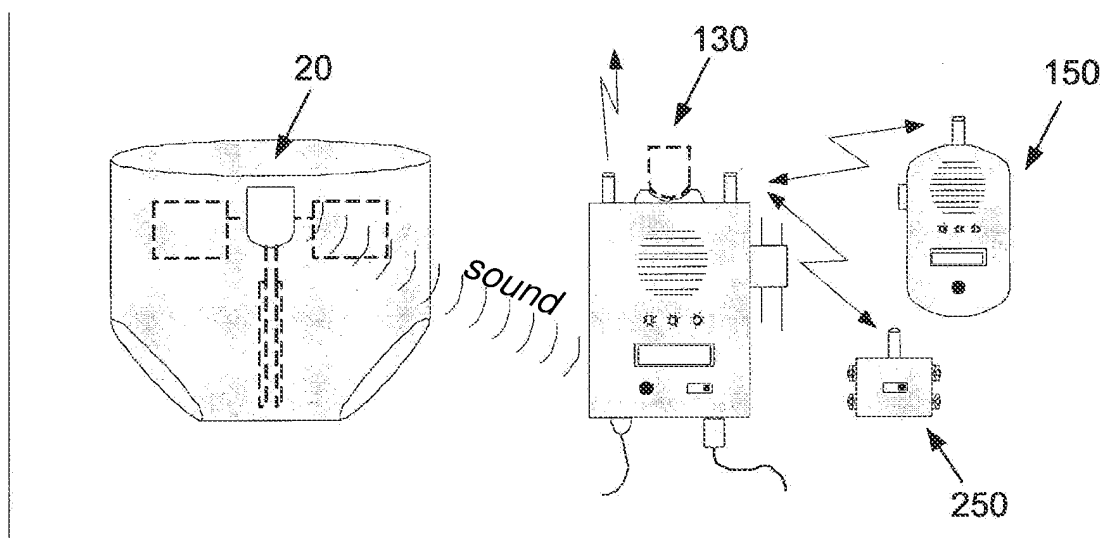
2018-04-17

Family 34/100 - FAMPAT - ©Questel

**Title**

(EP2222226)

System for detecting apnea

**Images****Abstract**

(EP2222226)

An apnea detector is disclosed. A detector unit in communication with a capacitive type sensor is adapted to receive an

electrical signal which is indicative of variable capacitance resulting from movement of a subject and to emit an alert signal when the received electrical signal is indicative of symptoms of apnea. The detector unit is attached to an article of clothing, such as a diaper. In one embodiment, a detector unit is in communication with a curvature sensor adapted to detect a variable curvature of a subject body surface resulting from breathing patterns of a subject. The detector unit is attached to an article of clothing of the subject. A monitoring system comprises a detector unit for detecting one or more subject related parameters of interest and for emitting acoustical information after determining that a subject related parameter of interest has a predetermined status, and a stationary unit disposed within an audible range of the detector unit for receiving the emitted acoustical information.

**Inventors**

RAHAMIM SHAKED

ELYADA ORI

**Latest standardized assignees - inventors removed**

SHAKED RAHAMIM

ORI ELYADA

**Publication dates**

2008-02-09

2009-04-23

2009-07-16

2010-09-01

2010-12-15

2010-12-30

2011-01-20

2012-05-30

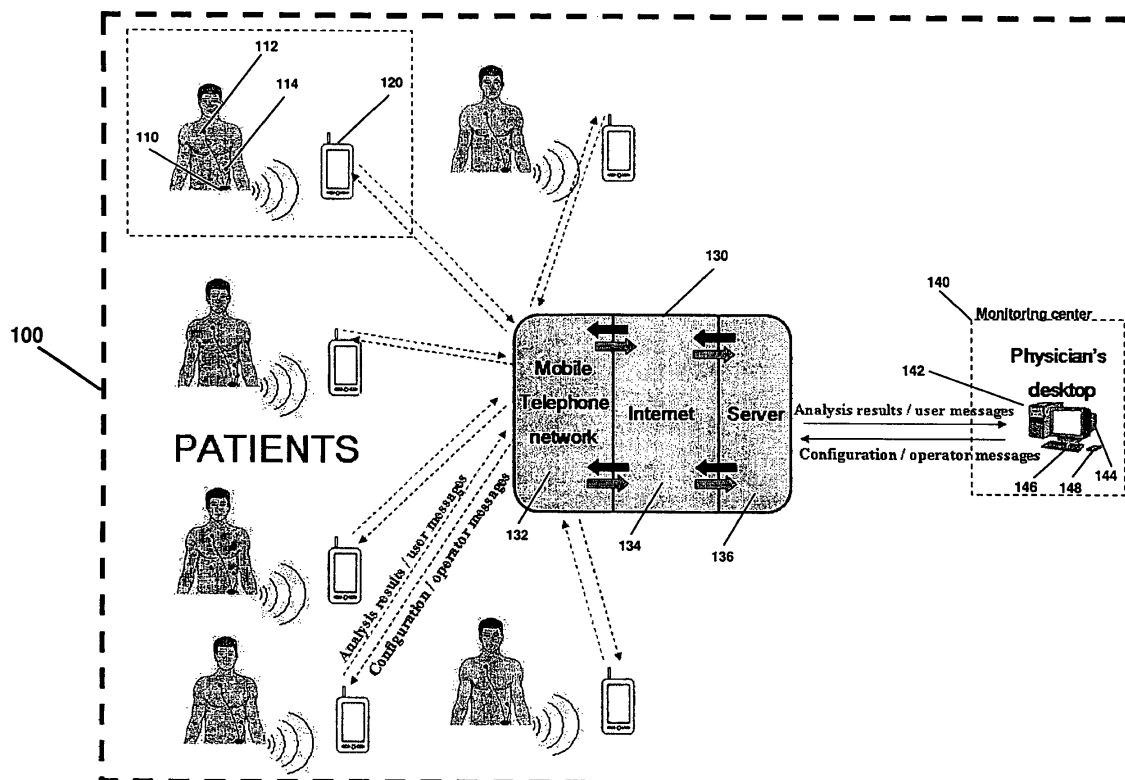
Family 35/100 - FAMPAT - ©Questel

**Title**

(US9846764)

Systems for safe and remote outpatient ECG monitoring

**Images**



## Abstract

(US9846764)

A system and method providing outpatient ECG monitoring and safe home based cardiac tele-rehabilitation. The system includes a recordation module for recording ECG signals using at least one lead, a tele-rehabilitation module for home based exercise management for a patient's recovery, the tele-rehabilitation module including a processing module for recognizing erroneous data from the ECG signals and an analysis module for calculating beat-to-beat annotations and determining if an ECG event and/or if a QT interval duration change has occurred. The system can include an exercise module for guiding the patient during an exercise session, a visual display that informs the patient to start and/or to stop the tele-rehabilitation exercise, a visual display and/or audible signal that informs the patient of an incoming or a missed tele-rehabilitation exercise session, and/or a communication module for transmitting/receiving data between the a cardiac tele-rehabilitation module and a physician/monitoring center.

## Inventors

DZIUBINSKI MAREK  
 PIOTROWICZ RYSZARD  
 PIOTROWICZ EWA  
 BARANOWSKI RAFAL

**Latest standardized assignees - inventors removed**

MEDICALGORITHMICS

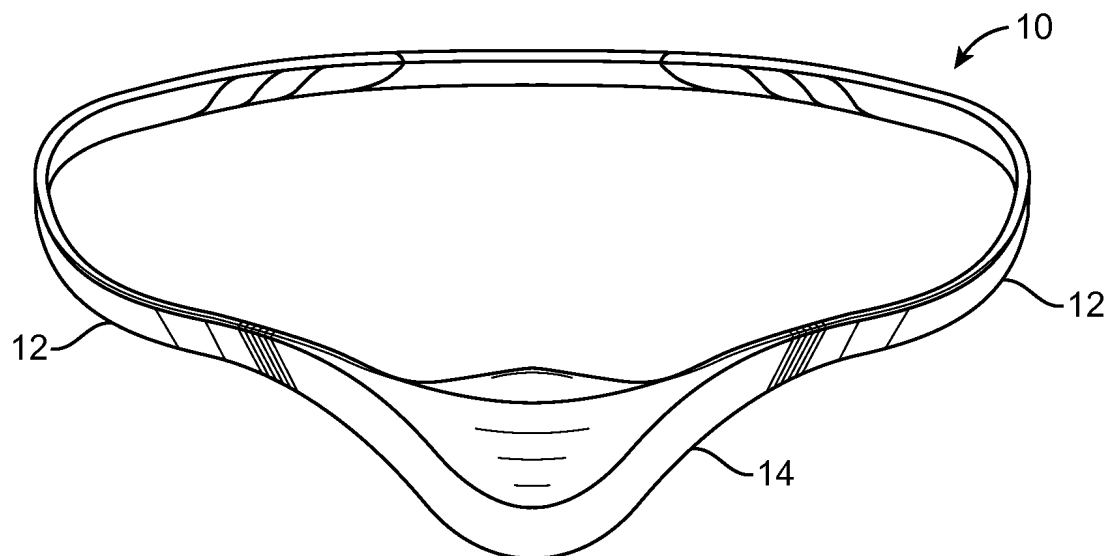
## Publication dates

2015-01-15  
 2016-02-11  
 2016-05-31  
 2016-08-25  
 2017-12-19  
 2018-03-29

**Title**

(EP2981330)

Devices and methods for airflow diagnosis and restoration

**Images****Abstract**

(EP2981330)

Devices for monitoring patient breathing comprise a collar having a microprocessor and memory which is connectable to a plurality of sensors. Therapeutic devices comprise similar diagnostic capabilities and further provide energy delivery elements for stimulating a patient's upper respiratory muscles in order to terminate and an apneic or snoring event.

**Inventors**

AHMAD WASEEM

SHAIKH WASEEM A

FARAQUI AAMIR A

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KHATRI ABDUL RAHIM

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**Latest standardized assignees - inventors removed**

INTELLIGENT WIDGETS

**Publication dates**

2014-10-09

2015-03-12

2016-01-27

2016-02-10

2016-06-02

2017-01-04

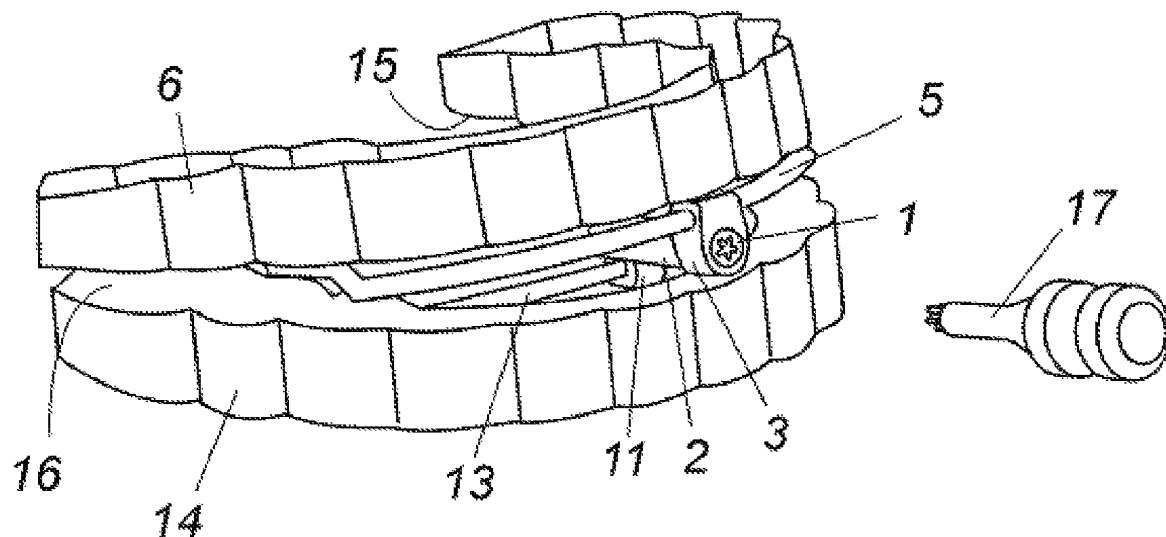
Family 37/100 - FAMPAT - ©Questel

**Title**

(EP2491901)

Regulatable intraoral mandibular advancement device, for preventing snoring and sleep apnoea

**Images**

**Abstract**

(EP2491901)

The invention relates to a regulatable intraoral mandibular advancement device that can be used to prevent snoring and sleep apnoea. Said device comprises two splints connected by a central screw (1) inserted into a sheath (2) comprising an upper ring (3), said sheath being used as a guiding housing (4) for an upper bar (5) of an upper plate (6), and the lower part of the sheath comprising a longitudinal groove (8) enabling the course of an inner mobile threaded (10) ring (9) that is displaced by the screw (1), and on which a lower displacement ring (11) is arranged, open or closed, said ring being provided with a perpendicular hole (12) with ellipsoidal conicity, in which the lower bar (13) fixed to the lower maxillary plate (14) is inserted. Said screw (1) is locked to the sheath (2) on its rear part.

**Inventors**

GARCIA URBANO JES S

**Latest standardized assignees - inventors removed**

LABORATORIO ORTOPLUS

**Publication dates**

2011-02-24

2011-02-24

2011-09-20

2012-02-13

2012-05-10

2012-05-23

2012-08-09

2012-08-29

2012-09-10

2012-10-24

2012-12-04

2013-03-07

2013-11-10

2014-02-19

2014-07-16

2014-07-23

2014-10-29

2014-12-27

2015-07-16

2015-08-05

2015-08-21

2016-05-24

Family 38/100 - FAMPAT - ©Questel

**Title**

(US4765340)

Apnea detector

**Images**



A medical apparatus for detecting apnea, in particular, in infants and children. The apparatus measures oxygen saturation in the blood and relates the measurement to a normal condition. The relationship is employed to indicate apnea.

**Inventors**

SAKAI TAKAO

HAMAGURI KENJI

**Latest standardized assignees - inventors removed**

KONICA MINOLTA

**Publication dates**

1986-10-13

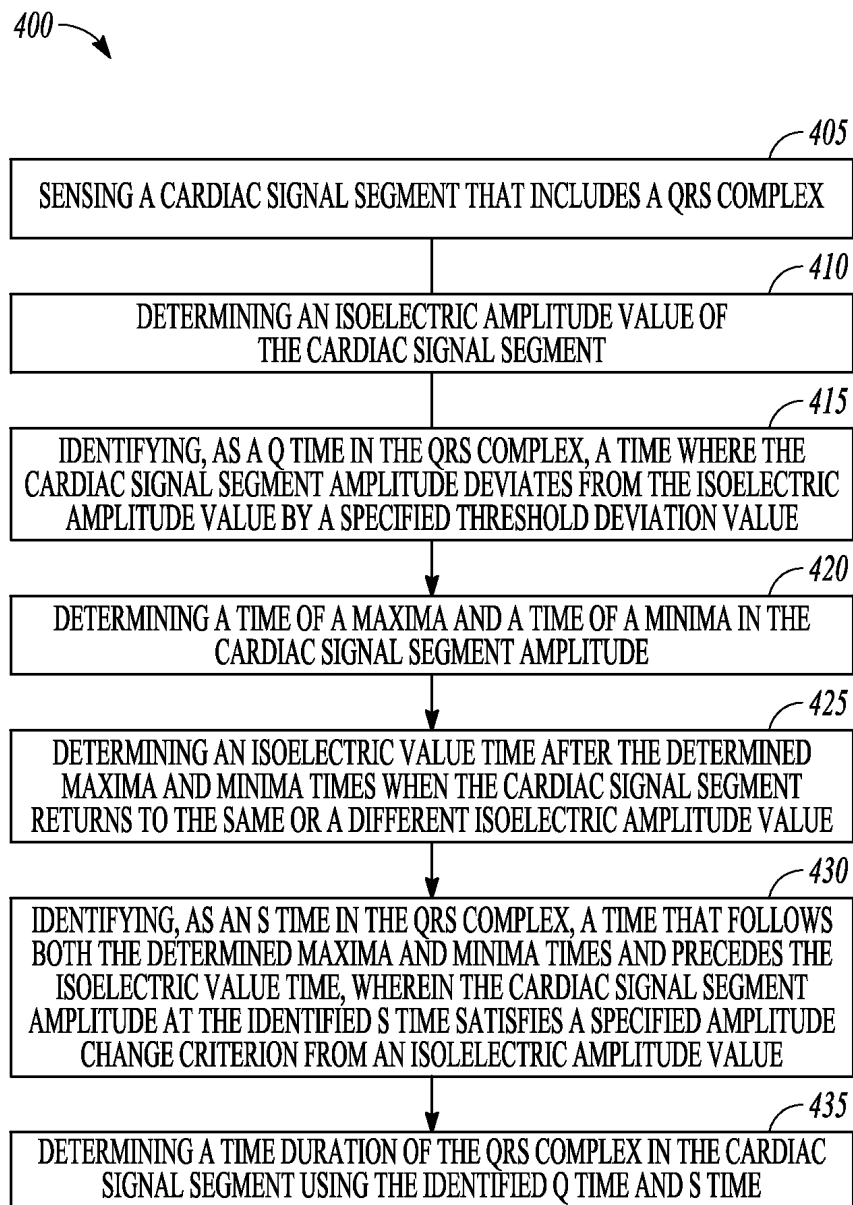
1988-08-23

Family 39/100 - FAMPAT - ©Questel

**Title**

(US9713432)

Wide QRS detector

**Images**

(US9713432)

A system comprises a cardiac signal sensing circuit and a processor circuit. To detect a QRS duration, the processor circuit determines an isoelectric amplitude value of the cardiac signal segment, identifies a time where the cardiac signal segment amplitude deviates from the first isoelectric amplitude value by a specified threshold deviation value as a Q time, determines an isoelectric value time after the determined maxima and minima times that the cardiac signal segment returns to the same or a different isoelectric amplitude value, identifies a time that follows both the determined maxima and minima times and precedes the isoelectric value time as an S time, wherein the cardiac signal segment amplitude at the identified S time satisfies a specified amplitude change criterion from an isoelectric amplitude value, and determines a time duration of the QRS complex in the cardiac signal segment using the identified Q and S times.

**Inventors**

PATANGAY ABHILASH

SHOME SHIBAJI

THAKUR PRAMODSINGH HIRASINGH

LI DAN

MARTIN STEVENS L

**Latest standardized assignees - inventors removed**

CARDIAC PACEMAKERS

**Publication dates**

2012-12-06

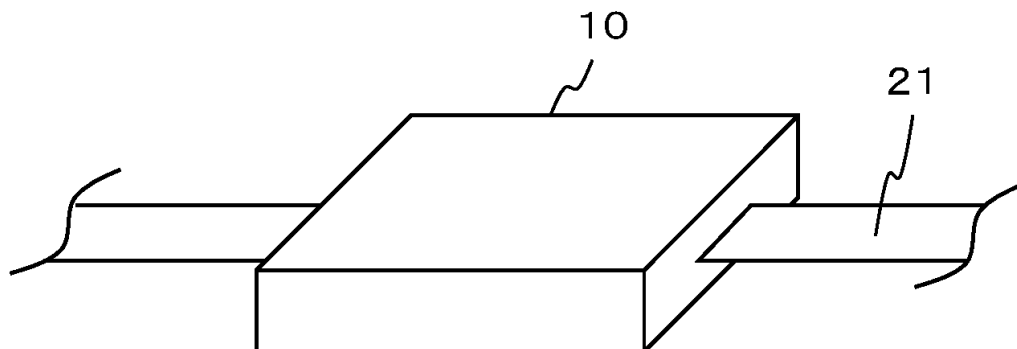
2017-07-25

Family 40/100 - FAMPAT - ©Questel

**Title**

(EP3260045)

Apnea detection device

**Images****Abstract**

(EP3260045)

The present invention includes a detection unit 13 that detects an apneic condition of a user on the basis of acceleration information measured by an acceleration sensor 11 that detects body movement as acceleration and angular velocity information measured by an angular velocity sensor 12 that detects body movement as angular velocity. Apnea during sleep can be more accurately detected by determining the apneic condition only if both the acceleration measured by the acceleration sensor 11 and the angular velocity measured by the angular velocity sensor 12 indicate the apneic condition.

**Inventors**

YAO BINGWEI

**Latest standardized assignees - inventors removed**

E3

**Publication dates**

2017-08-16

2017-09-28

2017-12-27

2018-03-29

2018-04-19

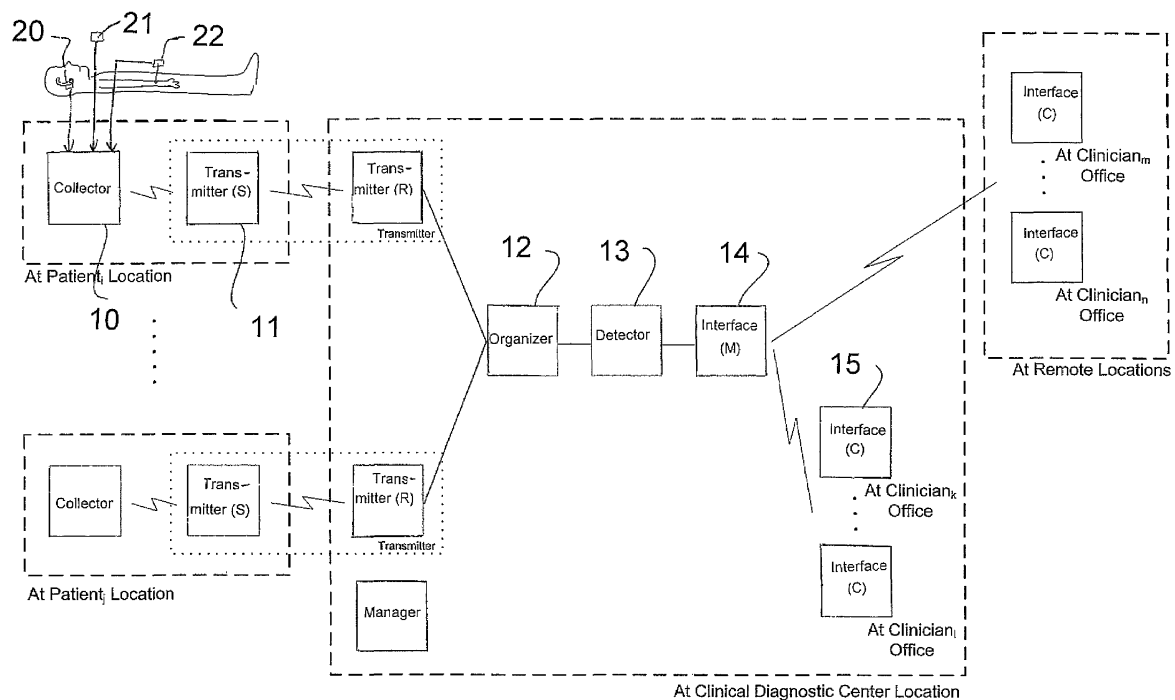
2018-05-23

Family 41/100 - FAMPAT - ©Questel

**Title**

(WO2008116318)

Breathing sound analysis for estimation of air flow rate

**Images****Abstract**

(WO2008116318)

Apparatus for use detection of apnea includes a microphone mounted in the ear of the patient for detecting breathing sounds and a second external microphone together with an oximetric sensor. A transmitter at the patient compresses and transmits the signals to a remote location where there is provided a detector module for receiving and analyzing the signals to extract data relating to the breathing. The detector uses the entropy or range of the signal to generate an estimate of air flow while extracting extraneous snoring and heart sounds and to analyze the estimate of air flow using Otsu's threshold to detect periods of apnea and/or hypopnea. A display provides data of the detected apnea/hypopnea episodes and related information for a clinician.

**Inventors**

MOUSSAVI ZAHRA

YADOLLAHI AZEDEH

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**Latest standardized assignees - inventors removed**

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**Publication dates**

2008-10-02

2008-10-02

2008-10-02

2009-07-14

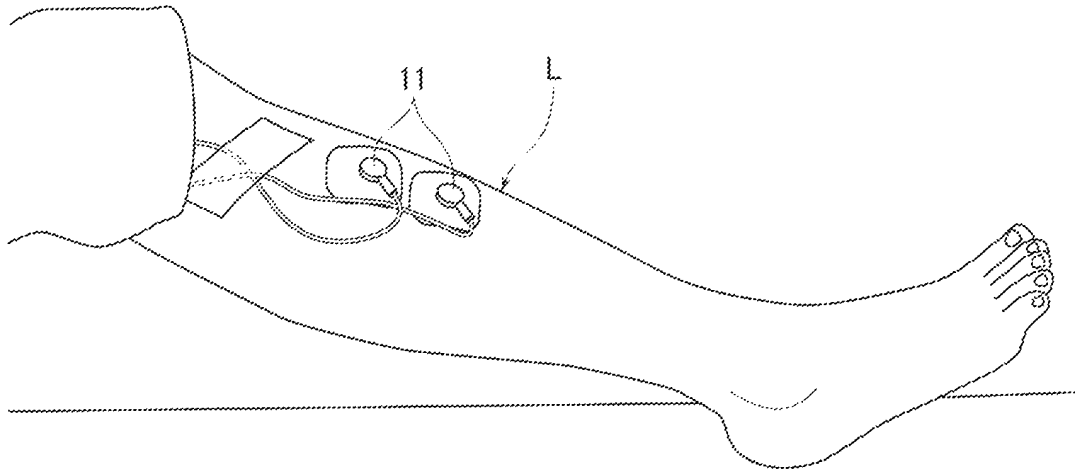
2009-07-16

Family 42/100 - FAMPAT - ©Questel

**Title**

(WO201413999)

Dementia differentiation device

**Images****Abstract**

(WO201413999)

According to the present invention, a leg movement acquisition unit (1) continuously acquires leg movements of a sleeping subject. An apnea detection unit (2) detects whether or not the subject is in a state of apnea. A movement analysis unit (3) determines whether or not the leg movements satisfy previously determined conditions. Herein, the previously determined conditions comprise at least conditions (a) to (d): (a) the duration of continuous leg movement is within a previously determined range; (b) the intensity of leg movement is a previously determined value or greater; (c) leg movements satisfying conditions (a) and (b) are continued for a previously determined number of iterations or more within a previously determined duration; (d) no movement from immediately before until immediately after a state of apnea detected by the apnea detection unit. A coefficient calculation unit (4) calculates a coefficient that is based on the number of iterations of leg movements that satisfy the previously determined conditions. An output unit (6) outputs either the coefficient or a determination result that is based on the coefficient.

**Inventors**

YAMAGUCHI YASUHIRO

OUCHI YASUYOSHI

HIBI SHINICHIRO

**Latest standardized assignees - inventors removed**

UNIVERSITY OF TOKYO

**Publication dates**

2014-01-23

2014-06-11

2015-09-17

2016-07-07

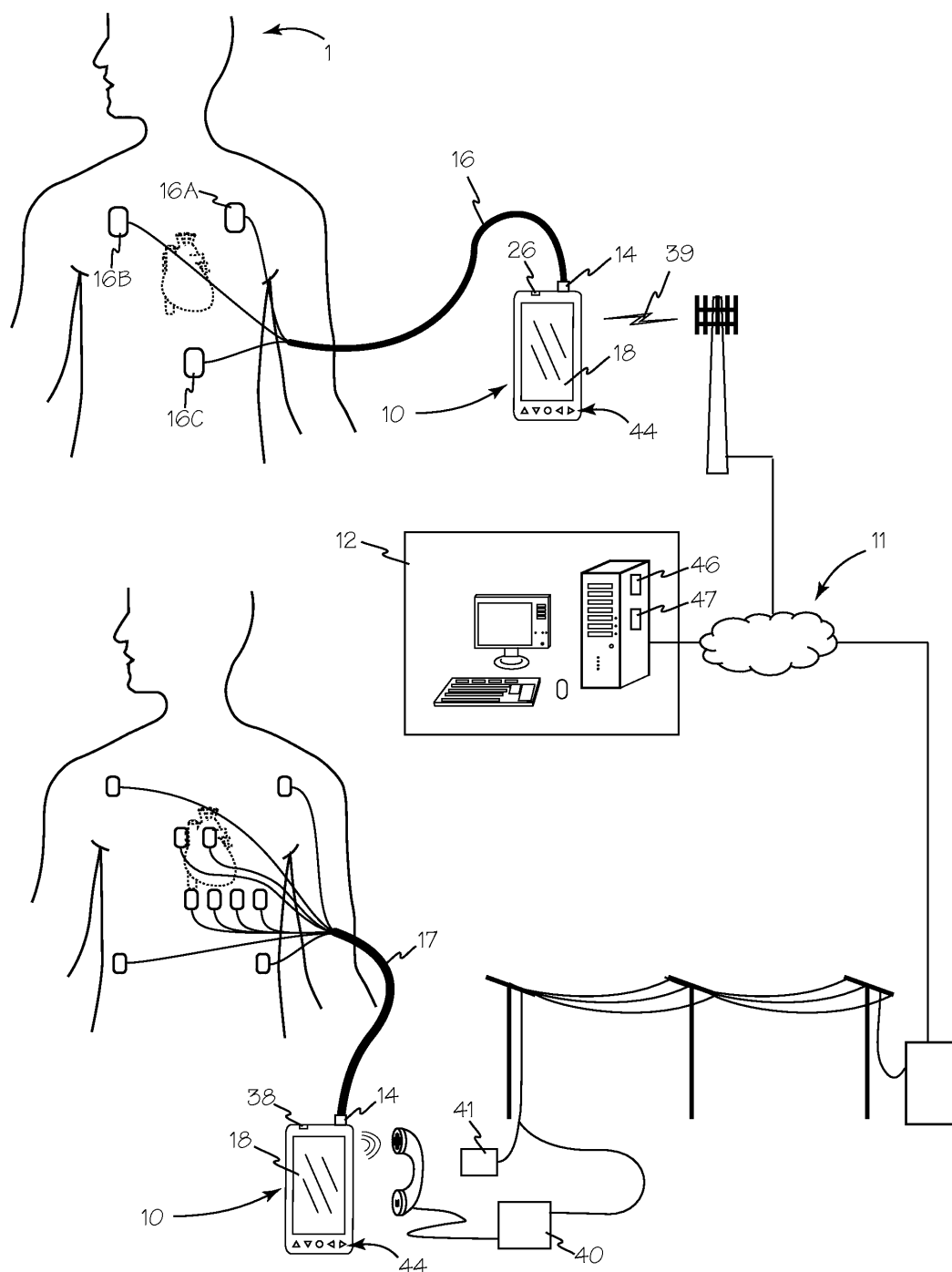
2016-10-11

Family 43/100 - FAMPAT - ©Questel

**Title**

(US9808165)

Multi-function health monitor with integrated cellular module

**Images****Abstract**

(US9808165)

A system and method for a multi-function remote ambulatory cardiac monitoring system. The system includes a housing and a microprocessor disposed within the housing. The microprocessor controls the remote ambulatory cardiac monitoring system. The system also includes an electrode for sensing ECG signals and the electrode being in communication with the microprocessor. An integrated cellular module also is included in the system, and the cellular module is connected to the microprocessor and disposed within the housing. The integrated cellular module transmits ECG signals to a remote center.

**Inventors**

MANERA LOREN A

**Latest standardized assignees - inventors removed**

APPLIED CARDIAC SYSTEMS

**Publication dates**

2011-11-03

2013-12-19

2015-03-03

2015-08-27

2016-01-19

2016-04-28

2017-11-07

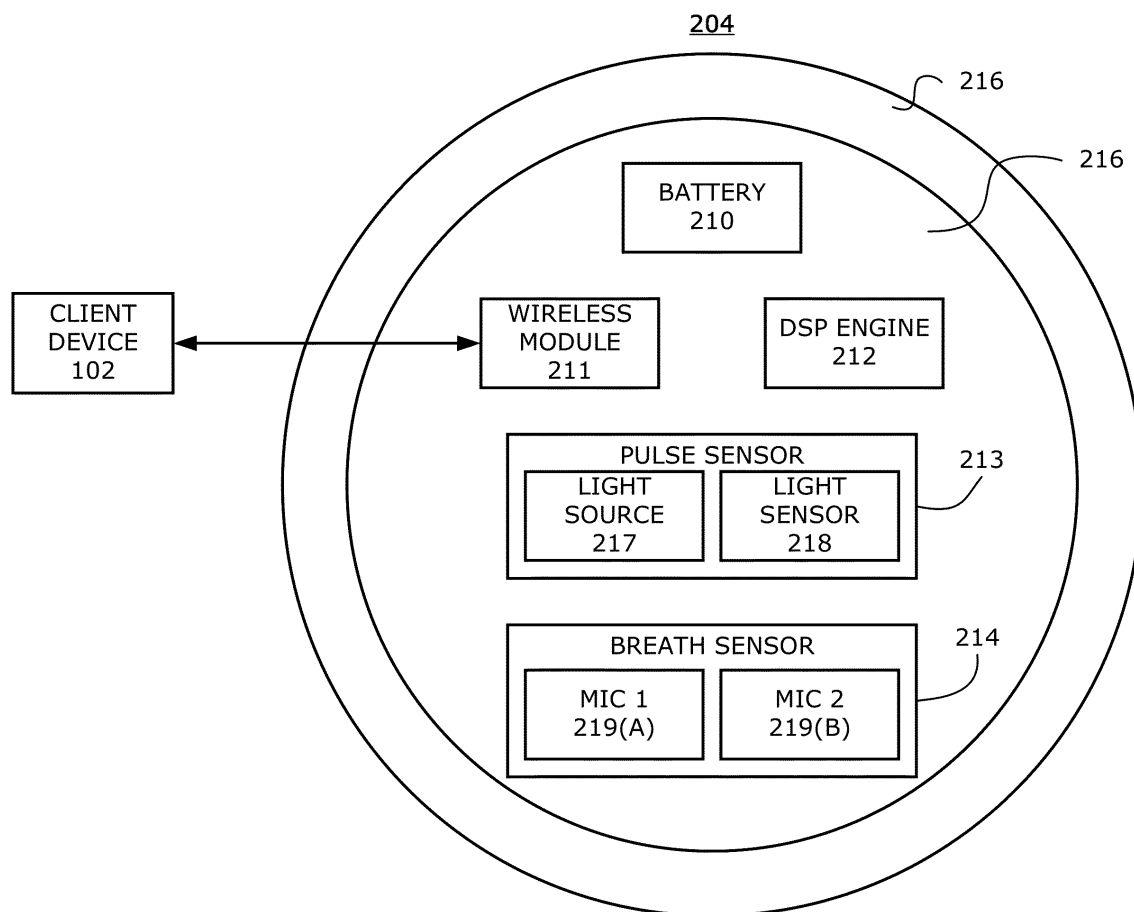
2018-03-01

Family 44/100 - FAMPAT - ©Questel

**Title**

(WO201649285)

Systems and methods for digital predictive disease exacerbation and pre-emptive treatment

**Images****Abstract**

(WO201649285)

The system described herein collects patient data passively and non-passively via onboard and external sensors, and combines the data with past clinical history to generate digital biomarkers. The collected data can also be further combined with other data generating systems to more accurately predict disease exacerbations. The system monitors the digital biomarkers in real-time, and can detect a change in the disease state prior to clinical decompensation and suggest pre-emptive intervention. The system enables a patient to be treated early in the clinical timeline when the disease exacerbation is at the subclinical level rather than waiting until the disease exacerbation reaches the clinical level. Acting when the

exacerbation is at the subclinical level enables preemptive treatment rather than reactive treatment, which is often more cost effective while improving clinical outcomes. The system is able to make the predictions by detecting subclinical changes in digital biomarkers that are generated from respiratory, cardiac, patient reported symptoms, user behaviors, and environmental triggers.

**Inventors**

KAKKAR RAHUL

COLLIER CYAN

SANGANEE HITESH

**Latest standardized assignees - inventors removed**

AEDIO

**Publication dates**

2016-03-31

2016-03-31

Family 45/100 - FAMPAT - ©Questel

**Title**

(EP-956066)

Apparatus for optimizing the continuous positive airway pressure for treating obstructive sleep apnea

**Images**

## U.S. PATENT DOCUMENTS

|           |         |                 |
|-----------|---------|-----------------|
| 5,107,831 | 4/2/92  | Haldem...       |
| 5,124,995 | 8/2/92  | Gucenko et al.  |
| 5,148,802 | 9/2/92  | Sanders et al.  |
| 5,199,721 | 4/7/93  | Sullivan et al. |
| 5,203,343 | 4/2/93  | Axe et al.      |
| 5,245,995 | 9/2/93  | Sullivan et al. |
| 5,259,573 | 11/2/93 | Gimcke et al.   |
| 5,313,957 | 8/7/94  | Zdrojowski      |
| 5,335,654 | 8/7/94  | Rapoport        |
| 5,353,788 | 10/2/94 | Miles           |
| 5,456,264 | 10/2/95 | Series et al.   |
| 5,488,157 | 10/2/95 | Axe et al.      |

## OTHER PUBLICATIONS

"Unattended CPAP Titration: Toward a Smart Machine", C. G. Jermin et al., *Sleep Research* 21, 1992, p. 342.  
 "Development and Application of an Automatic Nasal CPAP Calibration Procedure for use in the Unsupervised Home Environment", L.L. Miles et al., *Sleep Research* 21, 1992, p. 352.  
 "Ventilators", DuBois, CV Mosby Co., 1986, pp. 107-117.  
 "Digital Computation & Numerical Methods", Southworth, McGraw-Hill Co., 1965, pp. 6-10.  
 "Sleep Apnea—Diagnosis and Treatment", *Topics in Primary Care Medicine*, *The Western Journal of Medicine*, Aug. 1986; 145: 249-250.

"Therapeutic Options for Obstructive Sleep Apnea", *Garay, Respiratory Management*, Jul./Aug. 1987, pp. 11-15.

"Reversal of the 'Pickwickian Syndrome' By Long-Term Use of Nocturnal Nasal-Airway Pressure", Rapoport et al., *New England Journal of Medicine*, Oct. 7, 1982.

"Induction of upper airway occlusion in sleeping individuals with subatmospheric nasal pressure", Schwartz et al., *Journal of Applied Physiology*, 1988, 64, pp. 535-542.

"Reversal of Obstructive Sleep Apnea by Continuous Positive Airway Pressure Applied Through the Noses", Sullivan et al., *Lancet*, 1981, 1, 852-865.

"Techniques for Administering Nasal CPAP", Rapoport, *Respiratory Management*, Jul./Aug. 1987, pp. 18-21.

"Mechanics of the Pharynx in Patients With Obstructive Sleep Apnea", Remmers J.L. et al., *Sleep and Respiration*, 1990, pp. 261-271.

Different Roles for an Automatic Nasal CPAP Calibration Procedure and "SMART PAP", Miles, L.L., *Sleep Research* 21, 1993, p. 238.

"Development and Application of Automatic Nasal CPAP Calibration Procedures for Use in the Unsupervised Home Environment", Miles L.L. et al., *Supplemental Issue: Sleep and Breathing*, vol. 16, Dec. 1993, pp. 8118-8119.

**Abstract**

(EP-956066)

For the treatment of apnea, a method and apparatus are disclosed. The preferred breathing apparatus consists of an analog to digital converter (118), microprocessor (110), a patient supply hose (108), a nose fitting (102), and a pressure transducer (104).

**Inventors**

RAPOPORT DAVID M

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**Latest standardized assignees - inventors removed**

NEW YORK UNIVERSITY

**Publication dates**

1997-08-14  
1997-08-14  
1997-08-28  
1998-09-08  
1999-11-17  
2000-04-18  
2000-08-10  
2001-01-31  
2004-12-08  
2004-12-15  
2005-01-13  
2005-04-18  
2005-06-16  
2005-11-24  
2006-08-01  
2006-09-21  
2007-11-22  
2007-12-19  
2010-05-19

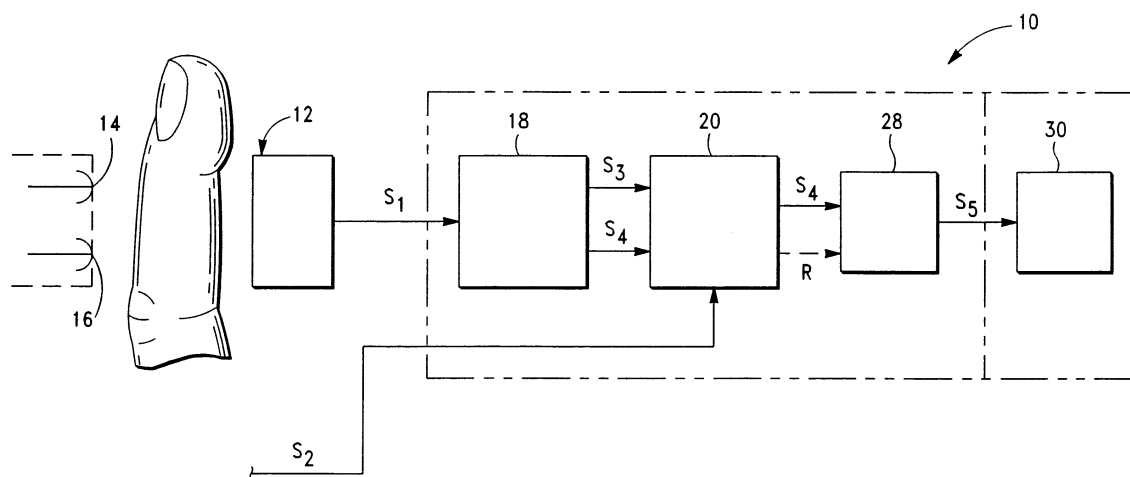
Family 46/100 - FAMPAT - ©Questel

#### Title

(WO200173394)

Method and apparatus for determining physiological characteristics

#### Images



#### Abstract

(WO200173394)

A method for determining physiological characteristics comprising the steps of (a) acquiring a first blood oxygen signal (S<sub>3</sub> & S<sub>4</sub>) from a subject, the blood oxygen signal (S<sub>3</sub> & S<sub>4</sub>) having an undesirable artifact signal component; (b) acquiring an additional physiological signal (S<sub>2</sub>) having a heart rate component using an acquisition technique that is different and independent from the first acquiring step; (c) processing the first blood oxygen signal (S<sub>3</sub> & S<sub>4</sub>) and the physiological signal (S<sub>2</sub>) to provide a first waveform having a reduced level of the artifact signal component therein; (d) processing the first waveform and the physiological signal to provide a reference waveform (R); and (e) processing the reference waveform (R) and the physiological signal to provide a second blood oxygen saturation signal (S<sub>5</sub>) corresponding to the blood oxygen saturation level of the subject.

#### Inventors

STONE ROBERT T

MILLS ALEXANDER K

**Latest standardized assignees - inventors removed**

KINDERLIFE INSTRUMENTS

WOOLSTHORPE TECHNOLOGIES

**Publication dates**

2001-10-04

2001-10-08

2001-11-01

2002-03-14

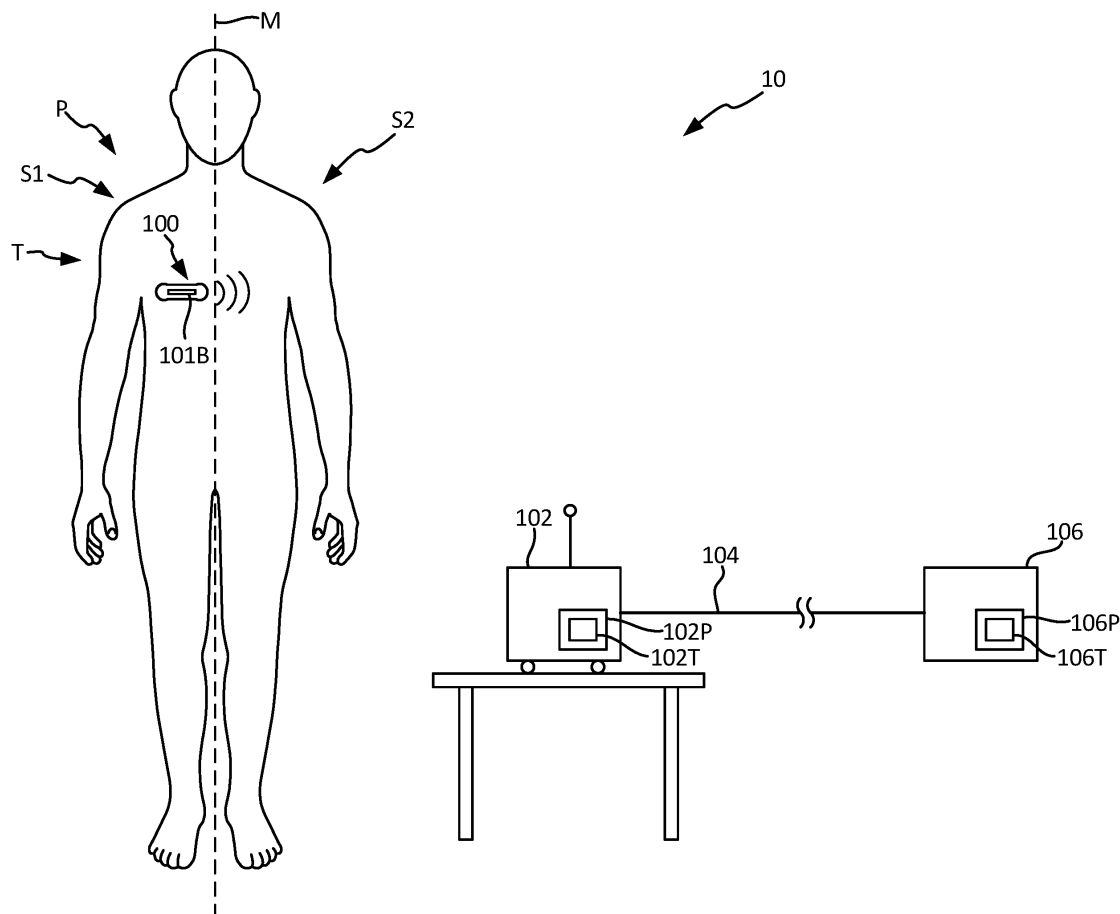
2003-07-15

Family 47/100 - FAMPAT - ©Questel

**Title**

(WO201864122)

System and method for cardiac monitoring using rate-based sensitivity levels

**Images****Abstract**

(WO201864122)

A system and method for detecting arrhythmic electrocardiogram (ECG) signals includes defining a plurality of threshold heart rates and rate-dependent sensitivity levels for detecting arrhythmic ECG episodes, wherein more clinically relevant heart rates are assigned rate-dependent sensitivity levels with higher sensitivities. ECG signals are monitored by a medical device, and monitored ECG signals are processed using the plurality of threshold heart rates and rate-dependent sensitivity levels to detect and capture arrhythmic ECG segments.

**Inventors**

CHAKRAVARTHY NIRANJAN

KATRA RODOLPHE

**Latest standardized assignees - inventors removed**

MEDTRONIC MONITORING

**Publication dates**

2018-03-29

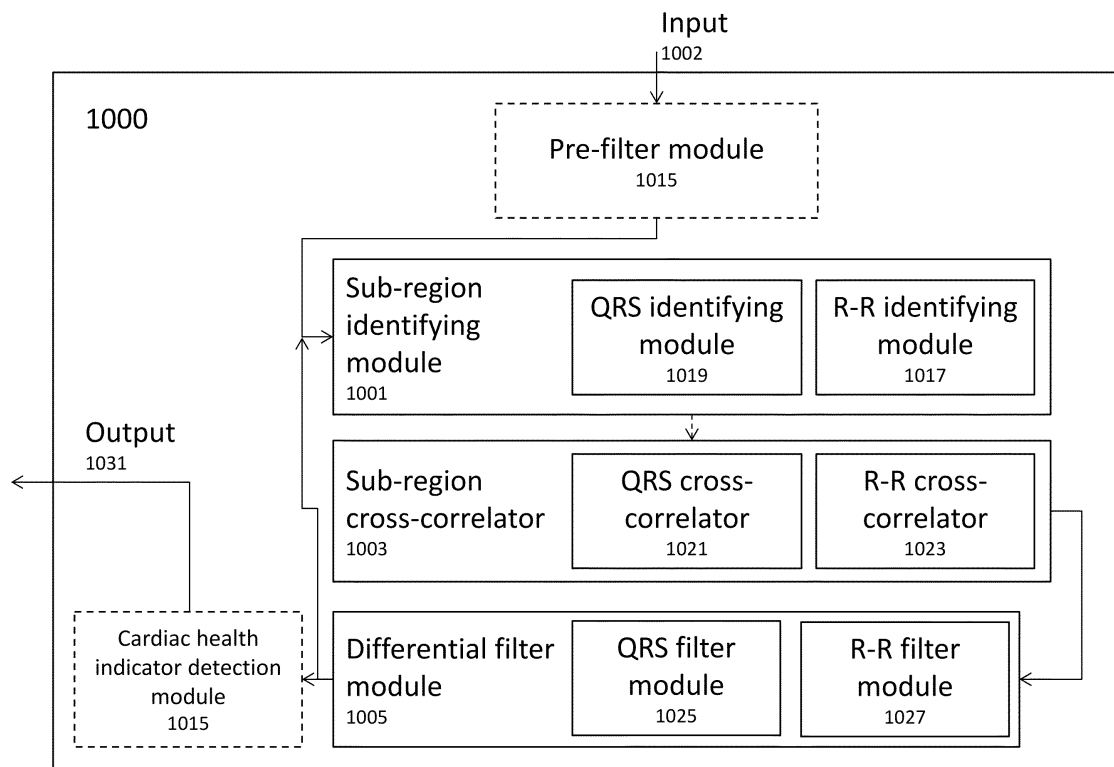
2018-04-05

Family 48/100 - FAMPAT - ©Questel

**Title**

(WO201474913)

Electrocardiogram signal detection

**Images****Abstract**

(WO201474913)

Apparatuses and methods for extracting, de-noising, and analyzing electrocardiogram signals. Any of the apparatuses described herein may be implemented as a (or as part of a) computerized system. For example, described herein are apparatuses and methods of using them or performing the methods, for extracting and/or de-noising ECG signals from a starting signal. Also described herein are apparatuses and methods for analyzing an ECG signal, for example, to generate one or more indicators or markers of cardiac fitness, including in particular indicators of atrial fibrillation. Described herein are apparatuses and method for determining if a patient is experiencing a cardiac event, such as an arrhythmia.

**Inventors**

GALLOWAY CONNER DANIEL CROSS

ALBERT DAVID E

**Latest standardized assignees - inventors removed**

ALIVECOR

**Publication dates**

2014-05-08

2014-05-15

2016-02-09



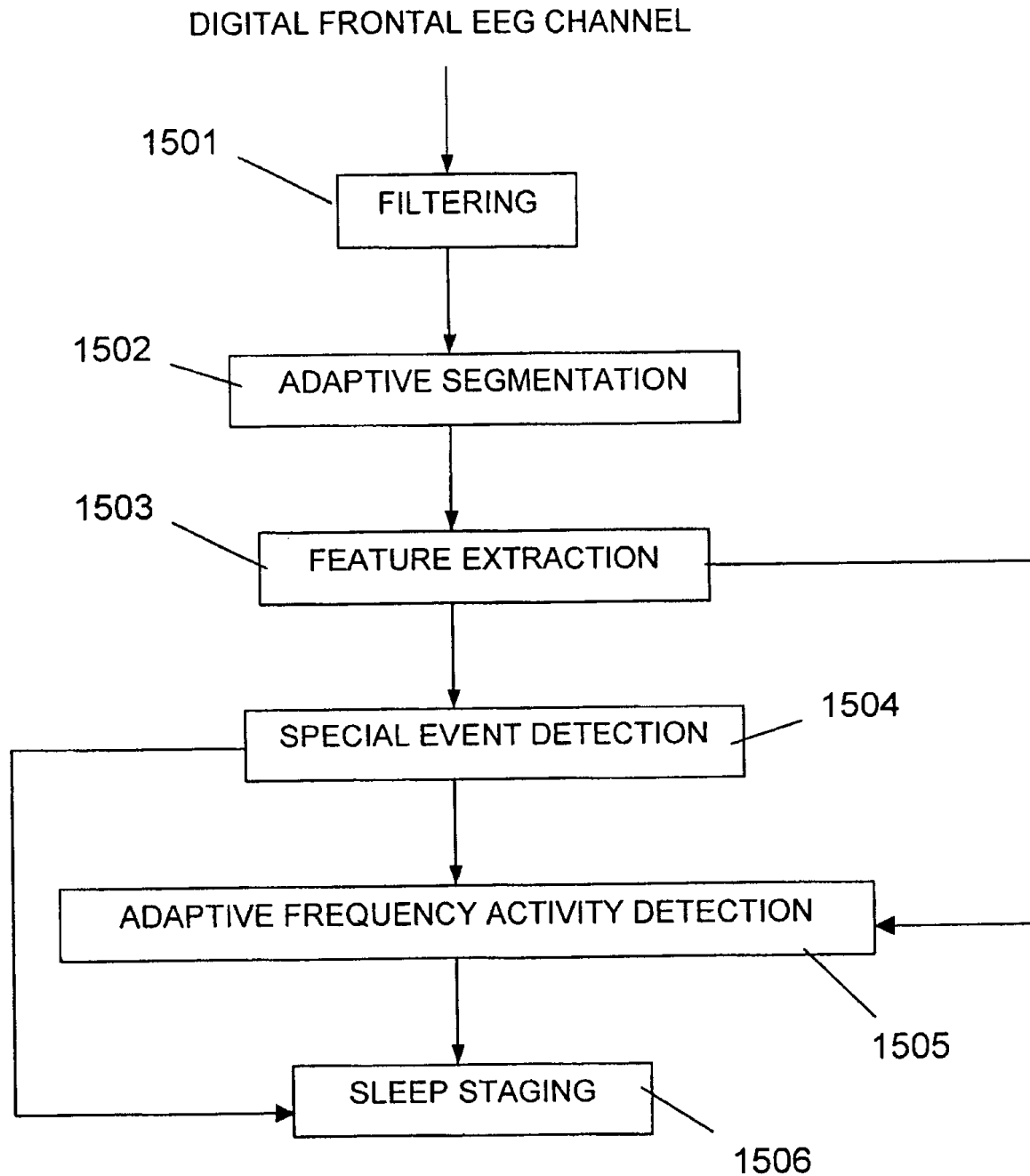
2010-11-18

Family 50/100 - FAMPAT - ©Questel

**Title**

(WO200357025)

Self-adaptive system for the analysis of biomedical signals of a patient

**Images****Abstract**

(WO200357025)

Method and system for monitoring normal/abnormal physiological events in patients by analyzing their biomedical signals, such as EEG signals, EOG signals, EMG signals, ECG signals and Respiratory signals. Corresponding raw data streams are aggregated, where each of which representing a different type of biomedical signals of the patient. Raw data streams are adaptively segmented and characterized for each type of biomedical signal. An attribute domain is determined, in which each segment is represented by a point corresponding to the attribute values of the segment. A set of clusters is generated in the attribute domain for each type of biomedical signal or for any combination thereof, each cluster consisting of a combination of points determined by their relative location to other points by assigning a set of property values to each

point such that each property value corresponds to the degree of association of the point with one of the clusters. The combination of points included in each cluster is varied according to their most updated property value and by including points derived from adaptive segmentation of further aggregated raw data streams of the patient. At least one updated cluster is associated with a normal/abnormal physiological state of the patient by using former knowledge, regarding normal/abnormal physiological states of the patient and/or of a reference group of patients, that is represented as reference clusters in the domain.

**Inventors**

GEVA AMIR

TODROS KOBI

PRESSMAN ASSAF

LEVI BARUCH

MERGI ARYEH

**Latest standardized assignees - inventors removed**

WIDEMED TECHNOLOGIES

**Publication dates**

2002-08-14

2003-07-17

2003-07-24

2003-07-24

2003-12-24

2004-04-15

2009-12-29

2011-07-31

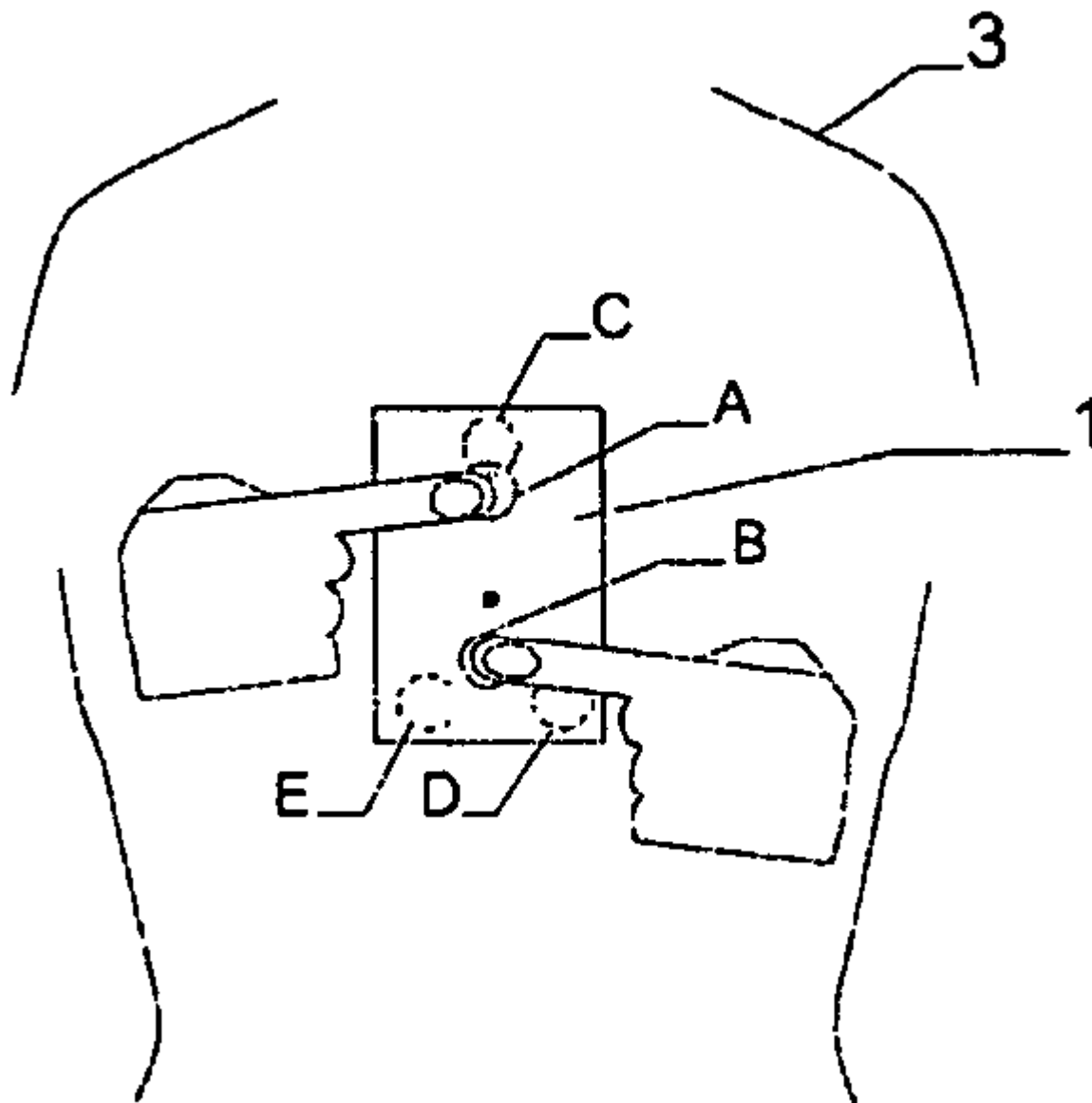
Family 51/100 - FAMPAT - ©Questel

**Title**

(EP1659936)

Apparatus and method for cordless recording and telecommunication transmission of three special ecg leads and their processing

**Images**

**Abstract**

(EP1659936)

The invention is related to a device and method for cordless recording, telecommunication transmission, and processing of three special ECG leads by the means of the mobile device (1) and diagnostic-calibration center (2) where the reconstruction of standard ECG leads is performed. Reconstruction parameters are determined previously by calibration for each patient. In urgent situation, a patient (3) performs recording of three special ECG leads with the mobile device (1), and sends the memorized data to the diagnostic-calibration device (2) via a cellular telephone (4). The patient can trace the process of recording and sending the data with the help of sound and light indicators. Diagnostic-calibration center (2) is equipped with a PC computer (6) connected to a receiving cellular telephone (7) and calibration ECG device (8) with 14 electrodes. Ten electrodes are grouped into a standard 12-channel ECG cable, while the remaining four are used for recording of three special ECG leads and are grouped into a separate box (9) with integrated electrodes arranged identically as the integrated electrodes on the mobile device (1).

**Inventors**

BOJOVIC BOSKO

HADZIEVSKI LJUPCO

BELICEV PETAR

**Latest standardized assignees - inventors removed**

NEWCARDIO

**Publication dates**

2005-03-03

2006-05-25

2006-05-31

2006-09-28

2006-11-14

2006-11-29

2007-02-15

2007-12-26

2008-01-15

2008-02-07

2008-03-19

2008-03-19

2008-04-04

2008-05-16

2008-07-24

2008-11-26

2010-01-12

2012-12-12

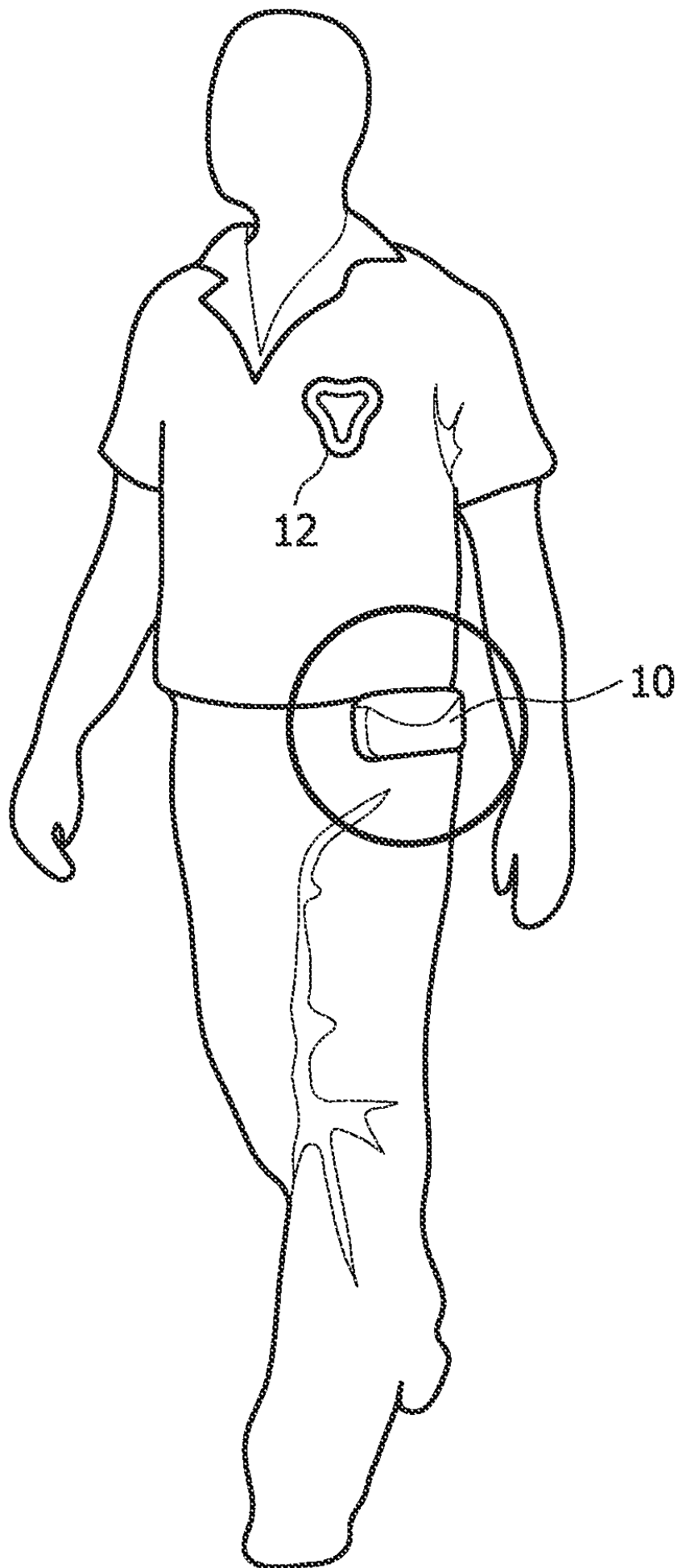
Family 52/100 - FAMPAT - ©Questel

#### **Title**

(EP2262417)

Ecg monitoring system with configurable alarm limits

#### **Images**



**Abstract**

(EP2262417)

An ECG monitoring system for ambulatory patients includes a small multi-electrode patch that adhesively attaches to the chest of a patient. A reusable battery-powered ECG monitor clips onto the patch and receives patient electrical signals from the electrodes of the patch. A processor continuously processes received ECG signals and analyzes the received ECG signals for predefined arrhythmia. If an arrhythmia is detected, a wireless transceiver in the ECG monitor transmits the event information and an ECG strip to a monitoring center. At the commencement of a monitoring procedure a message is sent to the monitoring center and configuration information for arrhythmia detection is downloaded and installed in the monitor. The configuration file is determined by a screen of selectable standard and custom arrhythmias and alarm limits at the monitoring center.

**Inventors**

FEILD DIRK

CRAWFORD MICHAEL

KWONG SAMUEL

KONA HIMAVALLI

KAO CHUNI

MAUSER CORINNE

GEHMAN STACY

**Latest standardized assignees - inventors removed**

PHILIPS ELECTRONICS

**Publication dates**

2009-09-17

2010-12-10

2010-12-22

2011-04-28

2011-05-12

2011-06-01

2012-04-20

2012-10-16

2013-11-13

2013-11-27

2014-05-21

2015-08-11

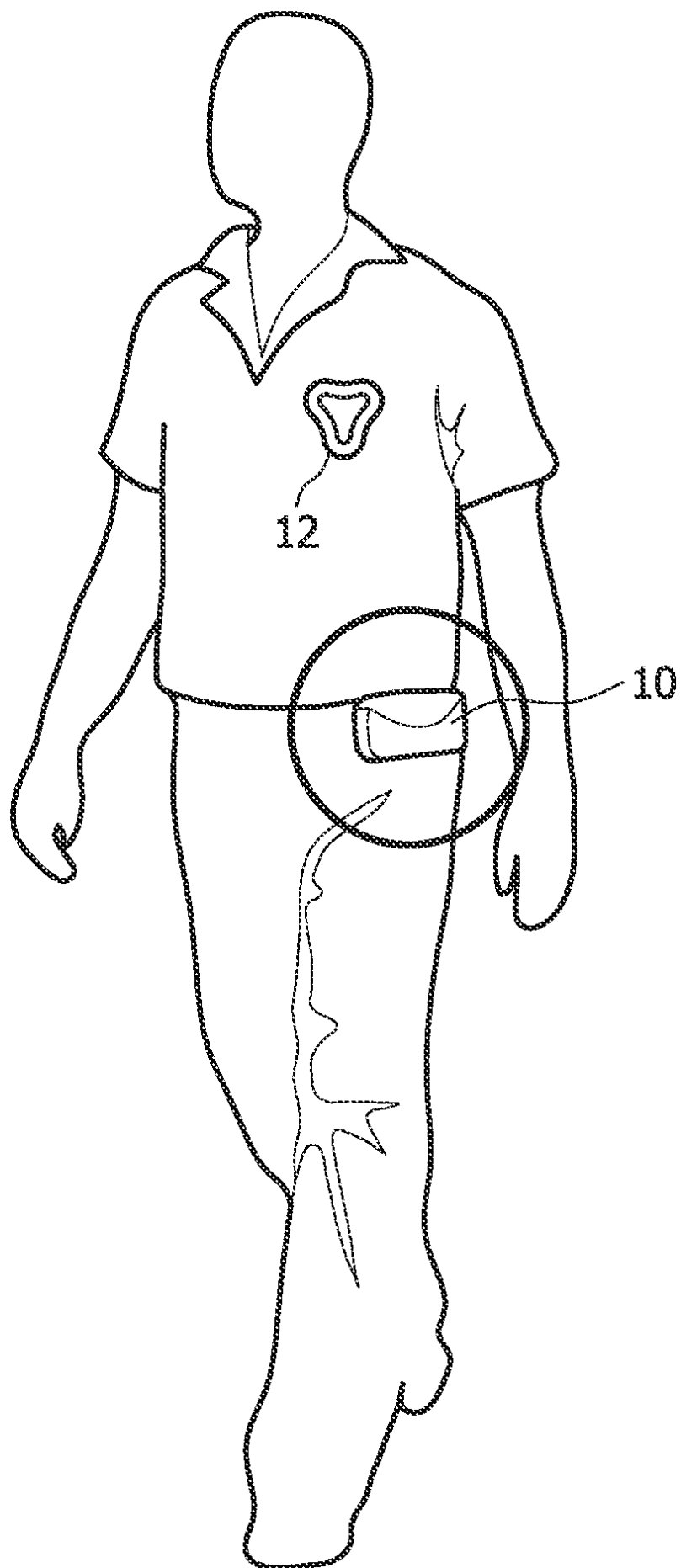
Family 53/100 - FAMPAT - ©Questel

**Title**

(EP2262420)

Ecg monitoring system with a charging docking station

**Images**



**Abstract**

(EP2262420)

An ECG monitoring system for ambulatory patients includes a battery-powered ECG monitor which attaches to a patient to receive patient electrical signals. A processor continuously processes received ECG signals and stores the signals in memory in the monitor. A wireless transceiver in the ECG monitor transmits the processed ECG signals to a cellphone handset. The battery of the monitor is recharged when the monitor is properly positioned in a charging dock, during which time the ECG signals are sent to the cellphone handset. Preferably the cellphone handset is recharged by the charging dock at the same time. At the conclusion of recharging and data transfer the monitor performs a self-test. A light on the charging dock is illuminated if any of the operations performed while the monitor is docked is unsuccessful.

**Inventors**

FONG SHANNON

KAO CHUNI

HERLEIKSON EARL

MCCOY WILLIAM

ISELI VICTOR

CRAWFORD MICHAEL

CROSS BRETT

EERDEN JACCO

DENNEY DOUGLAS

**Latest standardized assignees - inventors removed**

PHILIPS ELECTRONICS

**Publication dates**

2009-09-17

2010-12-10

2010-12-22

2011-02-02

2011-04-28

2011-08-25

2014-06-11

2016-05-03

2016-06-21

2016-12-06

2017-04-12

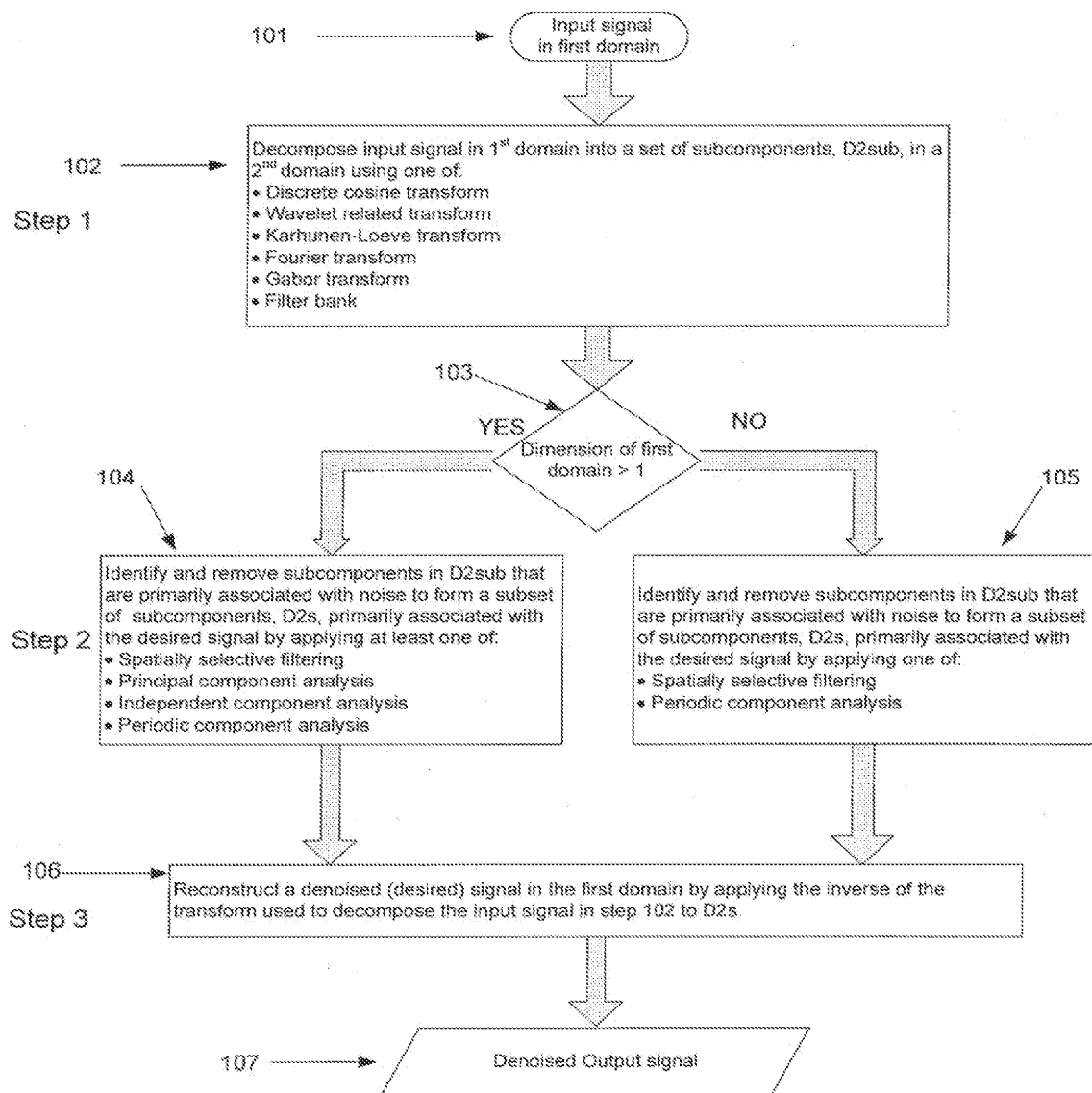
Family 54/100 - FAMPAT - ©Questel

**Title**

(US9408549)

Detecting fiducial points in physiological signals

**Images**



## Abstract

(US9408549)

Various aspects are directed to identifying a region of interest in a physiological signal. As may be consistent with one or more embodiments, the physiological signal is decomposed into subcomponents, and a subset of the subcomponents is selected based upon overlap of spectral energy with expected spectral energy of the region of interest, in at least one of the subcomponents. At least two of the subcomponents in the subset are combined and compared to a threshold, with the comparison being used to identify the location of the region of interest.

## Inventors

BROCKWAY MARINA

BROCKWAY BRIAN

**Latest standardized assignees - inventors removed**

VIVAQUANT

## Publication dates

2016-01-28

2016-08-09

2016-09-08

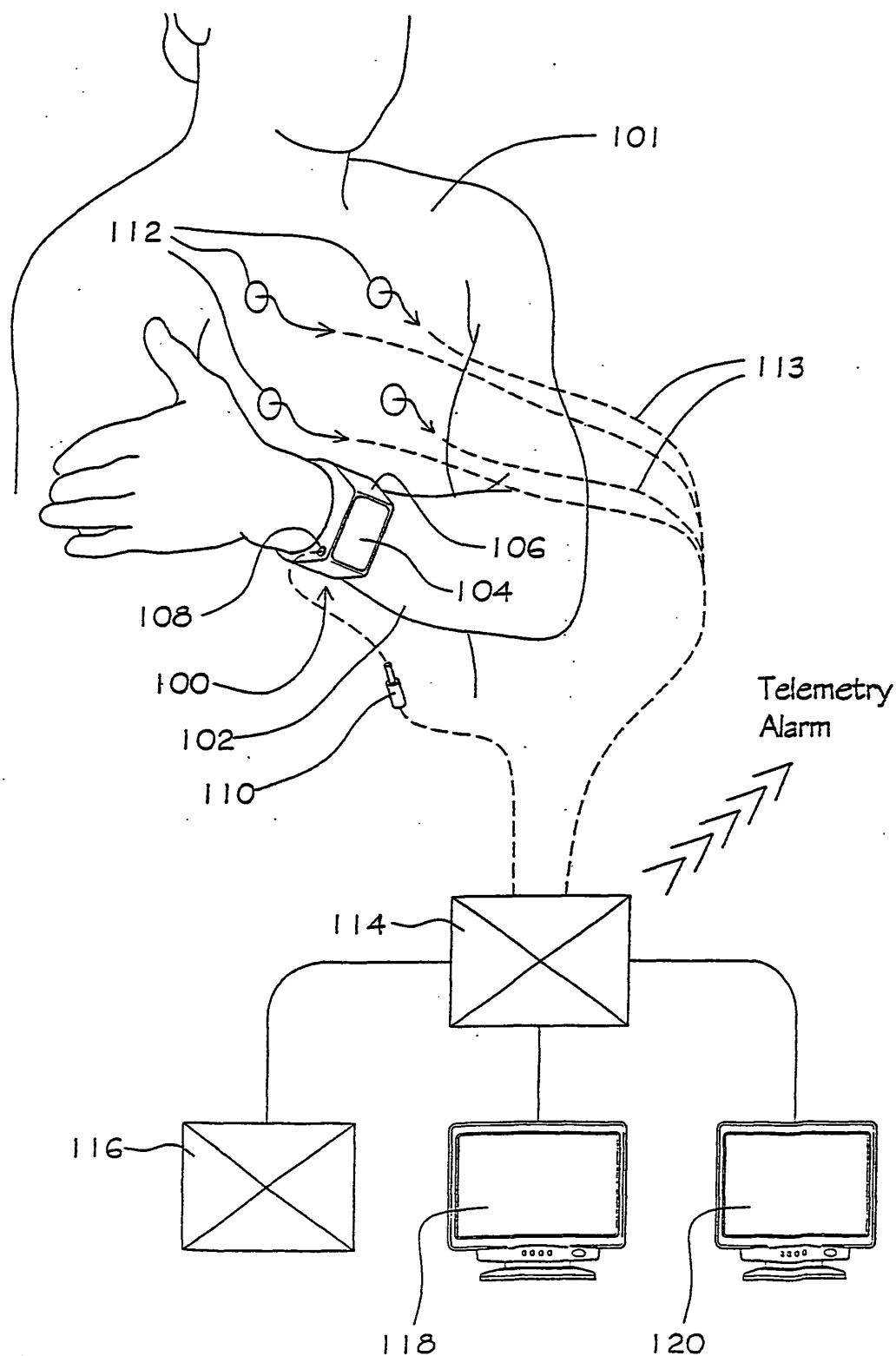
Family 55/100 - FAMPAT - ©Questel

## Title

(WO200200094)

## Apparatus and method for non-invasive monitoring of heart performance

## Images



## Abstract

(WO200200094)

A portable noninvasive device (100) for monitoring heart performance is worn on a wristband (106) surrounding the wrist (102) of a patient (101) and is synchronized with a Holter system (116). The device (100) houses a blood flow sensor and a pressure sensor, and the results from these sensors are shown on display (118) or transferred to a computer (120) for further analysis, storage, or evaluation. An electromagnetic sensor may also be used with the device (100).

## Inventors

GORENBERG NORA VIVIANA

ROTSTEIN HECTOR

NARODITSKY MICHAEL

MARMOR ALON

GORENBERG MIGUEL

**Latest standardized assignees - inventors removed**

CARDIOWATCH

**Publication dates**

2001-06-14

2002-01-03

2002-01-08

2002-06-13

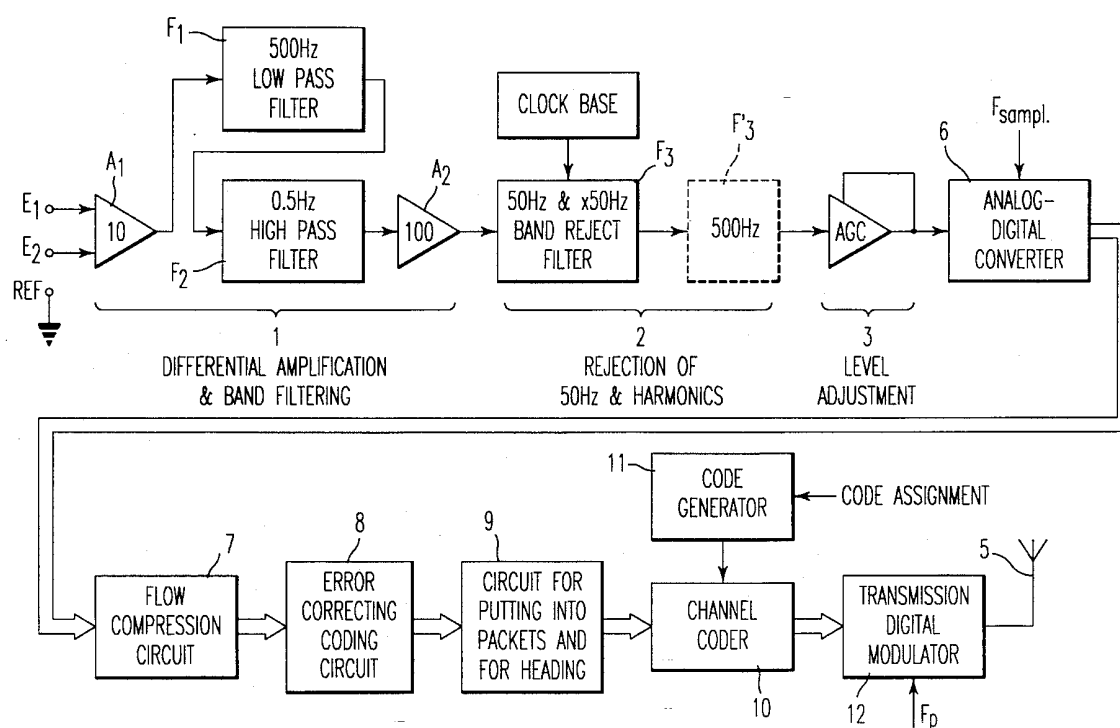
2005-02-17

Family 56/100 - FAMPAT - ©Questel

**Title**

(EP-586286)

Wireless transmission system for medical data

**Images****Abstract**

(EP-586286)

The wireless transmission system for medical data includes sending equipment carried by the patient which includes an assembly for differential amplification and for band filtering, an assembly (2) for rejection of interference, especially the mains and its harmonics, persisting in the band of the useful signal, a circuit (3) for amplification with automatic gain control and a modulator (4) receiving a carrier frequency, for example a UHF frequency at 2.45 GHz, and the useful signal, in analog mode or after a digital conversion and possible processing. The system also includes a tuned receiving station. The carrier frequency can be generated either in the sending equipment, or in the receiving station which then sends the unmodulated carrier to the transmitters which are associated with it. Application, especially, to transmitting cardiographic electrical signals. <IMAGE>

**Inventors**

HETHUIN SERGE

**Latest standardized assignees - inventors removed**

THOMSON CSF

**Publication dates**

1994-03-09

1994-03-11

1994-10-21

1995-10-17

1997-07-02

1997-08-07

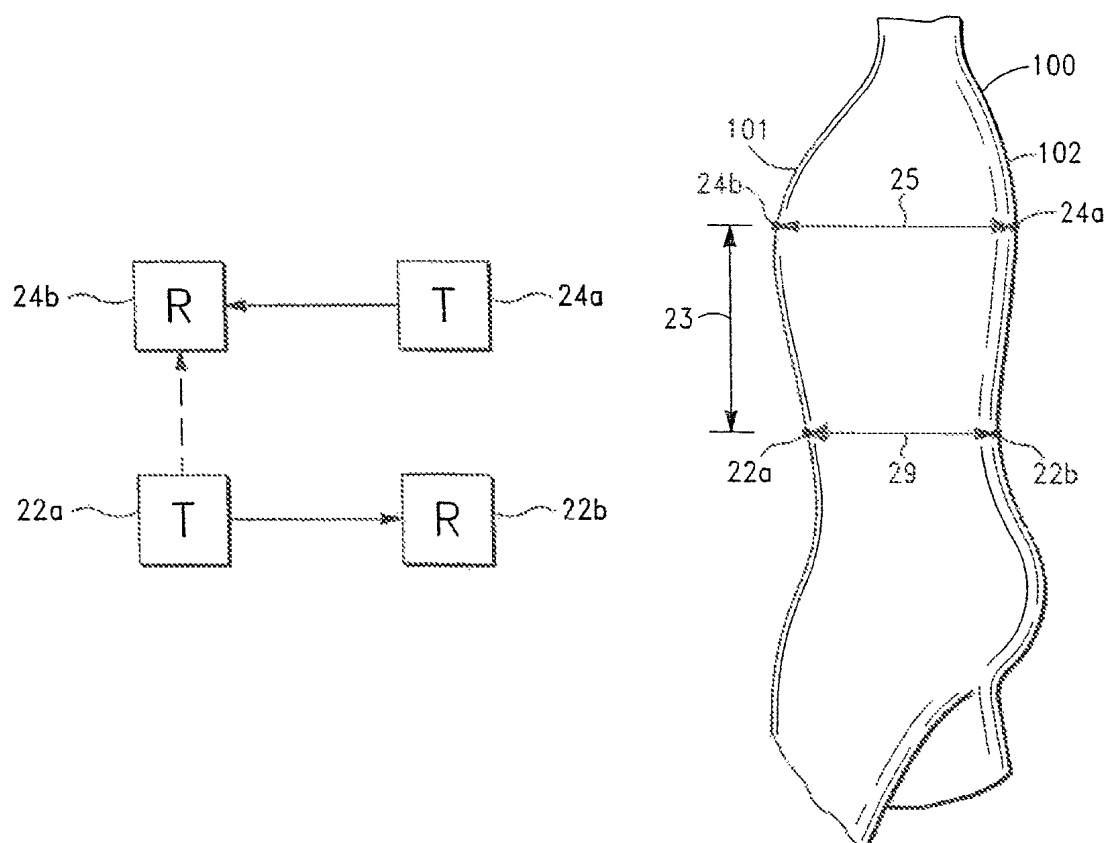
1997-11-27

Family 57/100 - FAMPAT - ©Questel

**Title**

(EP2289411)

Noninvasive method and system for monitoring physiological characteristics and athletic performance

**Images****Abstract**

(EP2289411)

A physiological monitoring system for noninvasively monitoring physiological parameters of a subject, comprising a fitness monitoring system for monitoring physiological parameters of a subject engaged in a physical activity, in accordance with one embodiment of the invention, includes (i) a monitoring garment adapted to cover at least a portion of a subject's torso, (ii) a magnetometer subsystem including a first magnetometer and a second magnetometer, wherein the first and second magnetometers are responsive to changes in distance therebetween, wherein the magnetometer subsystem is configured to generate and transmit a signal representative of a change in the distance between the first and second magnetometers, wherein the first and second magnetometers are incorporated into the monitoring garment, and wherein the first and second magnetometers are proximate to the subject's chest region when the monitoring garment is worn by the subject.

**Inventors**

DERCHAK ALEXANDER P

MCLEAN GEORGE

**Latest standardized assignees - inventors removed**

ADIDAS

**Publication dates**

2011-03-02

2011-06-02

2011-06-02

2016-01-13

2017-01-17

2017-07-27

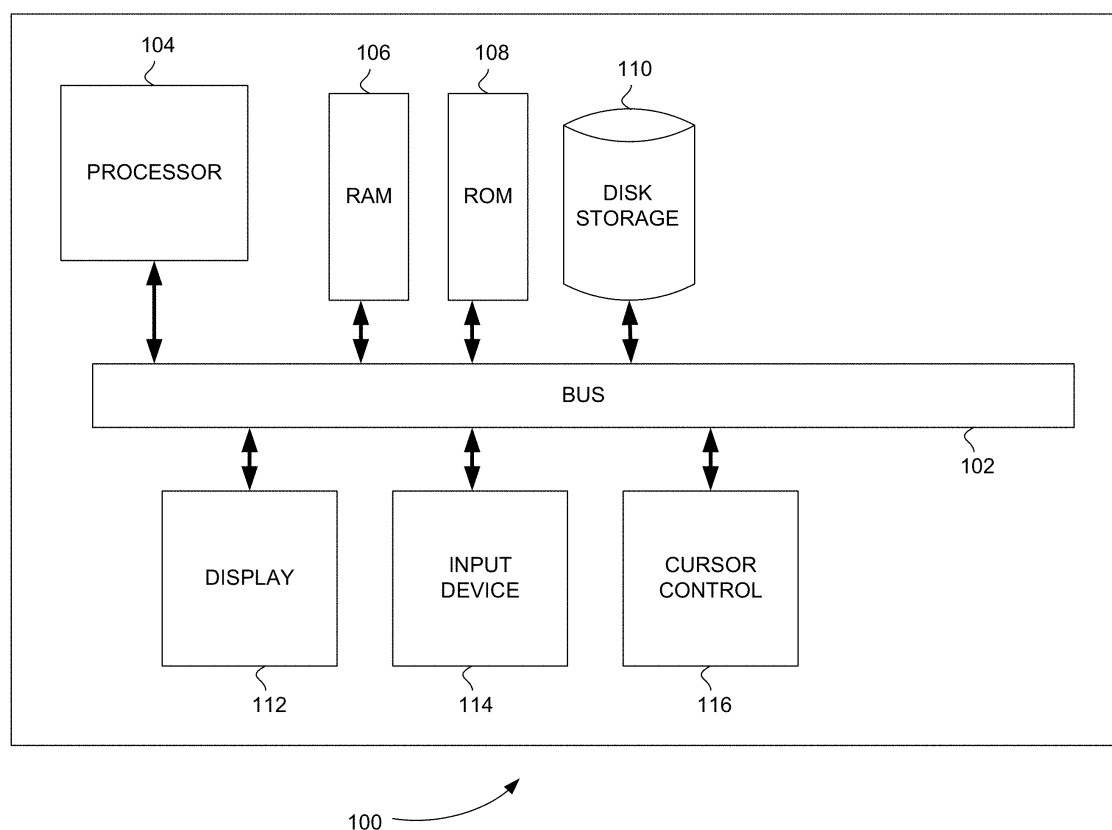
2018-01-10

Family 58/100 - FAMPAT - ©Questel

**Title**

(US20180028144)

Electronic Acoustic Stethoscope with ECG

**Images****Abstract**

(US20180028144)

A noninvasive system for detecting and processing PCG and ECG waveforms includes an electronic acoustic stethoscope and a server computer. Heart sounds of a patient are measured using an acoustic transducer of a chestpiece of the electronic acoustic stethoscope, the heart sounds are sent to an earpiece of the electronic acoustic stethoscope, and a PCG waveform is created. Heart electrical signals of the patient are measured using at least four electrodes of the chestpiece and an ECG waveform is created. The PCG waveform and/or the ECG waveform are transmitted to the server computer using a wireless communication device of the chestpiece. The PCG waveform is processed for additional PCG information and/or the ECG waveform is processed for additional ECG information using the server computer. Access to the

additional PCG information and/or additional ECG information is provided to at least one client device using the server computer.

#### Inventors

CHEN GUANGREN

YANG RONG

#### Publication dates

2018-02-01

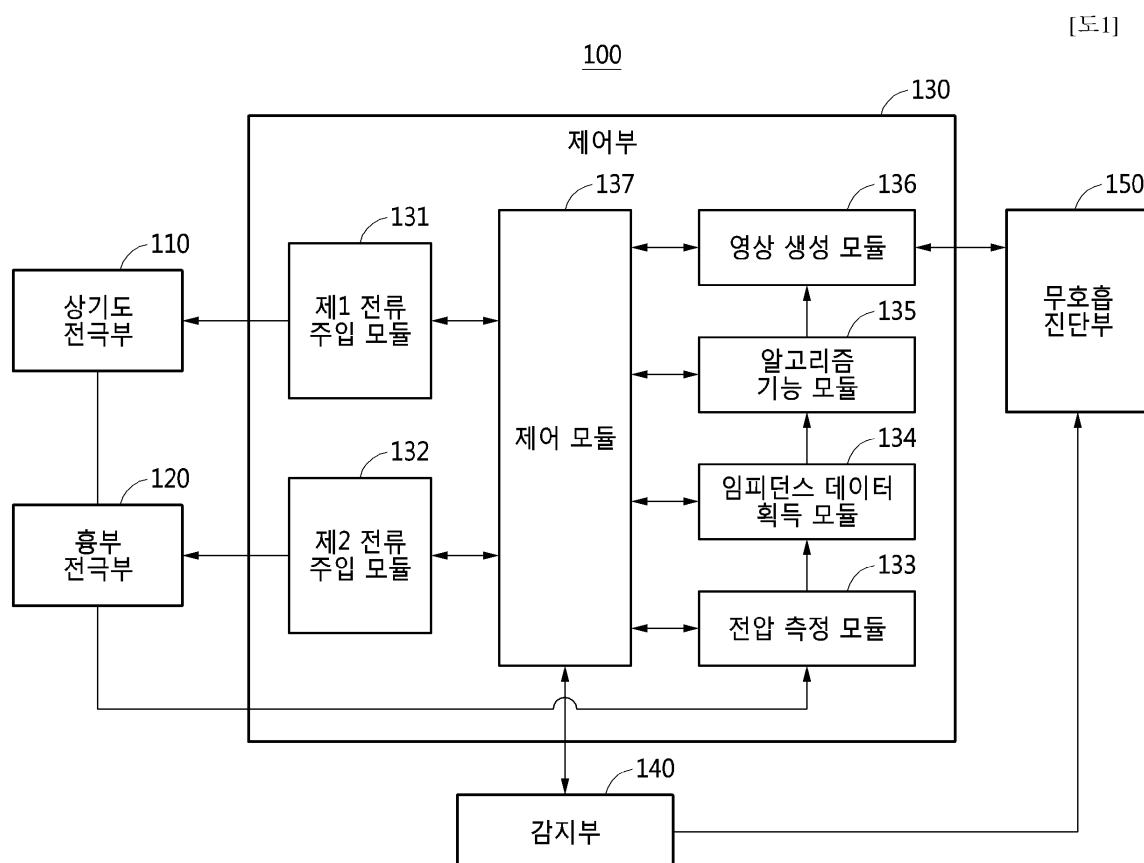
Family 59/100 - FAMPAT - ©Questel

#### Title

(WO201893131)

Device for measuring sleep apnea and method therefor

#### Images



110 ... Upper airway electrode unit

120 ... Chest electrode unit

130 ... Control unit

131 ... First current injection module

132 ... Second current injection module

133 ... Voltage measurement module

134 ... Impedance data acquisition module

135 ... Algorithm function module

136 ... Image generation module

137 ... Control module

140 ... Detection unit

150 ... Apnea diagnosis unit

#### Abstract

(WO201893131)

The present invention relates to a device for measuring sleep apnea and a method therefor which diagnose apnea based

on images obtained from impedance data of each of the upper airway and the chest of a subject. Accordingly, by imaging the air distribution in a lung according to the opening and closing of the upper airway by applying electrical impedance tomography (EIT) using electrodes attached to the upper airway and the chest, at least one of obstructive apnea, central apnea and complex apnea can be diagnosed and a treatment plan can be established therefor.

## Inventors

WOO EUNG JE

OH TONG IN

### Latest standardized assignees - inventors removed

BILAB

## Publication dates

2018-05-24

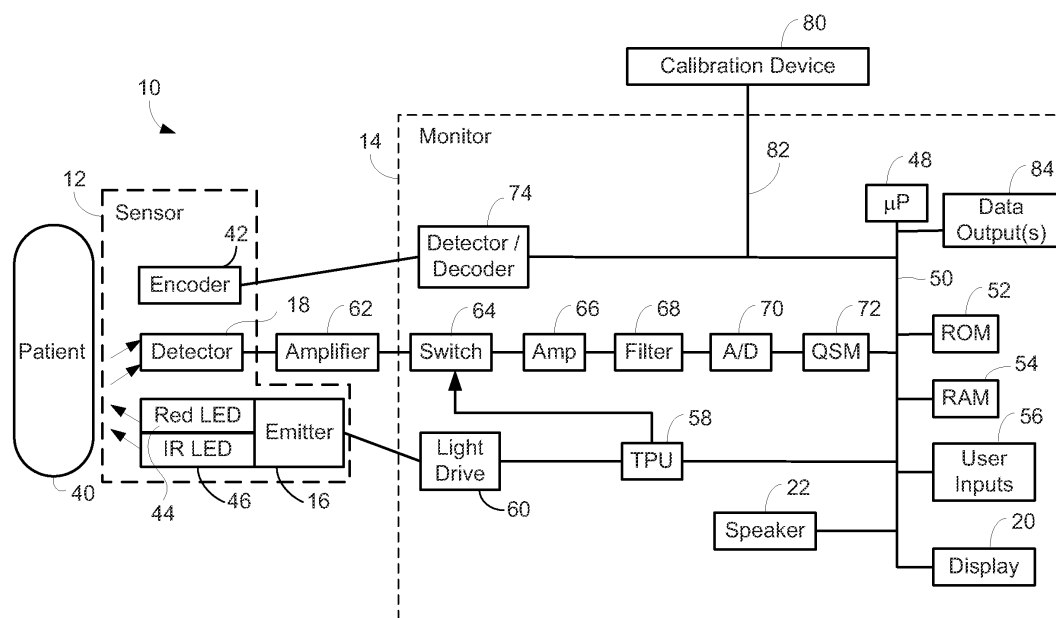
Family 60/100 - FAMPAT - ©Questel

## Title

(WO2014100084)

## Systems and methods for distinguishing between central apnea and obstructive apnea

## Images



## Abstract

(WO2014100084)

A patient monitoring system may acquire a time series of oxygen saturation data based on a physiological signal. A potential apneic event may be detected in the time series of oxygen saturation data in the form of a desaturation followed by a resaturation defined by a fall peak, nadir, and rise peak crossing respective thresholds. The potential apneic event may be qualified using a plurality of metrics derived from a portion of the time series of oxygen saturation data that corresponds to the potential apneic event. The qualified apneic event may be classified as being due to one of central apnea and obstructive apnea based on the output of a classification neural network the inputs to which comprise at least a second plurality of metrics.

## Inventors

OCHS JAMES

AMUNDSON SCOTT

### Latest standardized assignees - inventors removed

COVIDIEN

## Publication dates

2014-06-19

2014-06-26

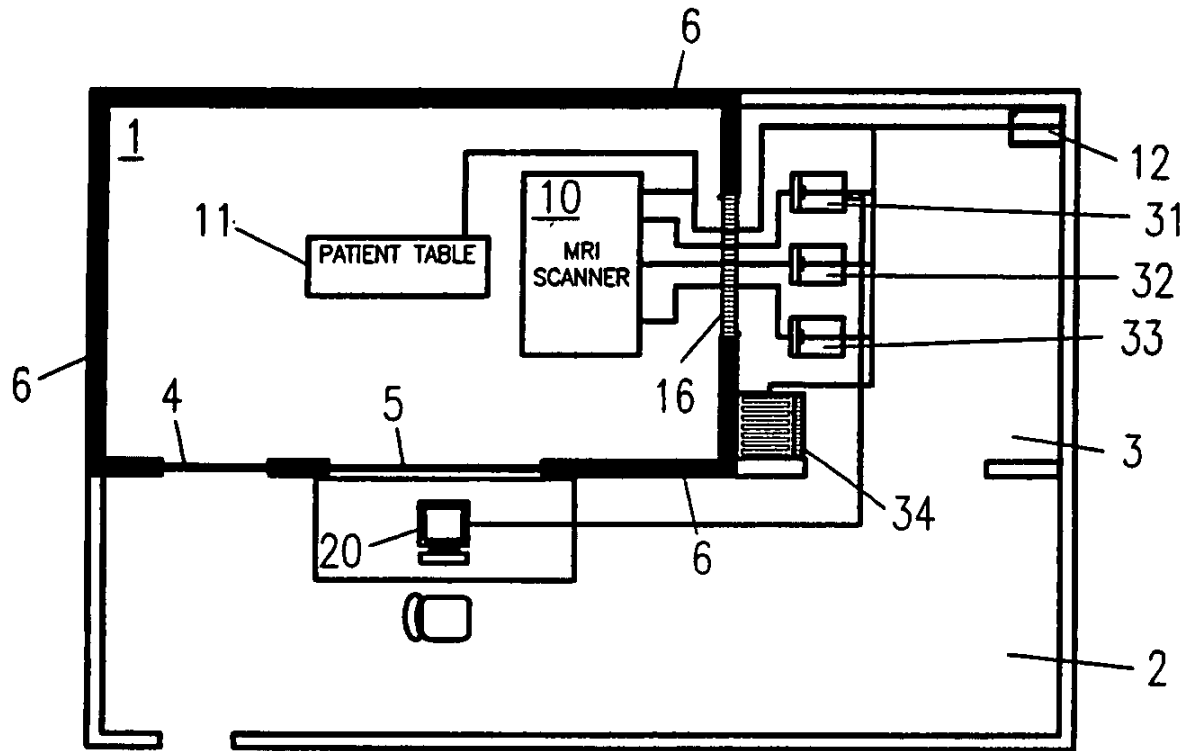
Family 61/100 - FAMPAT - ©Questel

## Title

(EP1773191)

# Wireless patient monitoring device for magnetic resonance imaging

## Images



## Abstract

(EP1773191)

The invention relates to systems, methods, and associated devices for wirelessly communicating physiologic signals or other data in an electromagnetically noisy environment, such as a magnetic resonance imaging (MRI) suite. They permit wireless communication of data obtained from a sensor module attached to a patient while situated within the bore of an MR scanner. The system includes a first transceiver and a second transceiver. The first transceiver is linked to the sensor module for transmitting the data received therefrom. The second transceiver, which is connected to an apparatus remote from the first transceiver, is used to convey to the apparatus the data received from the first transceiver. The first and second transceivers enable the sensor module and the apparatus to communicate unidirectionally or bidirectionally without being adversely affected by, or adversely affecting, the operation of the MR system.

## Inventors

GRIFFITHS DAVID M

### Latest standardized assignees - inventors removed

MEDRAD

## Publication dates

2005-05-19

2006-02-23

2007-04-18

2007-10-04

2008-03-13

2008-09-10

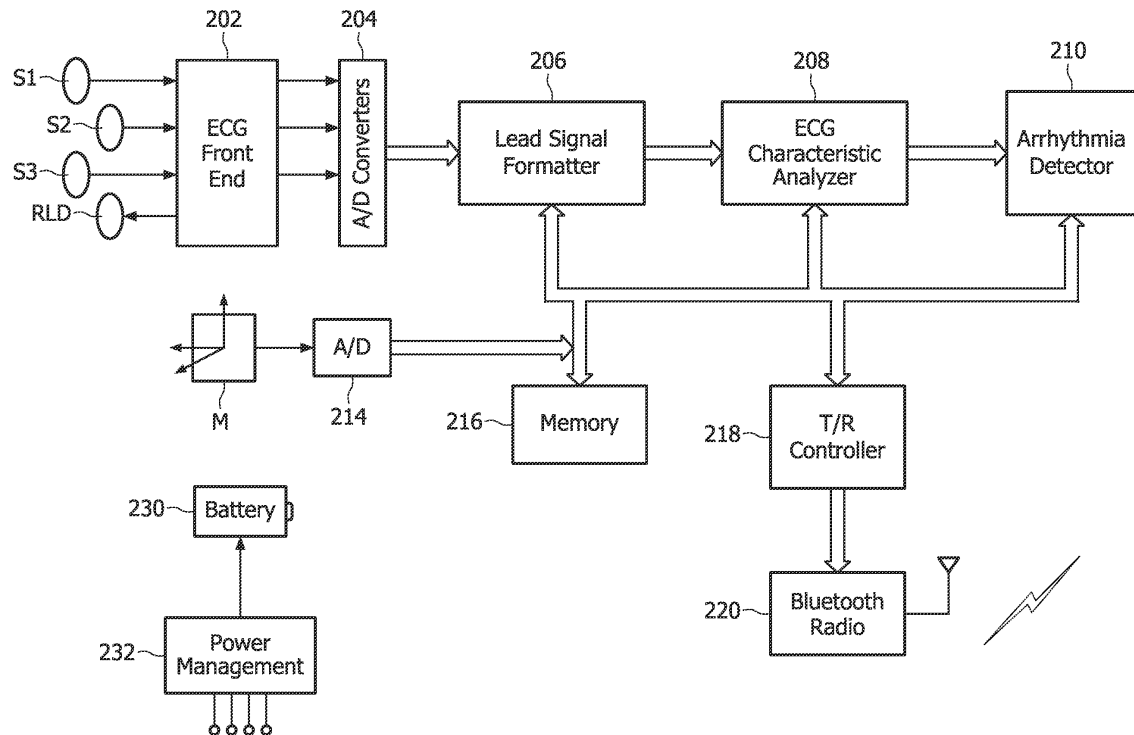
2009-11-11

Family 62/100 - FAMPAT - ©Questel

**Title**

(EP2262418)

Watertight cardiac monitoring system

**Images****Abstract**

(EP2262418)

An ECG monitoring system for ambulatory patients includes a small multi-electrode patch that adhesively attaches to the chest of a patient. A reusable battery-powered ECG monitor clips onto the patch and receives patient electrical signals from the electrodes of the patch. A processor continuously processes received ECG signals and stores the signals in memory in the monitor. Processed ECG signals and cardiac event information are sent wirelessly to a cellphone handset for relay to a monitoring center. The ECG monitor is contained in a watertight sealed case with only electrical contacts on the outside of the case. The electrical contacts electrically couple the ECG monitor to the electrodes of the patch during patient monitoring and to a charger during recharge of the battery.

**Inventors**

HUGH STEVEN

HERLEIKSON EARL

FONG SHANNON

SOLOSKO THOMAS

CROSS BRETT

**Latest standardized assignees - inventors removed**

PHILIPS ELECTRONICS

**Publication dates**

2009-09-17

2010-12-10

2010-12-22

2011-01-27

2011-02-09

2011-05-12

2012-04-20

2013-04-03

2014-01-28

2014-04-10

2014-12-17

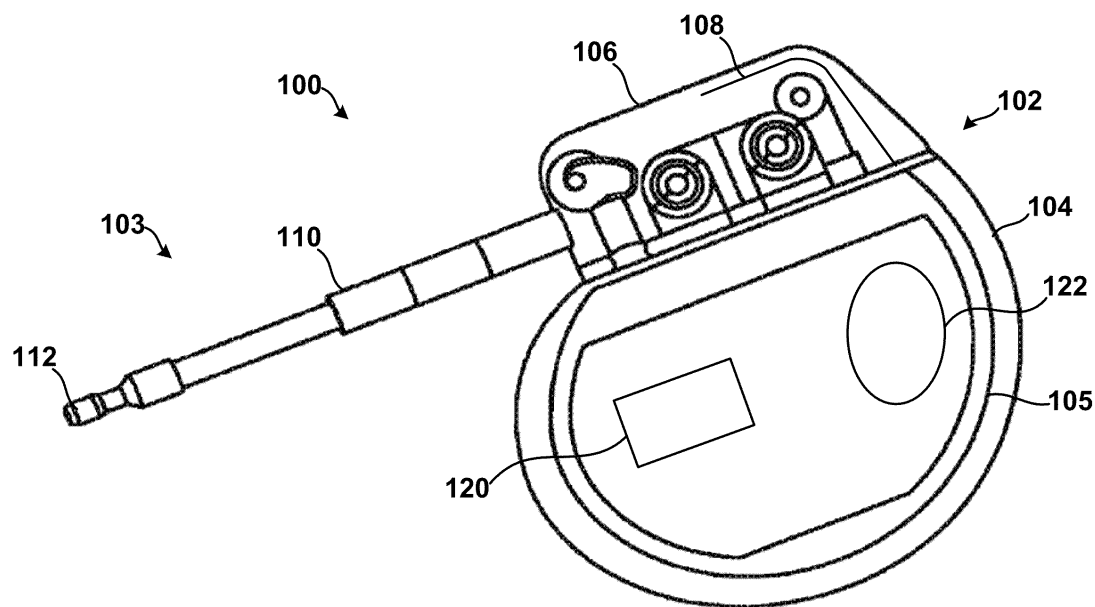
2015-09-15

Family 63/100 - FAMPAT - ©Questel

**Title**

(EP2777497)

Apparatus and method for detection of sleep disordered breathing

**Images****Abstract**

(EP2777497)

An apparatus, system, and method directed to detecting a physiological signal during discrete time separated detection windows, deriving one or more respiratory disturbance indices from the physiological signal, detecting a respiratory disturbance state in response to the one or more respiratory disturbance indices deviating from a threshold value, interpolating the one or more respiratory disturbance indices between adjacent time separated detection windows, and declaring a respiratory disturbance episode based on the detected respiratory disturbance state during the detection windows and the interpolation between detection windows.

**Inventors**

KATRA RODOLPHE

CHAKRAVARTHY NIRANJAN

**Latest standardized assignees - inventors removed**

MICRO POWER ELECTRONICS

GREATBATCH GLOBE TOOL

ELECTROCHEM SOLUTIONS

NEURONEXUS TECHNOLOGIES

PRECIMED

GREATBATCH

**Publication dates**

2014-09-17

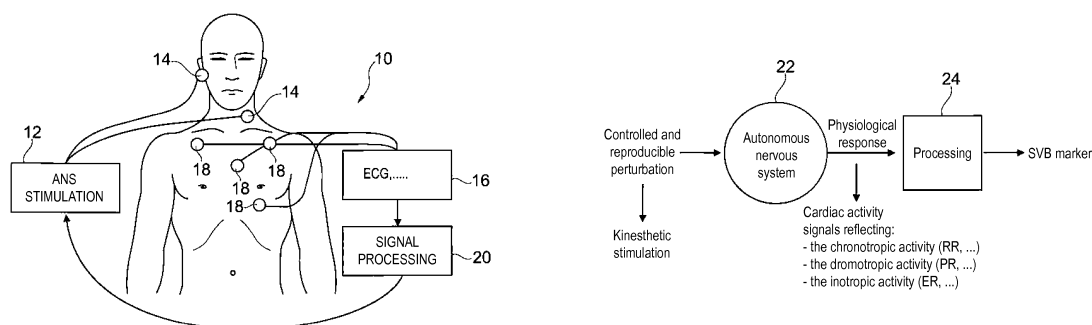
2014-09-18

Family 64/100 - FAMPAT - ©Questel

**Title**

(EP2904964)

Assembly including a medical device with kinaesthetic stimulation for non-invasive assessment of the sympathovagal balance of a patient

**Images****Abstract**

(EP2904964)

A system for assessing a sympathovagal balance of a patient includes a generator configured to produce stimulation pulses, a stimulator that receives the stimulation pulses produced by the generator and outputs a stimulation energy, a sensor configured to measure a physiological signal, and a processor. The processor is configured to control the generator during a plurality of sequences to produce the stimulation pulses over a test period, determine a biological parameter of a current activity of the patient derived from the physiological signal, determine a variation of the biological parameter resulting from the stimulation pulses, and determine a sympathovagal balance index according to the variation in the biological parameter.

(From US9782117 B2)

**Inventors**

BONNET JEAN-LUC

HERNANDEZ ALFREDO

**Latest standardized assignees - inventors removed**

UNIVERSITE DE RENNES 1

SORIN

**Publication dates**

2015-08-12

2015-08-13

2017-10-10

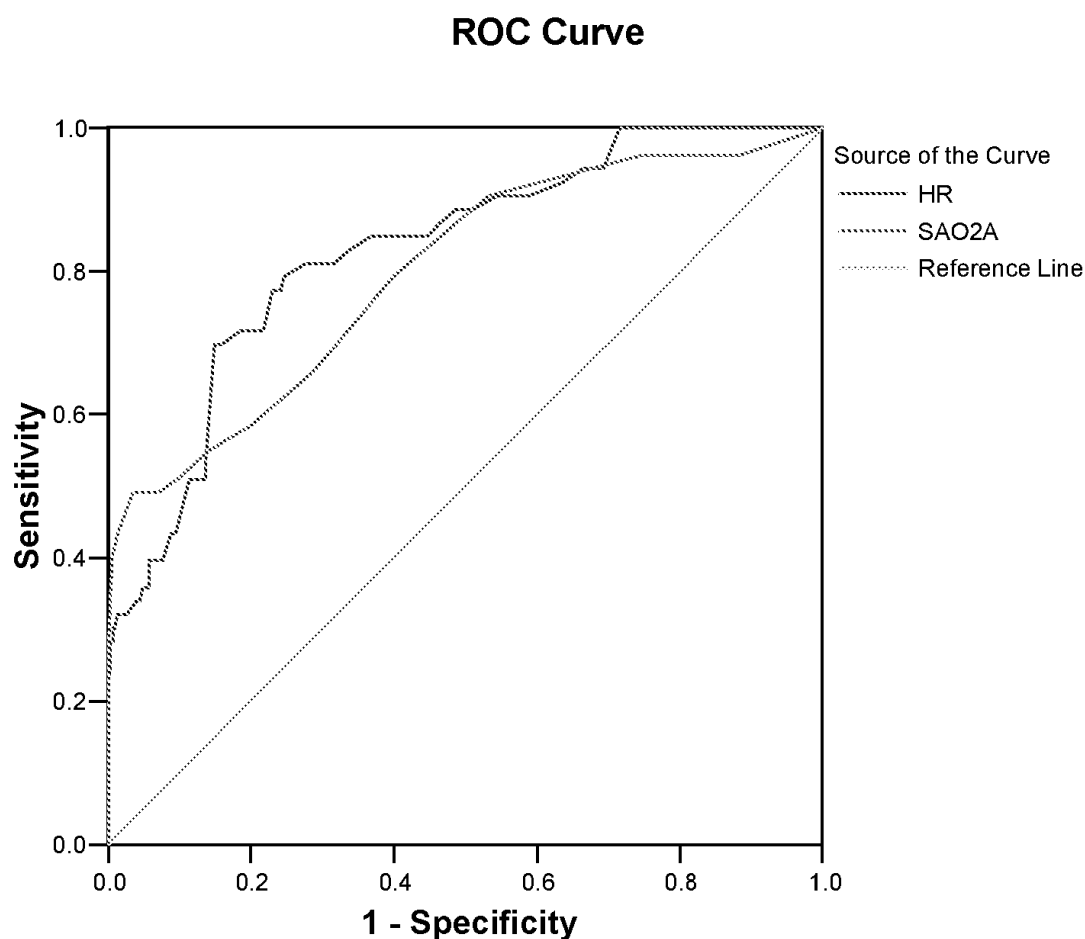
Family 65/100 - FAMPAT - ©Questel

**Title**

(WO2015193672)

Seizure detection

**Images**



Diagonal segments are produced by ties.

Figure 1

#### Abstract

(WO2015193672)

The present invention provides methods, procedures and systems which may find application in the detection of seizures including, for example epileptic seizures. The methods of the present invention comprise the step of determining the percentage difference between heart rate measurements of a subject, wherein a percentage difference between heart rate measurements indicates that a seizure is about to occur or is occurring. The systems of the present invention comprise means for determining the percentage difference between heart rate measurements of a subject, wherein if the heart rates differ, the system reports the occurrence of a seizure. This invention also provides devices comprising a system according to this invention.

#### Inventors

BROTHERSTONE RUTH

**Latest standardized assignees - inventors removed**

LOTHIAN HEALTH BOARD

#### Publication dates

2014-08-06

2015-12-23

2017-03-08

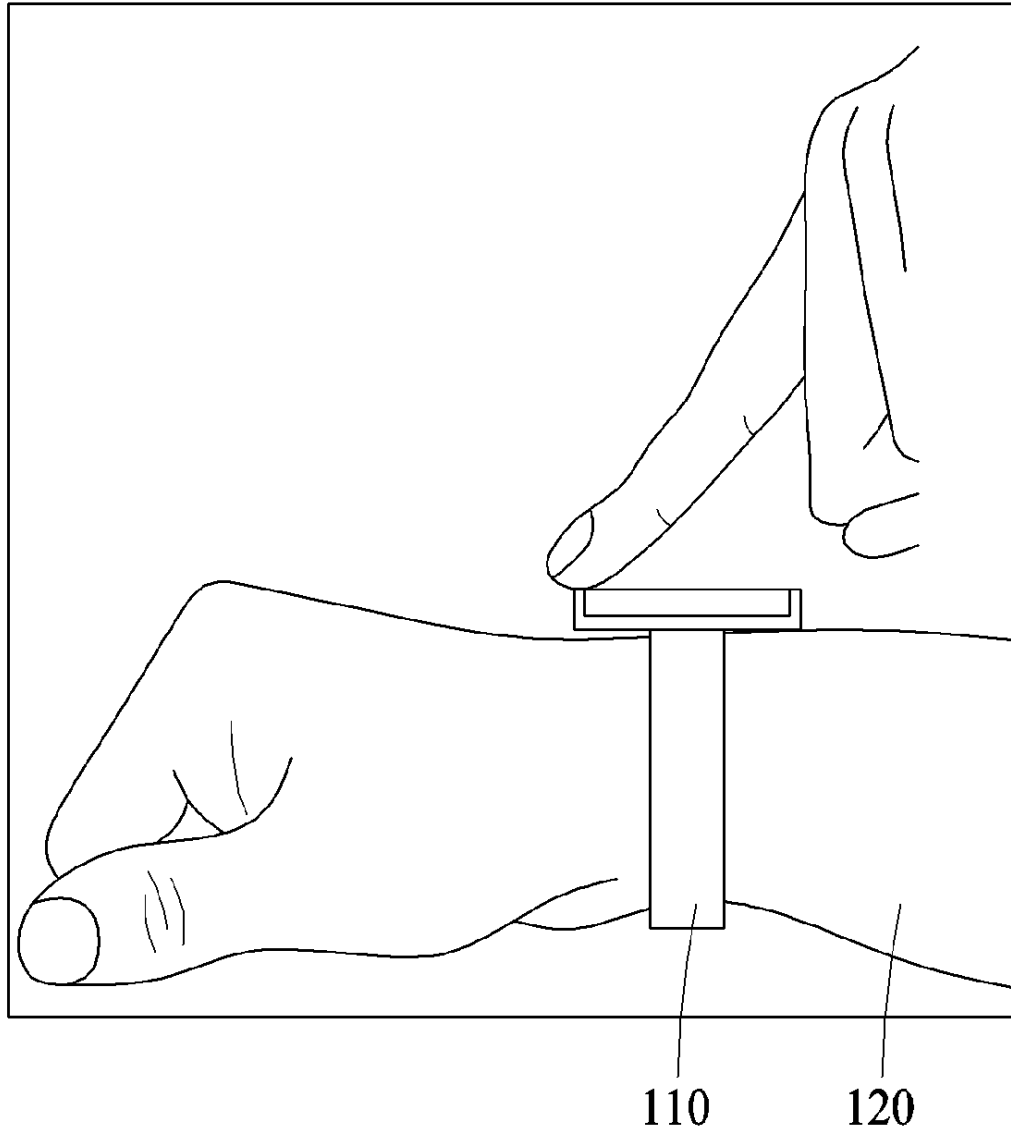
2017-03-29

Family 66/100 - FAMPAT - ©Questel

**Title**

(EP3189779)

Electrocardiogram (ecg) authentication method and apparatus

**Images****Abstract**

(EP3189779)

Disclosed are an electrocardiogram (ECG) authentication method and apparatus, and a training method and apparatus for training a neural network model used for ECG authentication, the ECG authentication apparatus being configured to acquire an ECG signal of a subject, extract a semantic feature of the ECG signal, and authenticate the subject based on the extracted semantic feature.

**Inventors**

LIU YANG

FENG XUETAO

ZHANG CHAO

BAE CHISUNG

KIM SANG-JOON

**Latest standardized assignees - inventors removed**

SAMSUNG ELECTRONICS

**Publication dates**

2017-07-06

2017-07-12

2017-07-13

2017-10-04

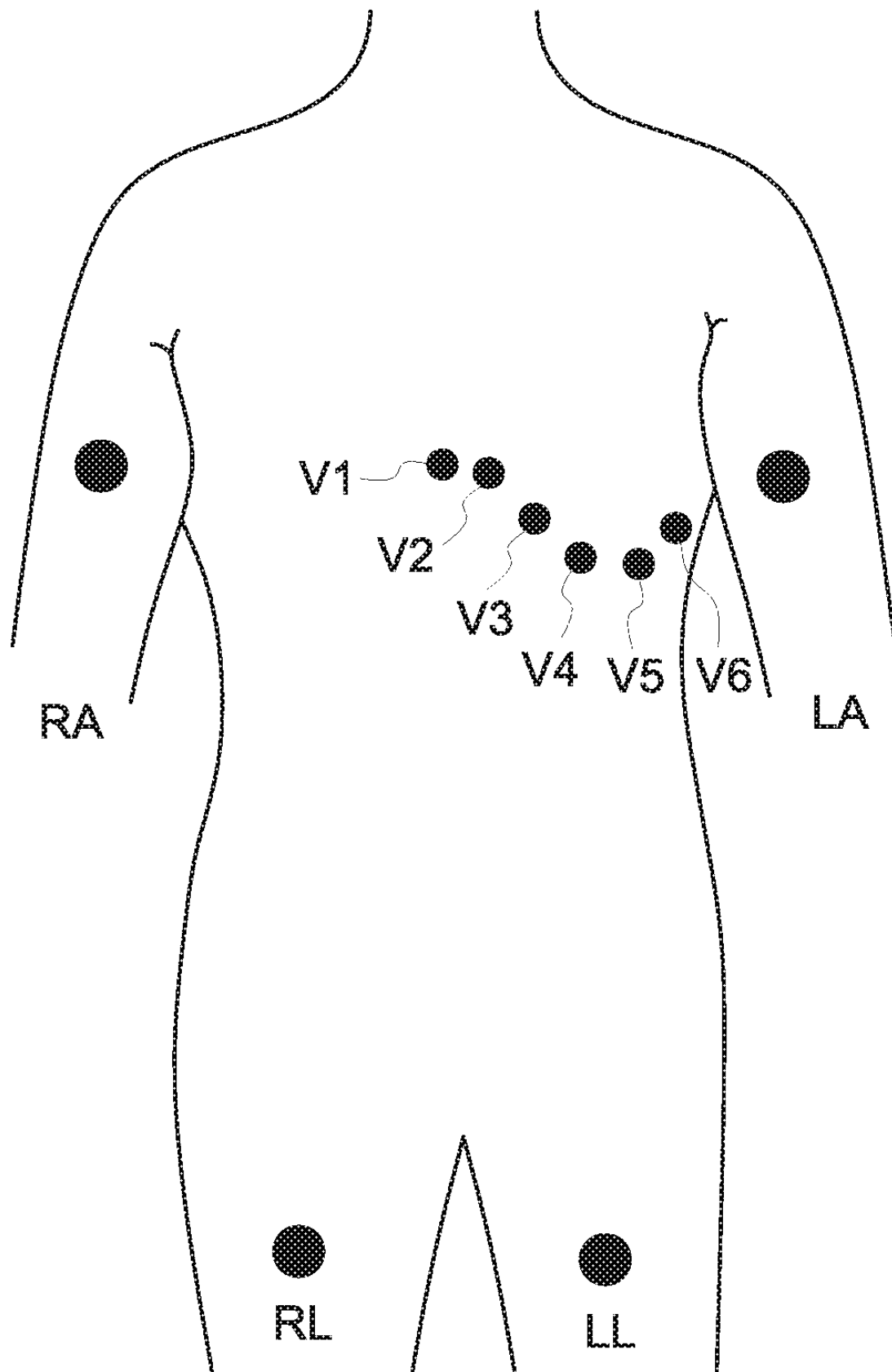
Family 67/100 - FAMPAT - ©Questel

**Title**

(WO2017151298)

Modular electrocardiogram device with limb-leads and expandable chest-leads

**Images**

**Abstract**

(WO2017151298)

A data acquisition system for use with expandable ECG electrode systems. The data acquisition system includes a main unit and one or more expansion units for increasing the number of ECG leads applied to a patient for enhanced monitoring capabilities. Multiple embodiments are illustrated for providing a common mode signal between the main electrode unit and expansion units without requiring the physical transmission of voltage potential between the main unit and the expansion

unit. In one embodiment, the main unit and the expansion unit share a common ground reference potential. In a second embodiment, an optical signal is transmitted between the main unit and the extension unit to relay the common mode information while in a third embodiment, common electrode potentials are provided to both the main unit and the extension unit for constructing their own common reference signal.

**Inventors**

SANTALA ROBERT FILIP ARNOLD

VARTIOVAARA VILLE PETTERI

VIRTANEN JUHA PETRI

**Latest standardized assignees - inventors removed**

GENERAL ELECTRIC

**Publication dates**

2017-09-07

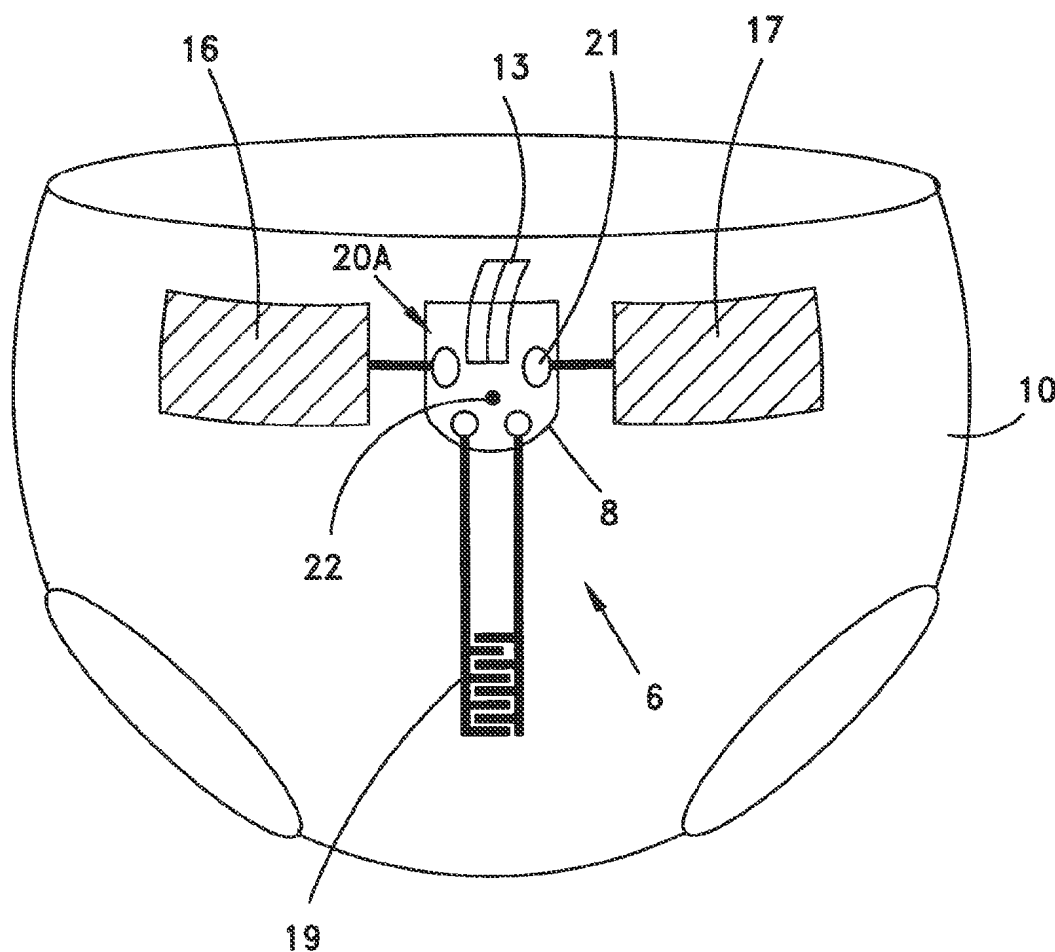
2017-09-08

Family 68/100 - FAMPAT - ©Questel

**Title**

(US9445747)

Apnea detector and system

**Images****Abstract**

(US9445747)

An apnea detector is disclosed. A detector unit in communication with a capacitive type sensor is adapted to receive an electrical signal which is indicative of variable capacitance resulting from movement of a subject and to emit an alert signal

when the received electrical signal is indicative of symptoms of apnea. In one embodiment, a detector unit is in communication with a curvature sensor adapted to detect a variable curvature of a subject body surface resulting from breathing patterns of a subject. The detector unit is attached to an article of clothing of the subject.

**Inventors**

RAHAMIM SHAKED

ELYADA ORI

**Latest standardized assignees - inventors removed**

DIAPERTECH

**Publication dates**

2013-05-16

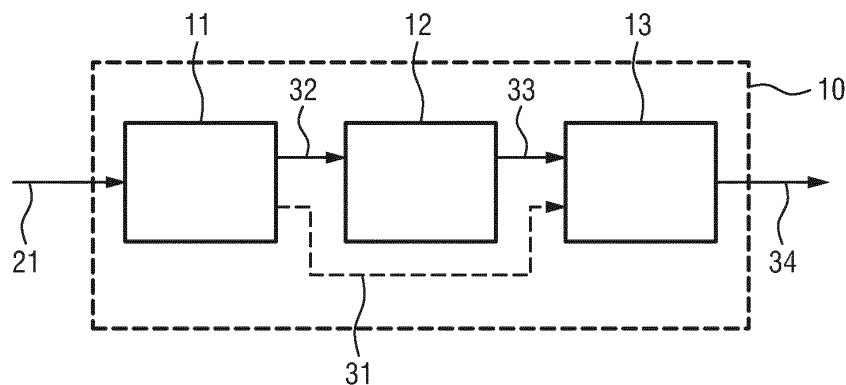
2016-09-20

Family 69/100 - FAMPAT - ©Questel

**Title**

(WO201801929)

Processing apparatus for processing a physiological signal

**Images****FIG.3****Abstract**

(WO201801929)

The present invention relates to a processing apparatus (10) for processing a physiological signal (21) using model subtraction, notch filtering and gating. The processing apparatus comprises a model subtraction unit (11) configured to receive the physiological signal (21) and to reduce a first unwanted signal component, such as an ECG contamination, in the physiological signal by subtracting from the physiological signal a model (31) of the 5 first unwanted signal component to obtain a residual signal (32); a filter unit (12) configured to receive the residual signal (32) and to reduce a second unwanted signal component, such as power line noise, in the residual signal by applying a notch filter to obtain a filtered signal (33); and a gating unit (13) configured to receive the filtered signal (33) and to apply gating to the filtered signal to obtain a gated signal (34). The present invention further relates to a 10 corresponding electromyography system and a method for processing a physiological signal using model subtraction, notch filtering and gating.

**Inventors**

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**Latest standardized assignees - inventors removed**

PHILIPS

**Publication dates**

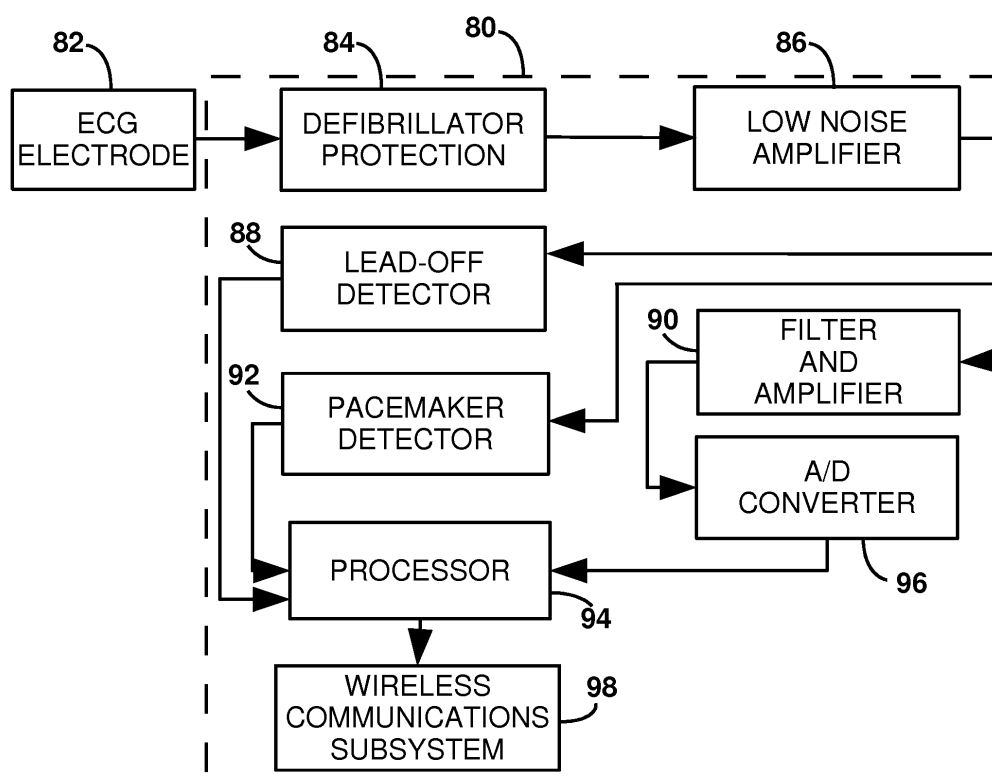
2018-01-04

Family 70/100 - FAMPAT - ©Questel

**Title**

(WO201023641)

Wireless medical monitoring system

**Images****Abstract**

(WO201023641)

A blood oxygen saturation level (SpO<sub>2</sub>) measurement subunit employed in a wireless transceiver unit connected to a medical monitor unit. An illumination emulator is used for emulating the characteristics of an illumination source of a pulse oximeter. The emulator utilizes at least part of the energy coming from the SpO<sub>2</sub> socket of the medical monitor. Energy originally intended to energize one illumination source of the pulse oximeter, energizes the power supply circuitry. A processor is employed for processing information about pulsing arterial blood of a patient received from a patient companion assembly (PCA). A digital to analogue converter is used for converting the PCA, to analogue signal. A low pass filter (LPF), filtering the signal to form a pulsative voltage signal represents the pulsing arterial blood of the patient, and is sent to the SpO<sub>2</sub> socket of the medical monitor for displaying and further processing.

**Inventors**

ZIV DAVID

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GANDELMAN YOSEF

KEREN AVI

**Latest standardized assignees - inventors removed**

ELCAM MEDICAL AGRICULTURAL COOPERATIVE ASS

**Publication dates**

2010-03-04

2010-06-17

2011-07-07

2011-09-01

2011-09-07

2015-04-01

Family 71/100 - FAMPAT - ©Questel

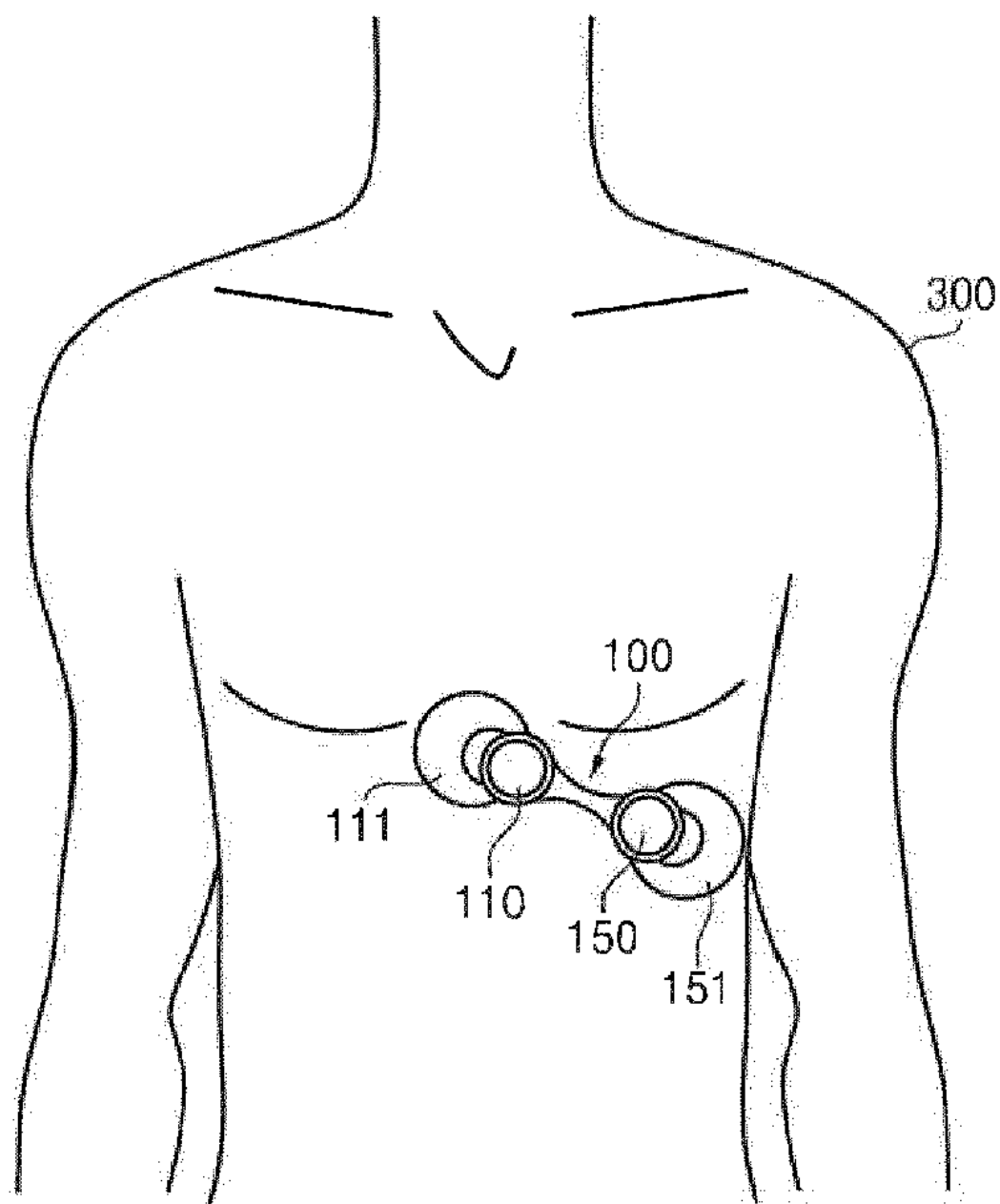
**Title**

(EP3170450)

Patch including an external floating high-pass filter and an electrocardiograph (ecg) patch including the same

**Images**

FIG. 2

**Abstract**

(EP3170450)

An electrocardiograph (ECG) patch including: a first electrode; a second electrode; a high pass filter configured to receive a bias voltage and provide the bias voltage to the first electrode and the second electrode; and a signal processing unit configured to generate the bias voltage and provide the bias voltage to the high pass filter.

**Inventors**

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Latest standardized assignees - inventors removed

SAMSUNG ELECTRONICS

Publication dates

2017-05-24

2017-06-01

2017-07-21

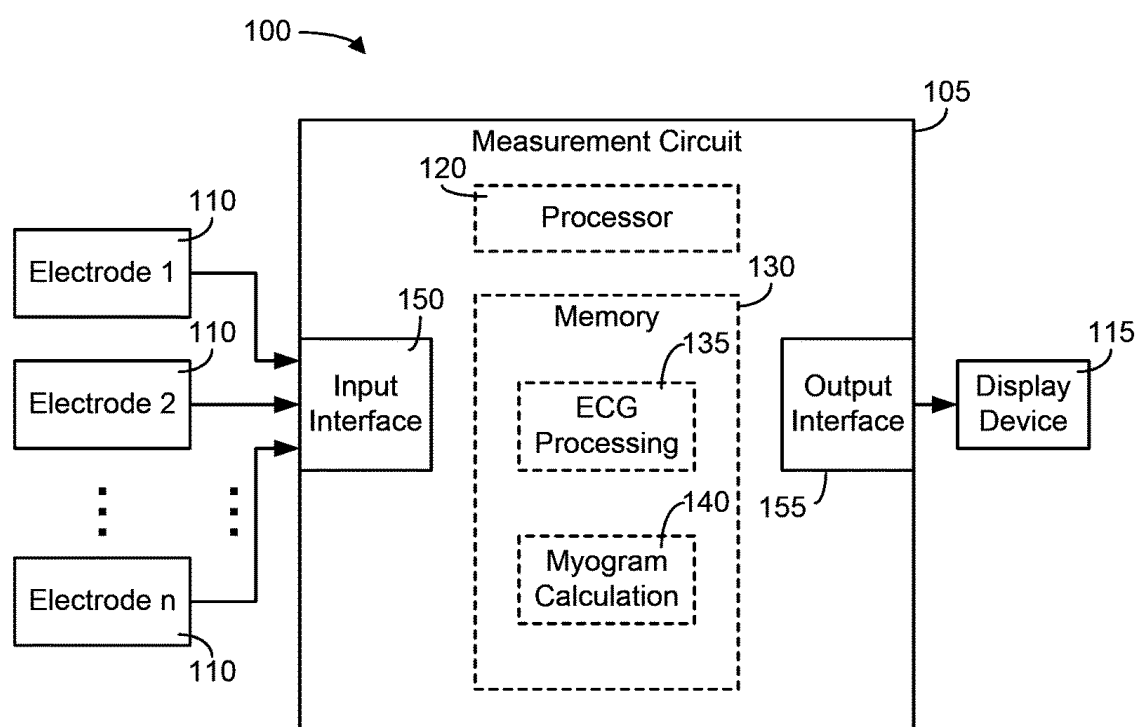
Family 72/100 - FAMPAT - ©Questel

Title

(US9585583)

Myogram determination from ecg signal

Images



Abstract

(US9585583)

Systems and methods for measuring signals representative of muscle activity are provided. One method includes detecting an ECG signal through a plurality of electrodes. The ECG signal includes a plurality of ECG sample signals, and each ECG sample signal is a bipolar signal associated with two of the plurality of electrodes and includes a cardiac signal component and a myographic signal component. The method further includes filtering each of the ECG sample signals to remove at least a portion of the cardiac signal component and generate a combined myographic power signal for the two of the plurality of electrodes with which the ECG sample signal is associated. Each combined myographic power signal represents a myographic potential between the two electrodes. The method further includes calculating individual myographic power signals for each of the plurality of electrodes by applying the combined myographic power signals within a covariance matrix.

Inventors

MORTARA DAVID W

Latest standardized assignees - inventors removed

MORTARA INSTRUMENT

MORTARA INSTRUMENT SERVICES

**Publication dates**

2017-03-07

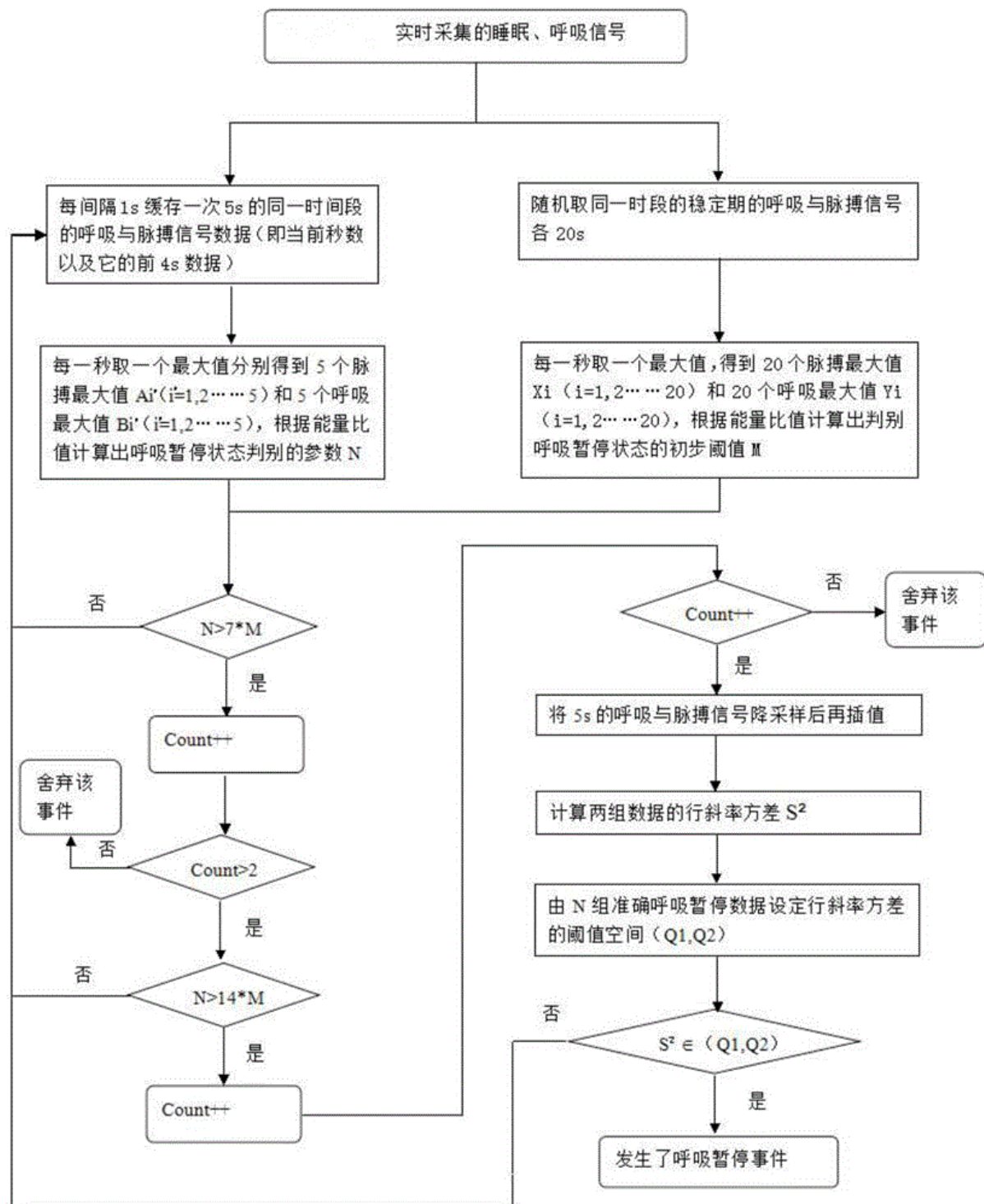
2017-06-22

Family 73/100 - FAMPAT - ©Questel

**Title**

(CN106175770)

Method and system for judging apnea during sleep

**Images****Abstract**

(CN106175770)

The invention relates to a method and a system for judging apnea during sleep. The method comprises the following steps:

step 1: acquiring a sleep breathing signal of a testee during the sleep in real time; step 2: processing the sleep breathing signal to obtain a breathing rate waveform diagram and a pulse waveform diagram; and step 3: analyzing the breathing rate waveform diagram and the pulse waveform diagram to determine whether the apnea happens during the sleep. Therefore, by virtue of the above solution, the determination of the sleep apnea is realized without contacting the testee, the radiation is avoided, and the detection result is accurate; and moreover, convenience in carrying is realized, the use is convenient and rapid, the test of the apnea and the use for examination when a user is at home or in an environment of the business travel can be satisfied, and the consumption of time and money can be reduced.

**Inventors**

LI XIANG

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CHEN PENGBIN

PANG ZHIQIANG

**Latest standardized assignees - inventors removed**

SOUTH CHINA NORMAL UNIVERSITY

**Publication dates**

2016-12-07

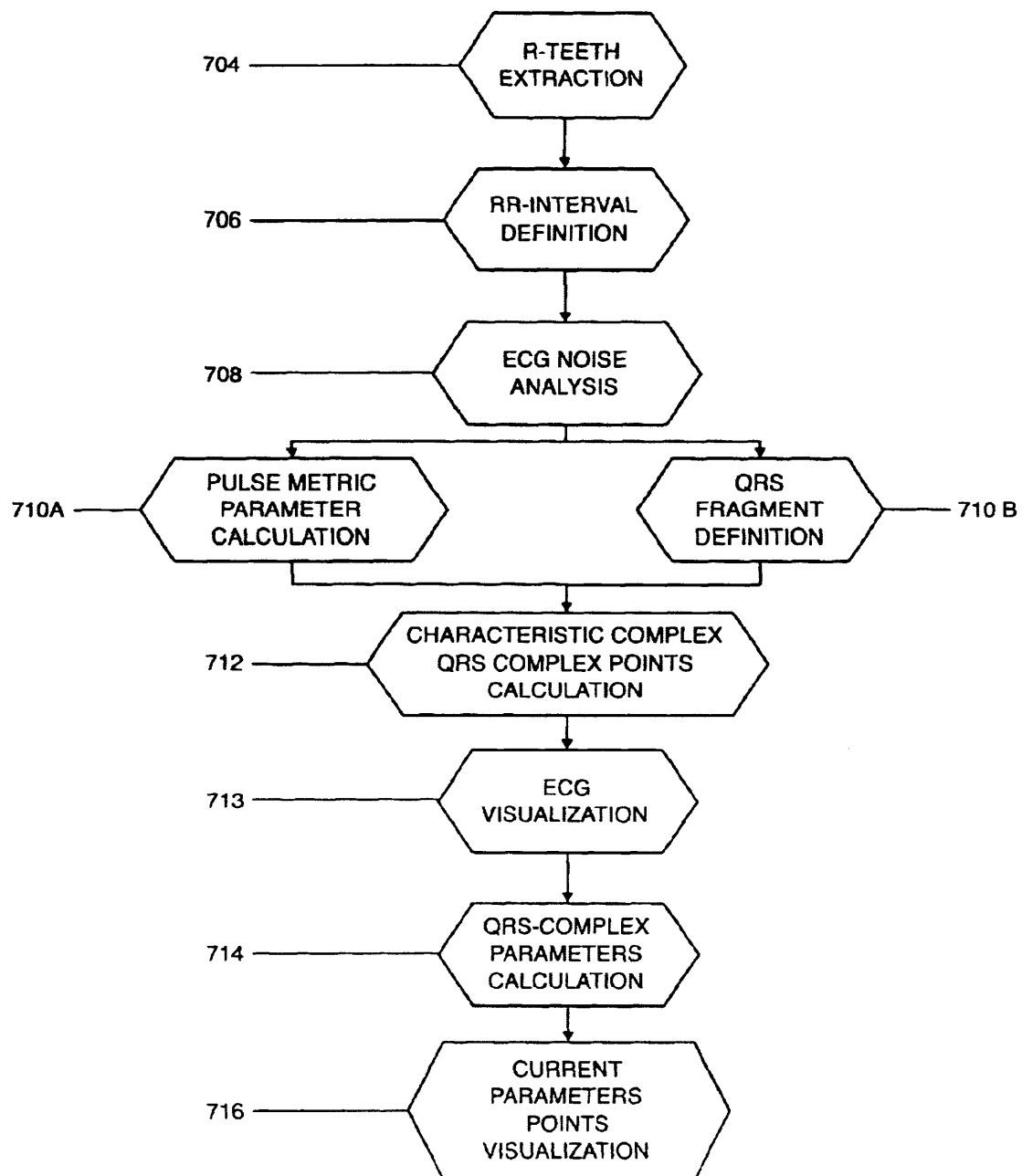
Family 74/100 - FAMPAT - ©Questel

**Title**

(EP1503664)

System and process for analyzing a medical condition of a user

**Images**

**Abstract**

(EP1503664)

A device (50) and a process for analyzing a medical condition of a user.

**Inventors**

MISCZYNSKI DALE J

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TYMOSHOK SERGII

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TYMOSHOK DYMTRIO

**Latest standardized assignees - inventors removed**

MONEBO TECHNOLOGIES

**Publication dates**

2002-12-12

2003-06-05

2003-06-05

2003-06-10

2003-06-10

2003-12-02

2004-11-11

2005-02-09

2005-05-12

2007-10-30

2009-02-25

Family 75/100 - FAMPAT - ©Questel

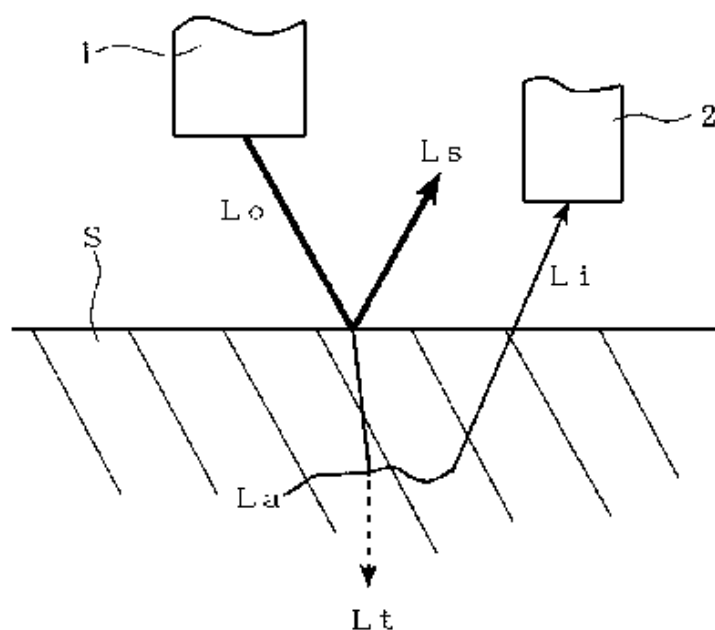
**Title**

(US6070092)

Method and apparatus for measuring optical properties of surface state of skin

**Images**

Fig. 1

**Abstract**

(US6070092)

Light  $L_o$  is allowed to be applied on the skin S, the internal scattered light  $L_i$  in the region from the surface of the skin S to the microcirculation system is detected preferably in at least three wavelength regions of 400 to nm, 500 to 600 nm, 600 to 800 nm, or 800 to 1500 nm, and the optical properties which are affected by blood circulation, such as skin color, spots, and discoloration are determined. With these optical properties, the surface state of the skin can be evaluated better.

**Inventors**

KAZAMA HARUHITO

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**Latest standardized assignees - inventors removed**

KAO

**Publication dates**

1998-05-19

1998-05-27

1998-07-01

2000-05-30

2003-01-08

2004-08-11

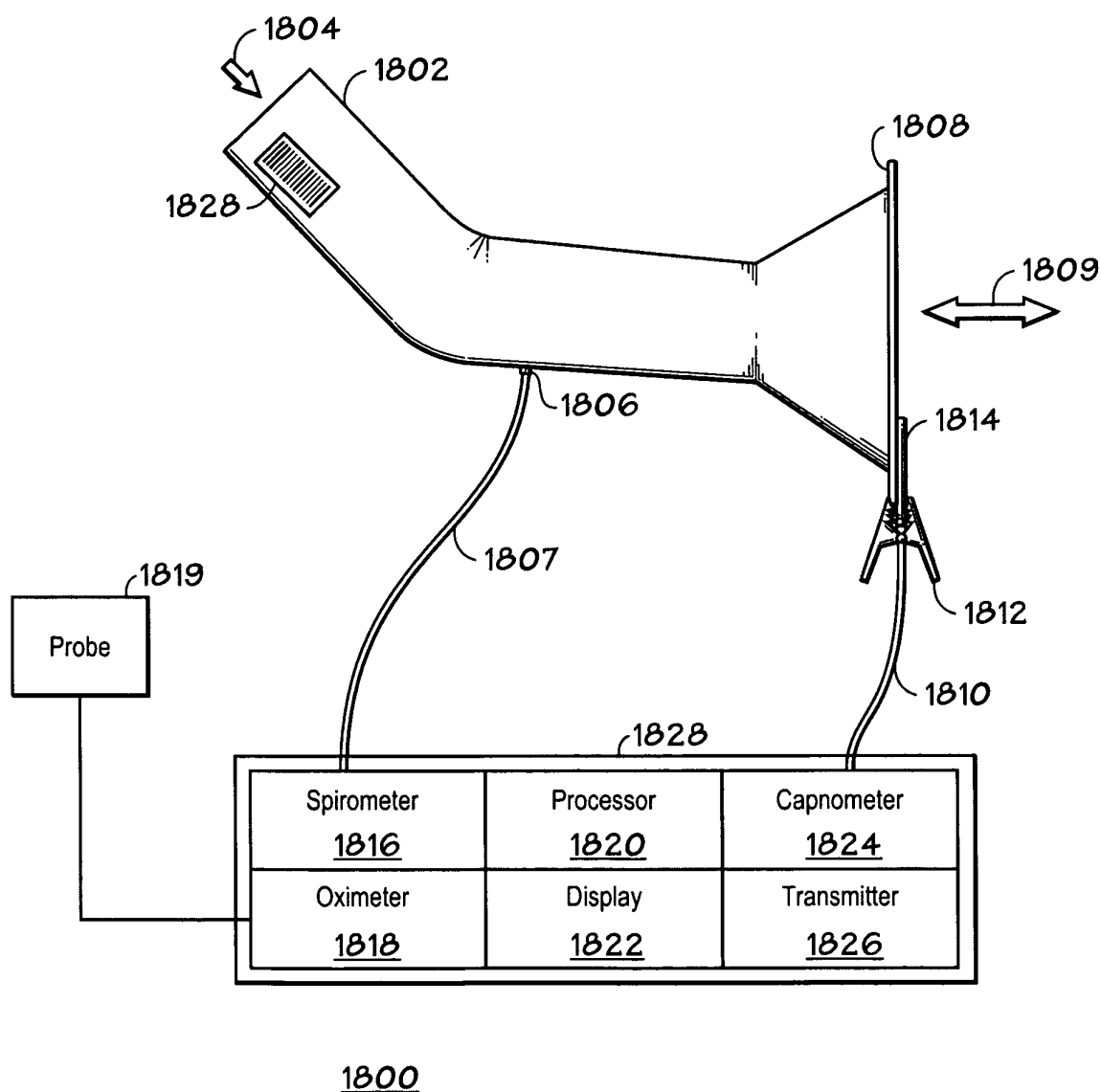
2005-04-29

Family 76/100 - FAMPAT - ©Questel

**Title**

(US9468378)

Airway instability detection system and method

**Images****Abstract**

(US9468378)

A system and method for data processing is disclosed. One example of a processor-based method comprises accessing data representative of a time series of at least one component of a timed waveform corresponding to a pulse, and searching the data for an occurrence of a cluster of variations induced by at least one of an apnea cluster and a hypopnea cluster. An exemplary system comprises a memory device adapted to access data representative of a time series of at least

one component of a timed waveform corresponding to a pulse, and a processor adapted to search the data for an occurrence of a cluster of variations induced by at least one of an apnea cluster and a hypopnea cluster.

**Inventors**

LYNN LAWRENCE A

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**Latest standardized assignees - inventors removed**

LYNN LAWRENCE A

**Publication dates**

2006-07-06

2006-07-13

2006-07-20

2006-08-24

2007-06-07

2015-01-13

2015-02-12

2015-05-26

2016-10-18

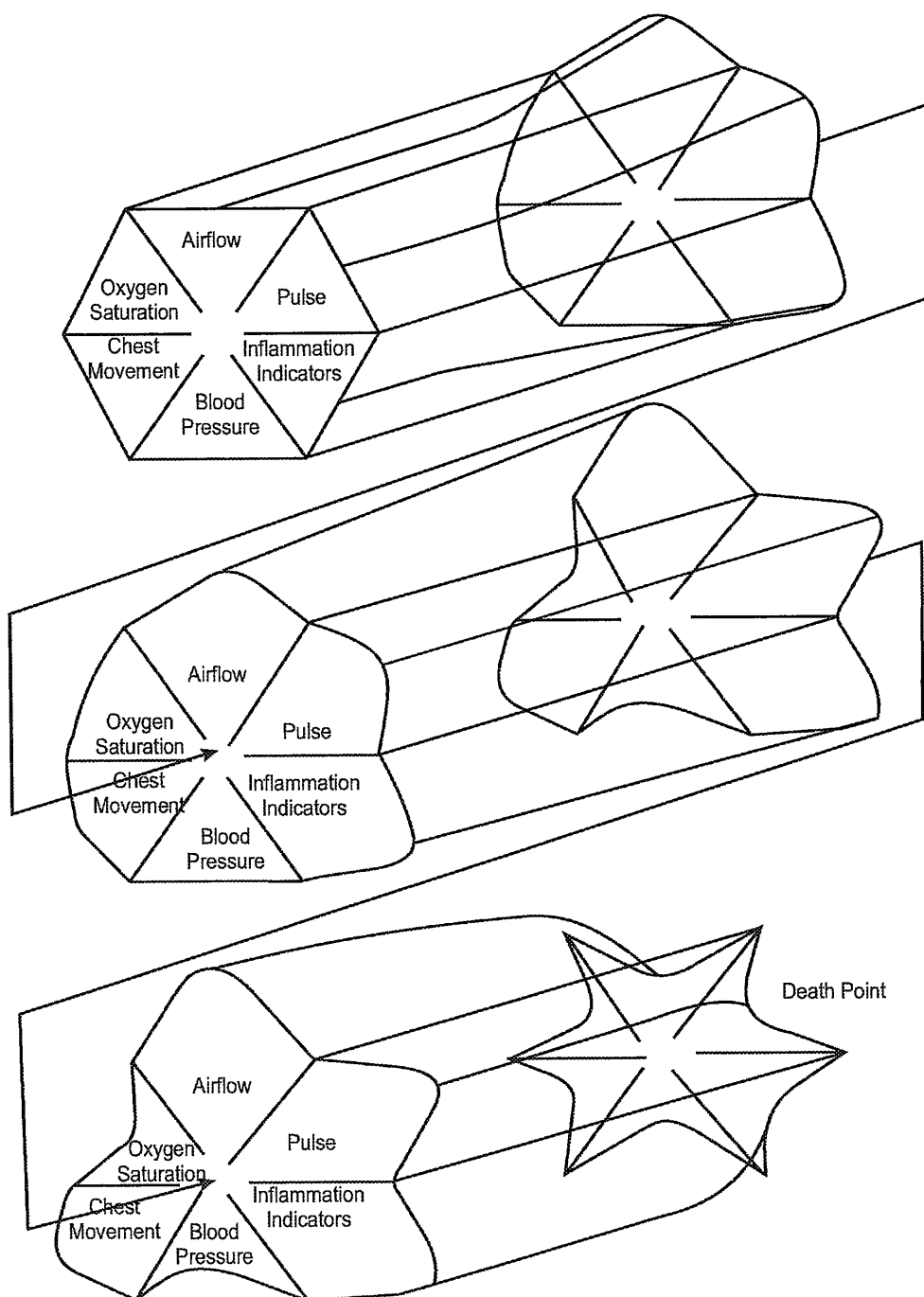
Family 77/100 - FAMPAT - ©Questel

**Title**

(US8241213)

Microprocessor system for the analysis of physiologic datasets

**Images**

**Abstract**

(US8241213)

A system and method for organization and analysis of complex and dynamically interactive time series is disclosed. One example comprises a processor based system for relational analysis of physiologic signals for providing early recognition of catastrophic and pathologic events such as pathophysiologic divergence. The processor is programmed to identify pathophysiologic divergence of at least one of first and second physiologic parameters in relationship to the other and to output an indication of the divergence. An object-based method of iterative relational processing waveform fragments in the time domain is described wherein each more complex waveform object inherits the characteristics of the waveform objects from which it is derived. The first physiologic parameter can be the amplitude and frequency of the variation in chest wall impedance or nasal pressure and the second parameter can be a measure or indication of the arterial oxygen saturation.

**Inventors**

LYNN LAWRENCE A

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**Latest standardized assignees - inventors removed**

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**Publication dates**

2010-04-01

2011-01-20

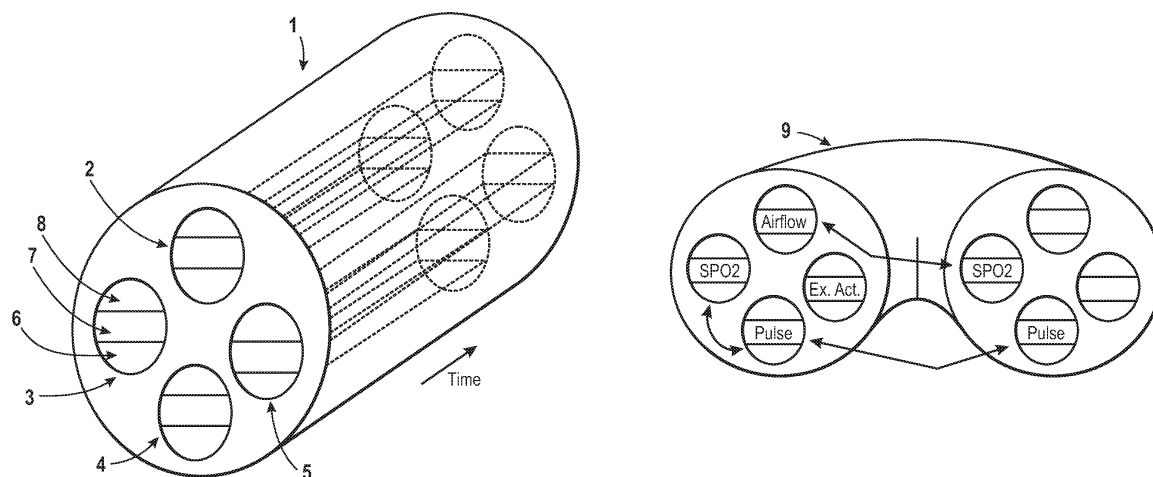
2012-08-14

Family 78/100 - FAMPAT - ©Questel

**Title**

(US7758503)

Microprocessor system for the analysis of physiologic and financial datasets

**Images****Abstract**

(US7758503)

A system and method for organization and analysis of complex and dynamically interactive time series is disclosed. One example comprises a processor based system for relational analysis of physiologic signals for providing early recognition of catastrophic and pathologic events such as pathophysiologic divergence. The processor is programmed to identify pathophysiologic divergence of at least one of first and second physiologic parameters in relationship to the other and to output an indication of the divergence. An object-based method of iterative relational processing waveform fragments in the time domain is described wherein each more complex waveform object inherits the characteristics of the waveform objects from which it is derived. The first physiologic parameter can be the amplitude and frequency of the variation in chest wall impedance or nasal pressure and the second parameter can be a measure or indication of the arterial oxygen saturation.

**Inventors**

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**Latest standardized assignees - inventors removed**

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**Publication dates**

2003-08-21

2006-12-07

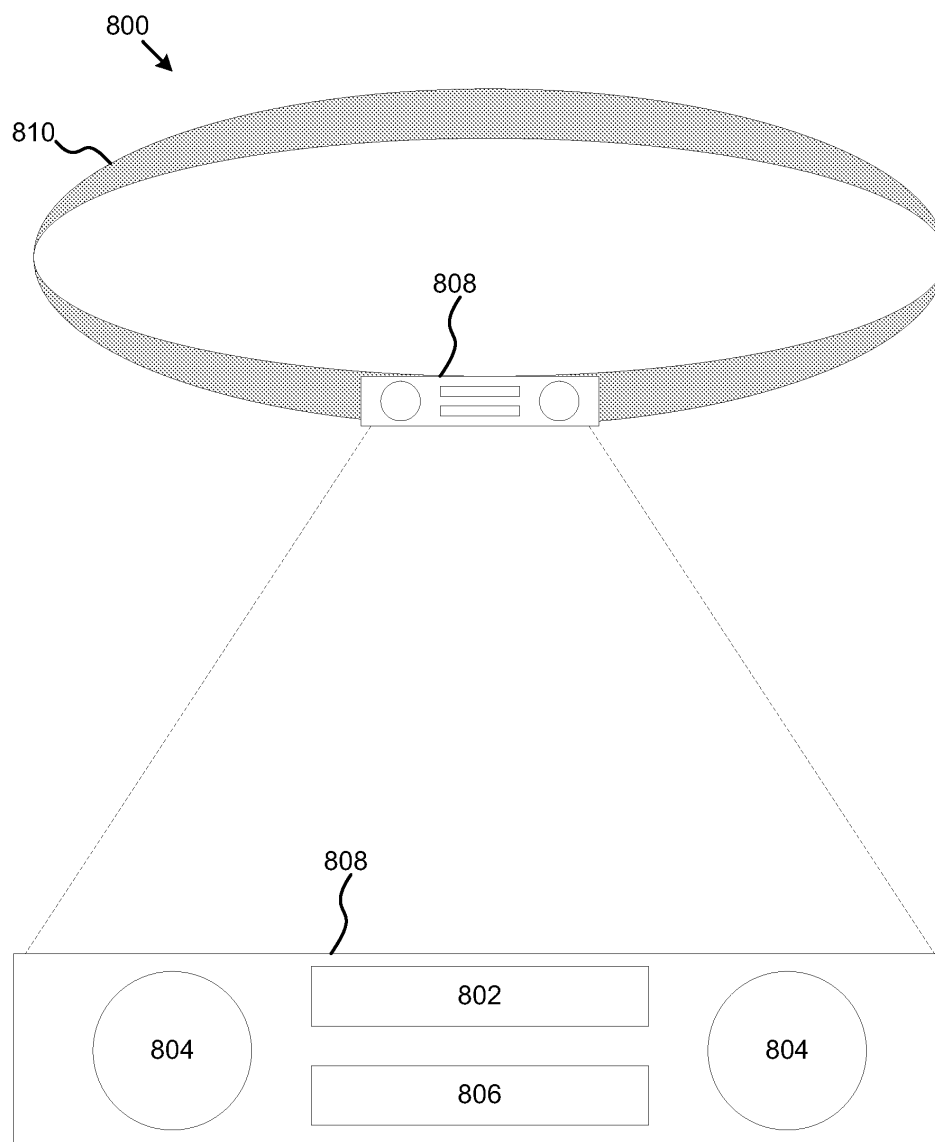
2010-07-20

Family 79/100 - FAMPAT - ©Questel

**Title**

(WO2011130541)

Measurements of fatigue level using heart rate variability data

**Images****Abstract**

(WO2011130541)

Methods, apparatuses, and systems for quantifying fatigue of a subject are disclosed. The methods may include measuring an electrocardiogram (ECG) signal from the subject. The methods may further include calculating, with a processing device, a Heart Rate Variability (HRV) metric in response to the ECG signal. The methods may additionally include calculating, with a processing device, a fatigue level in response to the HRV metrics.

**Inventors**

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**Latest standardized assignees - inventors removed**

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**Publication dates**

2011-10-20

2012-02-23

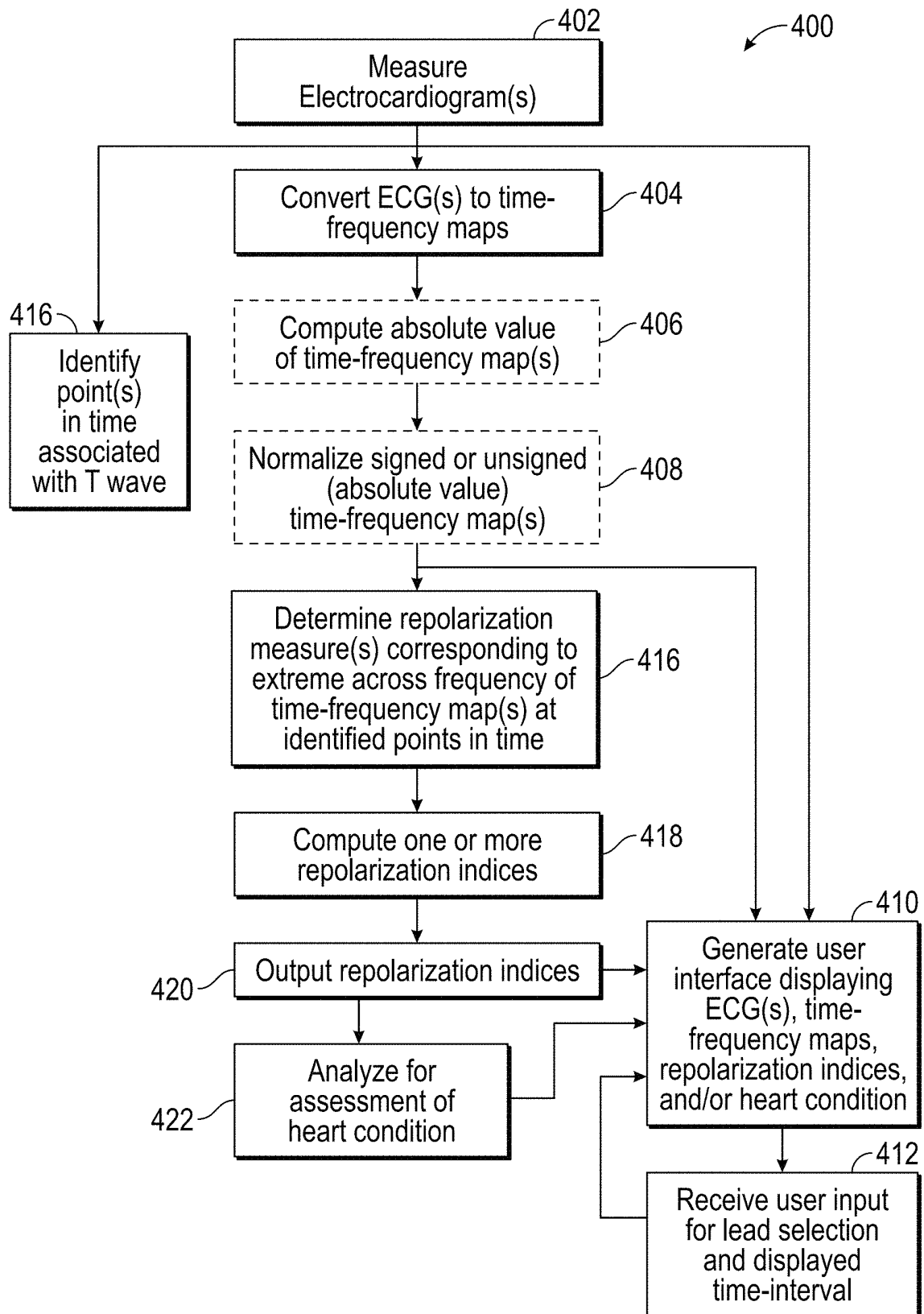
2013-06-06

Family 80/100 - FAMPAT - ©Questel

**Title**

(WO201758578)

Quantitative heart testing

**Images****Abstract**

(WO201758578)

Heart condition and function can be quantified using repolarization measures and/or repolarization indices derived from a

time-frequency transform of an electrocardiogram, e.g., based on points in time associated with the T wave. The electrocardiograms, time-frequency maps derived therefrom, and/or indices obtained by analysis of the time-frequency maps and electrocardiograms may be assembled into a user interface. Further embodiments are described.

#### Inventors

KRUBSACK DAVID  
HILZ MARK  
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#### Latest standardized assignees - inventors removed

HEART TEST LABORATORIES

#### Publication dates

2017-03-30  
2017-03-30  
2017-04-06  
2017-04-06  
2017-07-11  
2017-10-26  
2018-04-10  
2018-05-10

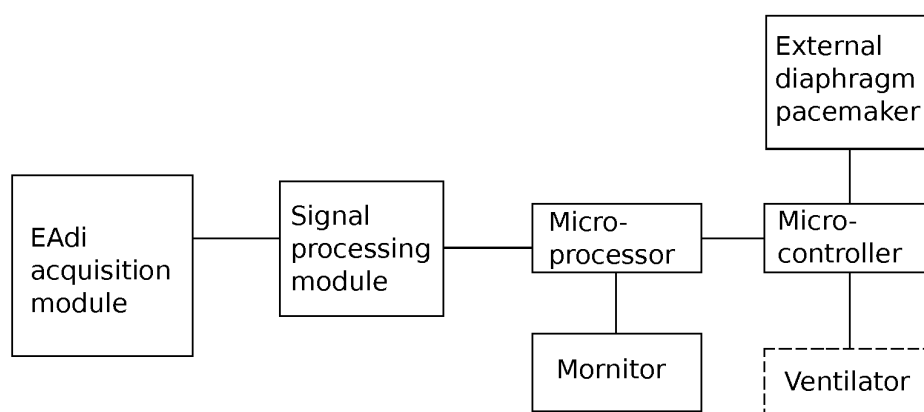
Family 81/100 - FAMPAT - ©Questel

#### Title

(EP2918303)

Method and device for external diaphragm pacing and synergistic aspiration with respirator

#### Images



#### Abstract

(EP2918303)

The present invention discloses a method for synchronized ventilation using an external diaphragm pacemaker and a ventilator, which includes the following steps: (1) filtrating captured EAdi signal to reduce the noises, (2) assessing the absolute peak value  $a$  of the EAdi signal and : if  $a < 0.5\mu V$ , adjust the external diaphragm pacemaker to issue a stimulus current at a frequency of 10-12 beats per minute, and at the same time trigger the ventilator to perform ventilation in an assisted ventilation mode; if  $0.5\mu V \leq a < 1.0\mu V$ , adjust the external diaphragm, pacemaker to issue a stimulus current at a frequency of 5-8 beats per minute, and at the same time trigger the ventilator to perform ventilation in an assisted ventilation mode; if  $1.0\mu V \leq a < 2.0\mu V$ , adjust the external diaphragm pacemaker to issue a stimulus current at a frequency of 3-4 beats per minute and at the same time trigger the ventilator to perform ventilation in an assisted ventilation mode. The present invention also discloses a device which couples an external diaphragm pacemaker to ventilator. The

present invention brings the external diaphragm pacemaker into the application of mechanical ventilation in the emergency room and intensive care unit.

**Inventors**

CHEN JIALIANG

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MAO YILI

CHEN MIAO

**Latest standardized assignees - inventors removed**

ZHANG HONGXUAN

**Publication dates**

2013-03-06

2014-05-15

2015-04-22

2015-09-16

2015-10-08

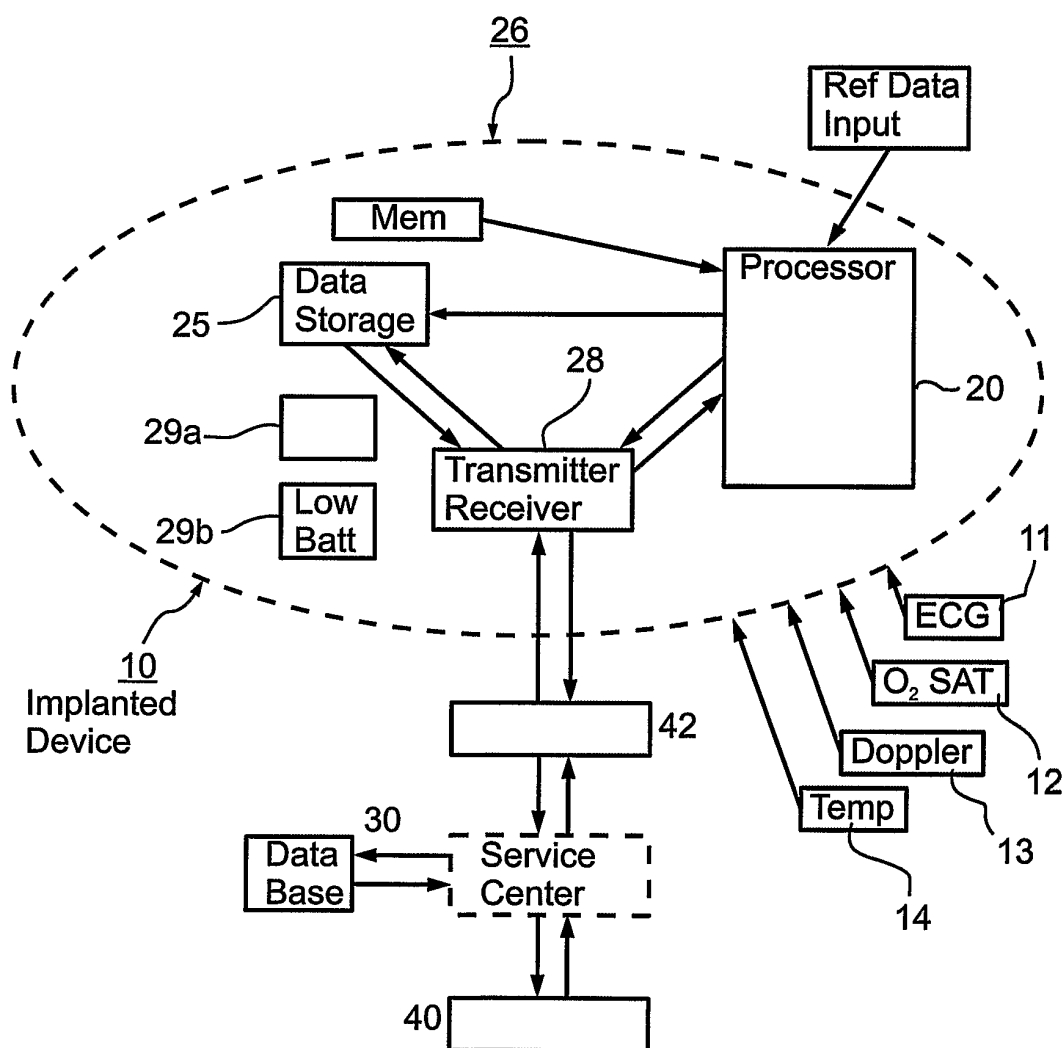
2016-08-03

Family 82/100 - FAMPAT - ©Questel

**Title**

(EP2285288)

Doppler motion sensor apparatus and method of using same

**Images**

**Abstract**

(EP2285288)

An apparatus for, and method of, sensing characteristics of a vessel and a fluid conveyed therein In one embodiment, the sensing device for acquiring signals and computing measurements comprises a sensor Including one or more transducers for transmitting acoustic energy, receiving acoustic energy, and converting the received acoustic energy into one or more signals, the one or more transducers facing a side of a vessel, a computing device operating the one or more transducers and processing the one or more signals to obtain measurement values, and a housing enclosing the sensor and the computing device

**Inventors**

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**Latest standardized assignees - inventors removed**

CARDIO ART TECHNOLOGIES

**Publication dates**

2007-06-14

2009-04-16

2009-09-03

2009-11-19

2009-11-19

2009-11-19

2009-11-19

2009-11-19

2009-11-19

2009-11-19

2009-11-19

2010-01-07

2010-04-08

2010-05-14

2010-05-27

2010-07-15

2011-01-31

2011-01-31

2011-01-31

2011-01-31

2011-02-16

2011-02-16

2011-02-16

2011-02-23

2011-03-18

2011-03-18

2011-05-04

2011-05-04

2011-05-18

2011-07-14

2011-07-14

2011-07-28

2011-09-01

2011-09-28

2011-10-13

2011-12-02

2011-12-02

2012-11-21

2012-11-21

2012-11-28

2013-12-25

2014-02-05

2014-04-09

2014-05-21

2014-06-30

2014-06-30

2014-06-30

2014-06-30

2014-09-17

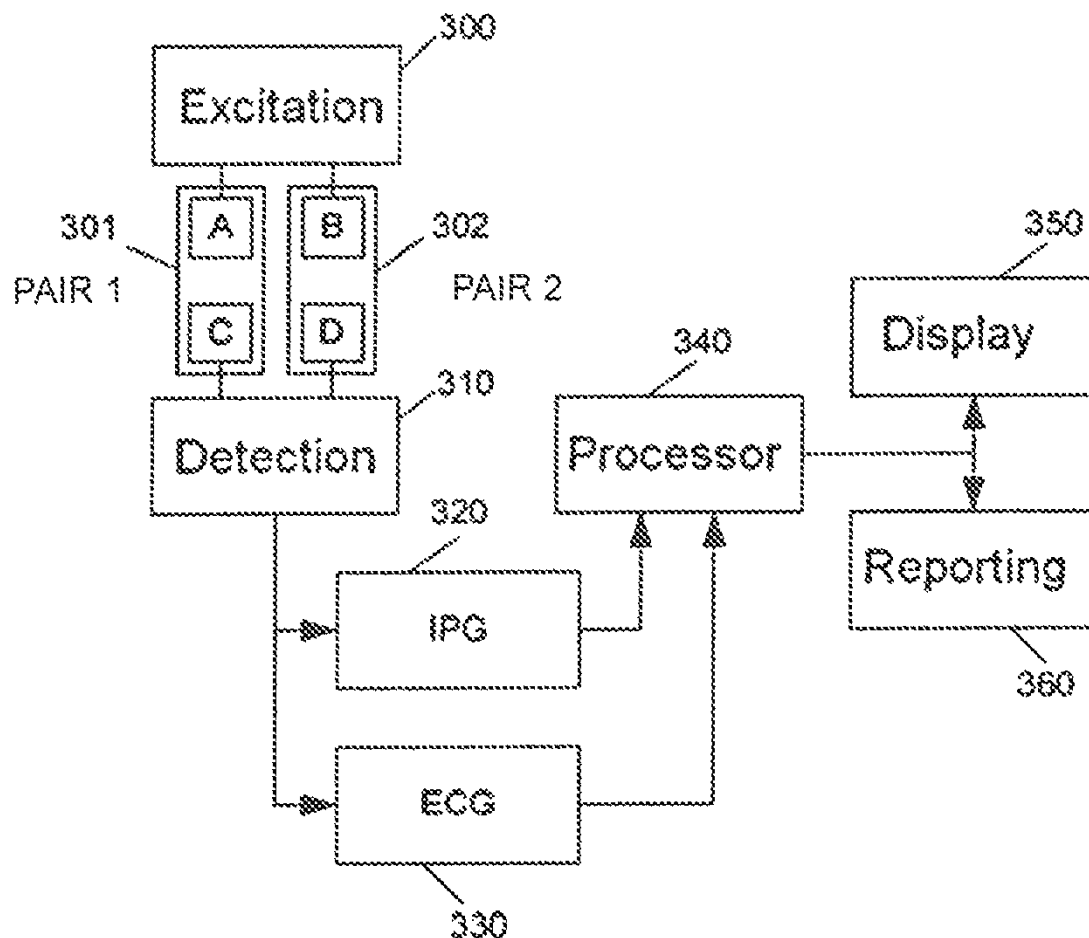
2015-01-07

Family 83/100 - FAMPAT - ©Questel

**Title**

(EP2737847)

Method and apparatus for obtaining cardiovascular information by measuring between two extremities

**Images****Abstract**

(EP2737847)

In this patent of invention there are described a method and an apparatus for obtaining information on the cardiovascular system beat by beat and continuously which are based exclusively on measurements between two limbs and effected with a pair of distal electrodes on each limb. The measurement is made by causing an alternating current to flow between one

electrode of each limb and measuring the potential difference between the other two electrodes, one also on each limb. This potential difference has a low frequency component which is the electrocardiogram (or ECG) and another component having the frequency of the injected alternating current and from which the so-called impedance plethysmogram (IPG) is extracted. The cardiovascular information will be determined by measuring the time interval between any predefined characteristic element of the ECG and one of the IPG.

**Inventors**

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**Latest standardized assignees - inventors removed**

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**Publication dates**

2013-02-07

2013-03-19

2013-03-28

2013-04-24

2014-03-05

2014-05-28

2014-05-29

2014-06-04

2014-07-10

2014-08-28

2015-01-02

2015-04-01

2016-10-12

2016-12-06

2017-02-09

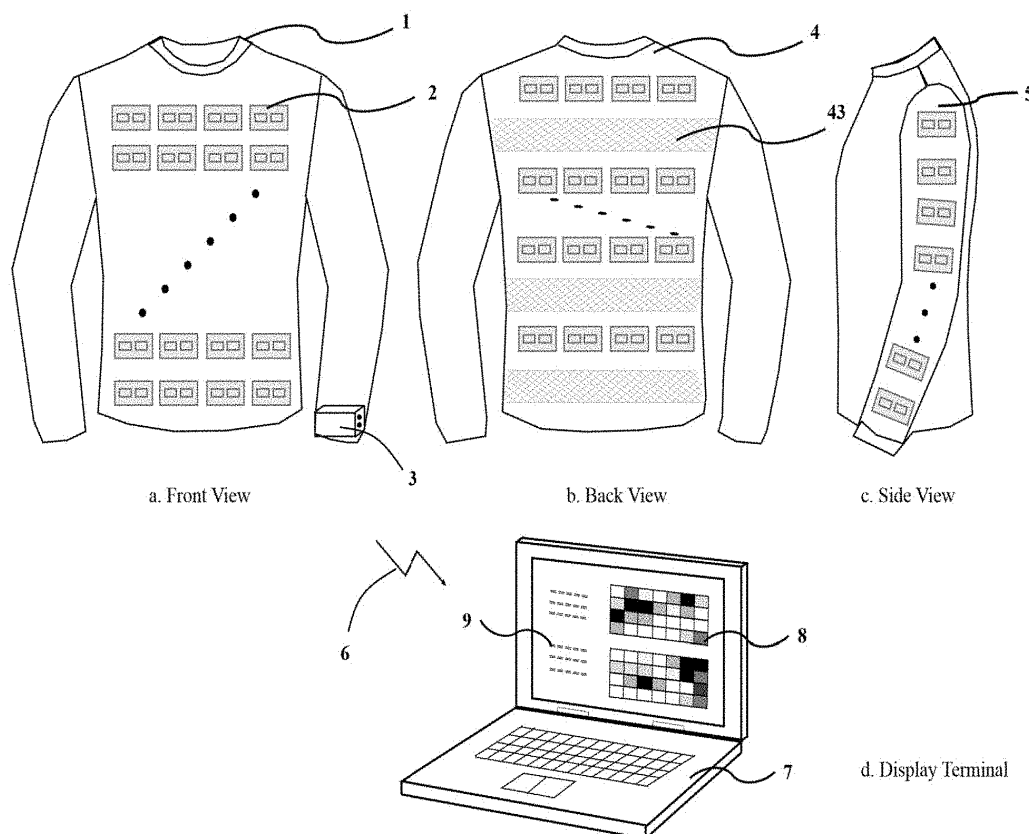
Family 84/100 - FAMPAT - ©Questel

**Title**

(US20180092554)

Wearable and unobtrusive multi-sensor array and method for pulse wave velocity imaging

**Images**



## Abstract

(US20180092554)

Novel and advantageous systems, devices, and methods for pulse wave velocity (PWV) imaging that enable precise central blood pressure (BP) estimation are provided. A multi-sensor array can provide two-dimensional PWV, thereby achieving the PWV imaging and precise central BP estimation. The multi-sensor array can be integrated in daily objects, such as clothing or a bed, which results in noninvasive, continuous, low-cost monitoring of BP that is easy to use and does not require a medical professional. Electrocardiogram imaging, photoplethysmogram imaging, and monitoring for other physiological parameters such as heart rate, SpO<sub>2</sub>, BP, and respiration, can also be achieved.

## Inventors

ZHANG YUANTING

TSANG HON KI

ZHAO NI

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## Latest standardized assignees - inventors removed

CHINESE UNIVERSITY OF HONG KONG

## Publication dates

2018-04-05

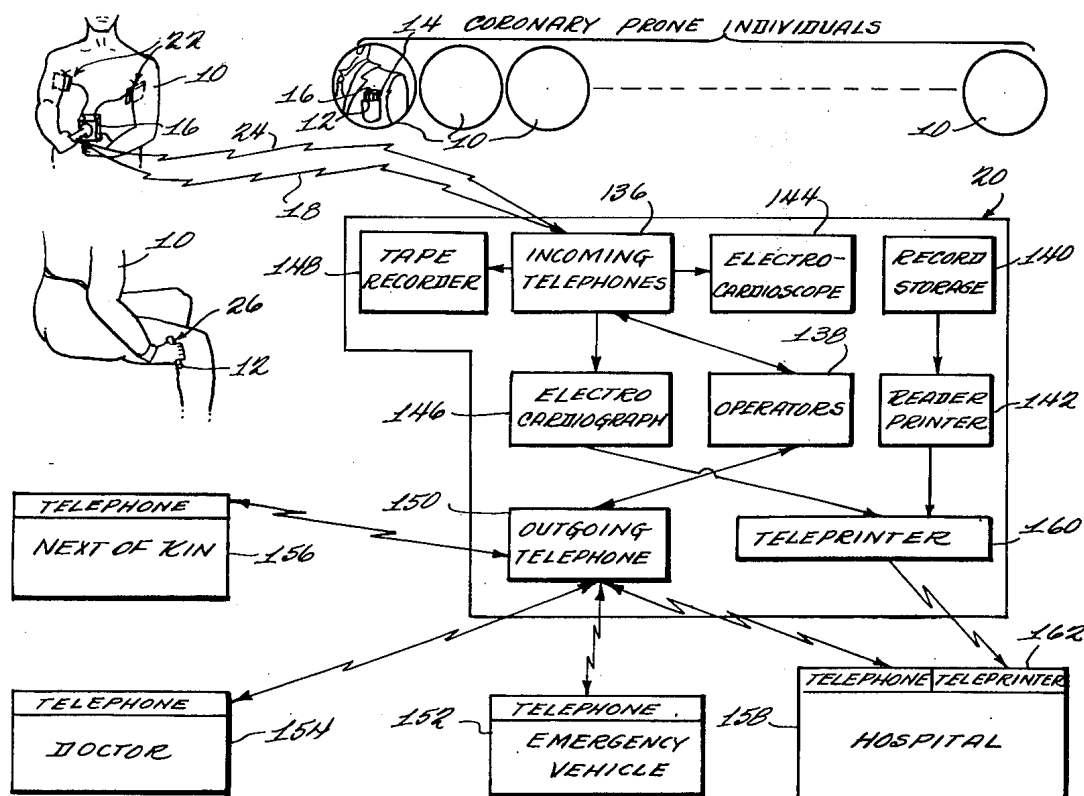
Family 85/100 - FAMPAT - ©Questel

## Title

(US4004577)

Method of treating heart attack patients prior to the establishment of qualified direct contact personal care

## Images



### Abstract

(US4004577)

A method of treating coronary prone patients when heart attack symptoms occur before qualified direct contact personal care can be administered to the patient which comprises providing each of a multiplicity of coronary prone patients with (1) a plurality of separate medicaments in self-administering form and (2) a device operable when disposed in operative relation to a patient to provide auditory signals indicative of the existing heart beat conditions of the patient, establishing communication by telephone between the patients experiencing heart attack symptoms and a source capable of making a qualified response based upon the existing heart beat conditions of the patient as to the medicament which will be effective when administered, disposing the device in operative relation with the patient and communicating the signals to the qualified source by means of the communication, communicating by means of the communication a qualified response from the source an indicated medicament which should be administered based upon the existing heart beat conditions of the patient communicated to the source and administering said indicated medicament to said patient at a time prior to qualified direct contact personal care for the patient, the qualified source preferably includes a plurality of individuals available at all times at specific telephones having medical records of the patients immediately available, including standing orders of each patient's doctor, equipment for converting the auditory signals communicated to conventional oscilloscope pictures and electrocardiograms and outgoing telephones for notifying the patient's doctor and next-of-kin and for dispatching an ambulance to the patient.

### Inventors

SARNOFF STANLEY J

**Latest standardized assignees - inventors removed**

BRUNSWICK TECHNOLOGIES

ING

### Publication dates

1974-03-15

1974-06-06

1974-06-06

1974-06-28

1975-01-22

1975-05-29

1976-09-17

1976-10-27

1976-10-27

1976-10-27

1977-01-25

1977-02-28

1977-03-10

1977-10-11

1977-10-11

1981-01-23

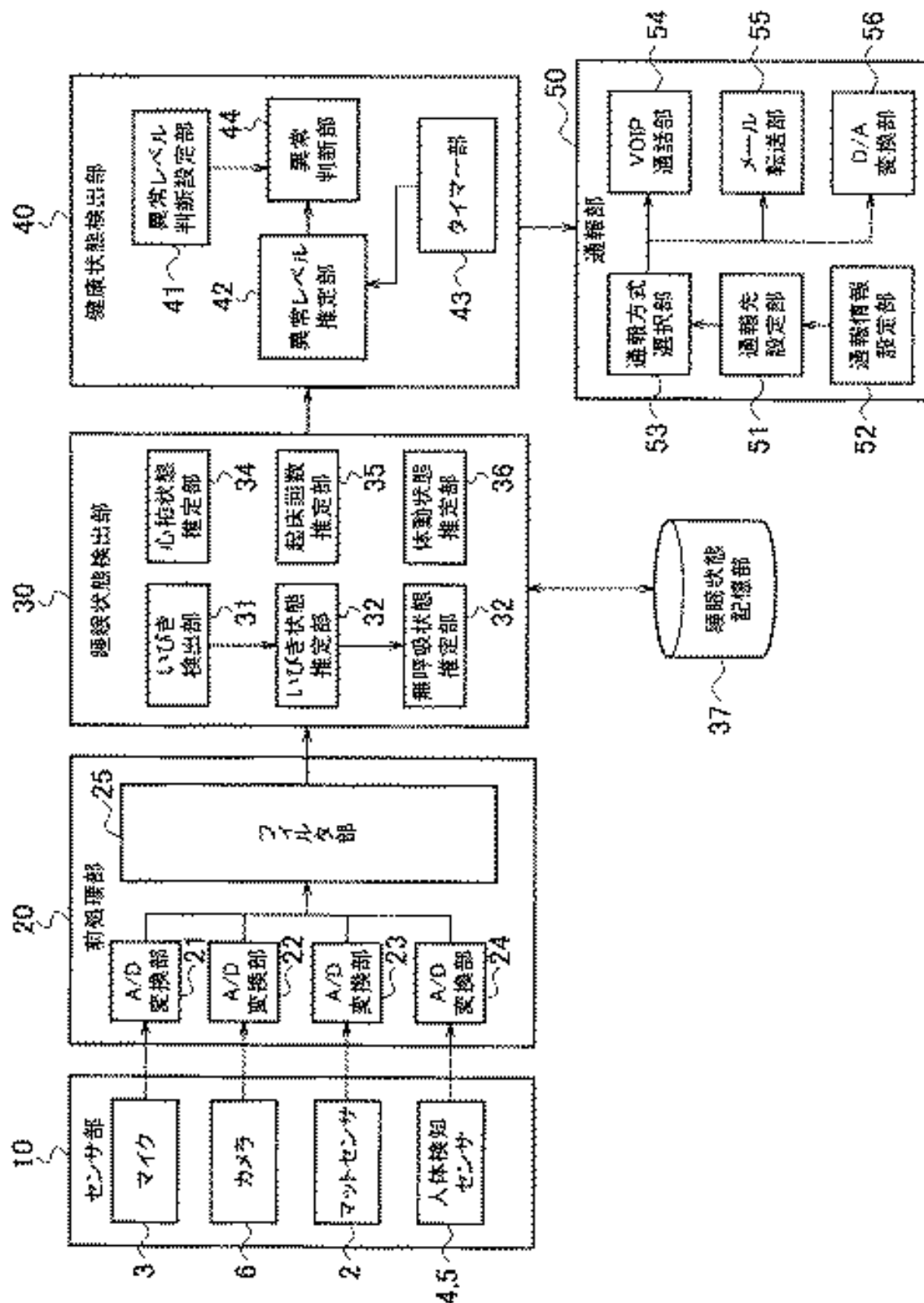
Family 86/100 - FAMPAT - ©Questel

**Title**

(JP2005304941)

Sleep state detector

**Images**



### Abstract

(JP4407365)

**PROBLEM TO BE SOLVED:** To provide a sleep state detector surely detecting a normal/abnormal state by detecting daily sleep environment without letting a user go to a specific inspection institute such as hospital.

**SOLUTION:** This sleep state detector detects sounds around a bed body by a microphone 3, detects the sounding of snore by a snore detecting part 31 based on obtained sound signals, and estimates whether the detected snore is steady or not

by a snore state estimation part 32. This sleep state detector estimates whether the user falls into an apnea state or not by an apnea state estimation part 33 based on the estimated snoring state and the detected snore sound signals, determines whether the estimated apnea state is an abnormal state or not by an abnormality determination part 44 and, when the user is in the abnormal state, notifies it to a notification destination by a notification part 50.

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#### Inventors

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PANASONIC ELECTRIC WORKS

#### Publication dates

2005-11-04

2010-02-03

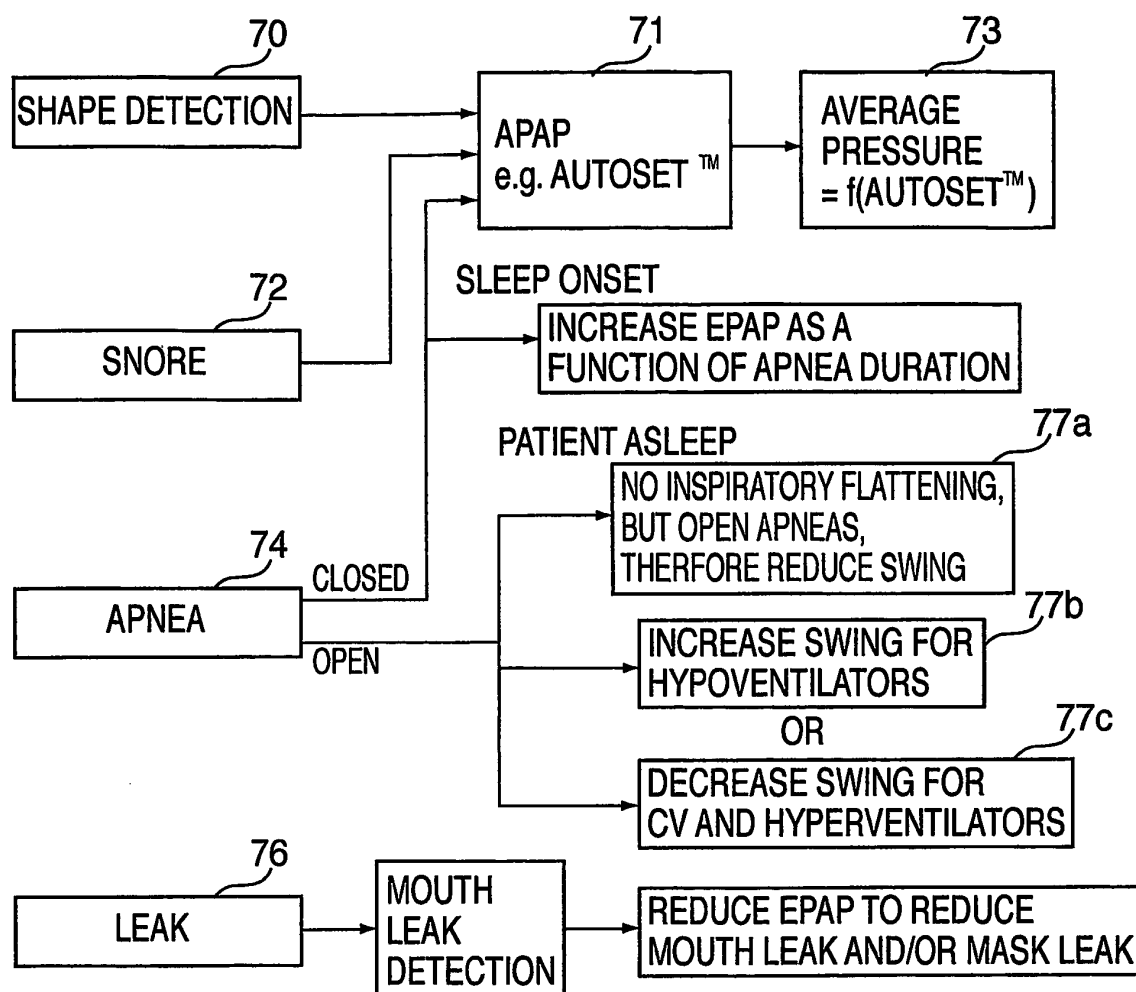
Family 87/100 - FAMPAT - ©Questel

#### Title

(EP1699514)

Mechanical ventilation in the presence of sleep disordered breathing

#### Images



#### Abstract

(EP1699514)

A method for controlling operation of a CPAP apparatus. The apparatus has a blower (2), a patient interface (6), an air delivery conduit (8) for delivering air from the blower (2) to the patient interface (6), a sensor (4p) for determining the

pressure in the patient interface (6), and a control mechanism (15) that causes air to be delivered at a desired pressure to the patient interface (6) and that detects transitions between inhalation and exhalation of a respiratory cycle of a patient in order to synchronise the blower output with the patient's efforts. In one form the CPAP apparatus provides pressure in accordance with a bi-level waveform with at least one characterising parameter of the waveform being automatically adjusted in accordance with indications of sleep disordered breathing. The indications of sleep disordered breathing can be one or more of snoring, apnea, hypopnea, and flow limitation.

**Inventors**

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**Latest standardized assignees - inventors removed**

RESMED

**Publication dates**

2005-07-14

2005-07-14

2006-09-13

2007-01-24

2007-06-28

2007-09-20

2008-06-30

2009-12-24

2010-03-24

2010-05-12

2010-08-18

2010-09-16

2011-01-06

2011-04-29

2011-09-06

2011-09-14

2011-11-24

2011-12-01

2013-09-04

2014-04-01

2014-06-05

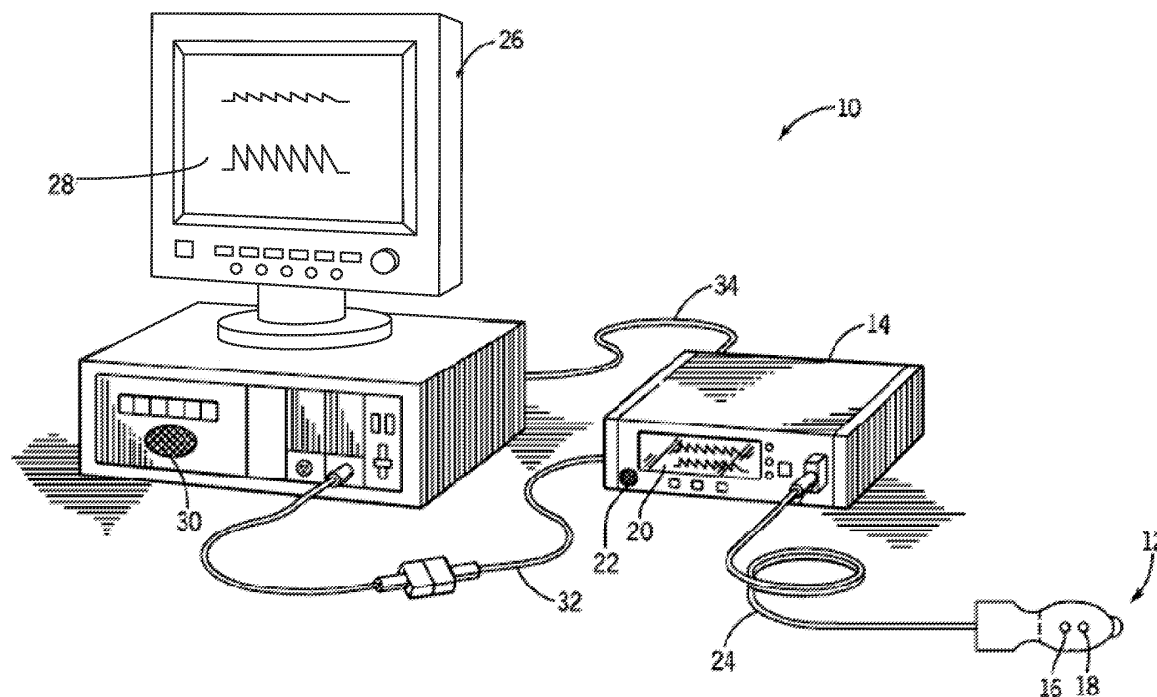
Family 88/100 - FAMPAT - ©Questel

**Title**

(WO201007488)

Systems and methods for computing a physiological parameter using continuous wavelet transforms

**Images**

**Abstract**

(WO201007488)

According to embodiments, systems and methods for computing a physiological parameter are provided. The physiological parameter may be calculated using a continuous wavelet transform technique as well as using a non-continuous wavelet transform technique. More than one value for the physiological parameter may be calculated using various techniques. The values may be evaluated to select a desired value, or an average or weighted average of the values may be computed to generate a desired value.

**Inventors**

ADDISON PAUL STANLEY

WATSON JAMES NICHOLAS

**Latest standardized assignees - inventors removed**

NELLCOR PURITAN BENNETT

ADDISON PAUL STANLEY

WATSON JAMES NICHOLAS

**Publication dates**

2010-01-21

2010-01-21

Family 89/100 - FAMPAT - ©Questel

**Title**

(WO2002101681)

Device and system for detecting and monitoring cardiovascular diseases in a patient using mobile technology

**Abstract**

(WO2002101681)

The system comprises a small-sized electronic device enabling reception of an ECG signal sensed under daily living conditions of a patient. Said signals are amplified, filtered and analyzed by means of algorithms intended to study parameters of interest of the electrocardiographic signal. If a serious crisis in a patient is determined by the electronic device, a mobile terminal sends an alarm along with the electrocardiogram signal to a patient management and supervision center. A bi-directional alarm management system enables said center to act consequently if a serious crisis has been detected in a patient and the center may then contact the patient, call an ambulance or hospital with the aim of providing as soon as possible care to the patient.

**Inventors**

VINDEL LUIS MIGUEL

FERNANDEZ MIGUEL ANGEL

VALLEJO JOSE MANUEL

JIMENEZ FERNANDO

**Latest standardized assignees - inventors removed**

GRUPO IT DEUSTO

**Publication dates**

2002-12-19

2003-04-16

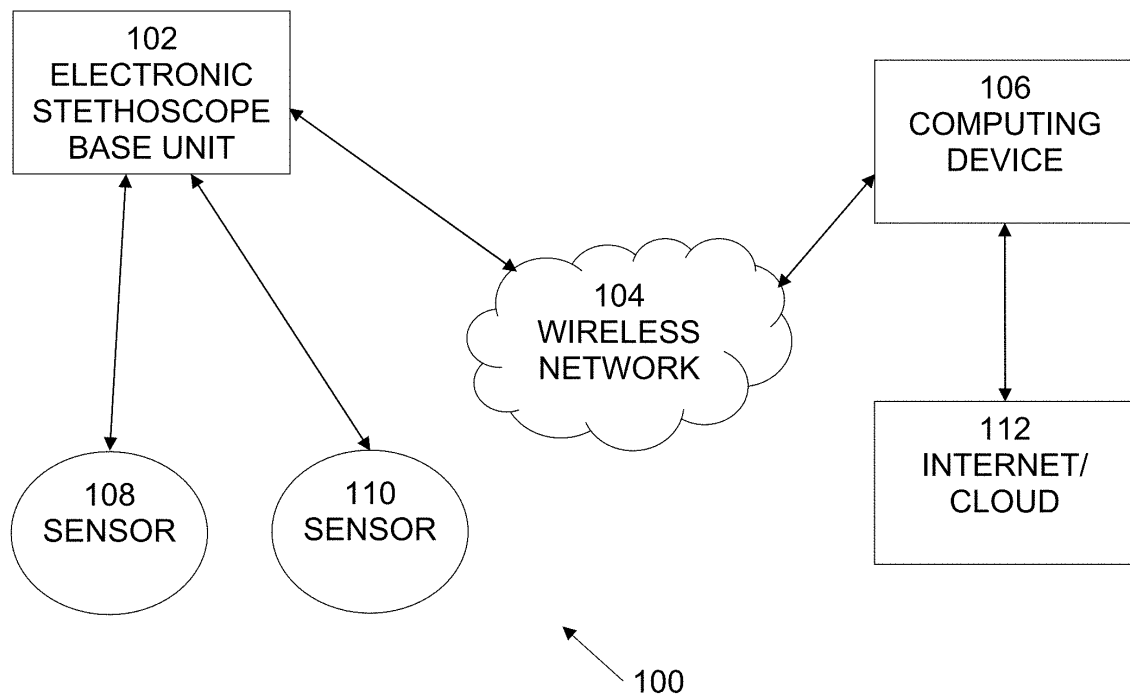
2005-02-01

Family 90/100 - FAMPAT - ©Questel

**Title**

(US20170231597)

Networked Electronic Stethoscope

**Images****Abstract**

(US20170231597)

Embodiments of the present systems and methods may provide improved electronic stethoscopes that provide diversified diagnosis functionality. For example, embodiments may provide the capability to diagnose a wide range of pathologies by using the device's wireless network capacity to link it to wearable sensors of different kinds, maintaining the traditional use of the stethoscope while enabling it to sense a whole new set of physiological signals. For example, in an embodiment, a system may comprise a networked electronic stethoscope and a sensor adapted to be attached to the networked electronic stethoscope, the sensor comprising an electrode adapted to obtain a signal representing a physiological parameter of a patient, a processor adapted to digitize and process the obtained signal to form data, and a wireless network adapter adapted to transmit the data to the networked electronic stethoscope.

**Inventors**

HOWARD NEWTON

**Publication dates**

2017-08-17

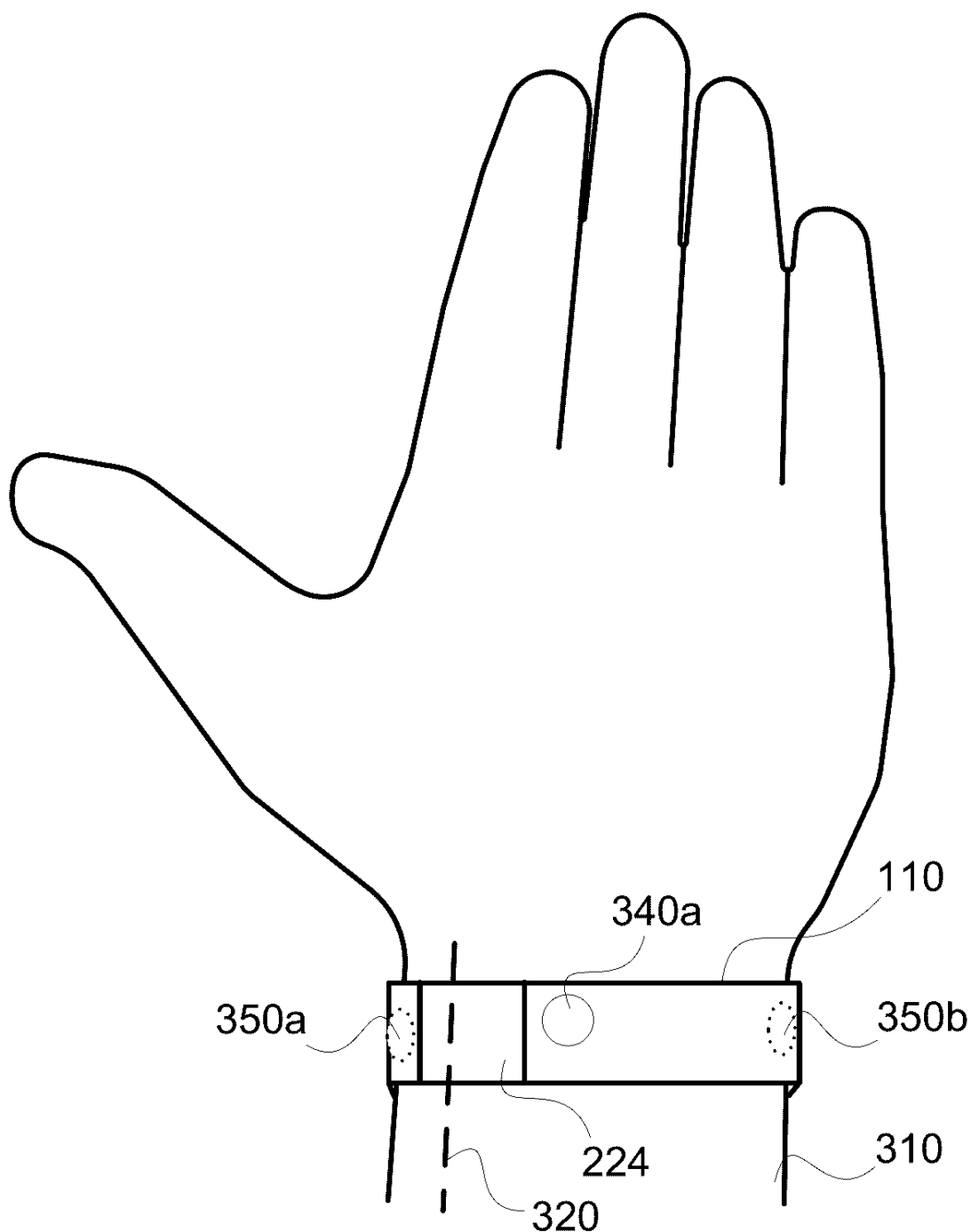
Family 91/100 - FAMPAT - ©Questel

**Title**

(EP3307150)

Wearable device electrocardiogram

**Images**



**Abstract**

(EP3307150)

Provided are a method and systems for measuring an electrocardiogram (ECG) using a wearable device. An example system includes the wearable device in a shape of a band worn on a limb (e.g., a wrist) of a patient. The wearable device includes an electrical sensor. The wearable device is operable to record, via the at least one electrical sensor, an electrical signal from the limb of the patient. The wearable device is operable to split the electrical signal into segments based on a reference signal. The reference signal includes an indication of onset times of heart beats. The segments are averaged to

derive average ECG data of low signal-to-noise ratio. The wearable device includes an optical sensor operable to measure skin color beneath a pulsating artery of the limb. The reference signal includes a photoplethysmogram (PPG) signal recorded via the optical sensor simultaneously with the electrical signal.

**Inventors**

LANGE DANIEL H

**Latest standardized assignees - inventors removed**

CHRONISENSE MEDICAL

**Publication dates**

2016-12-15

2016-12-15

2018-04-18

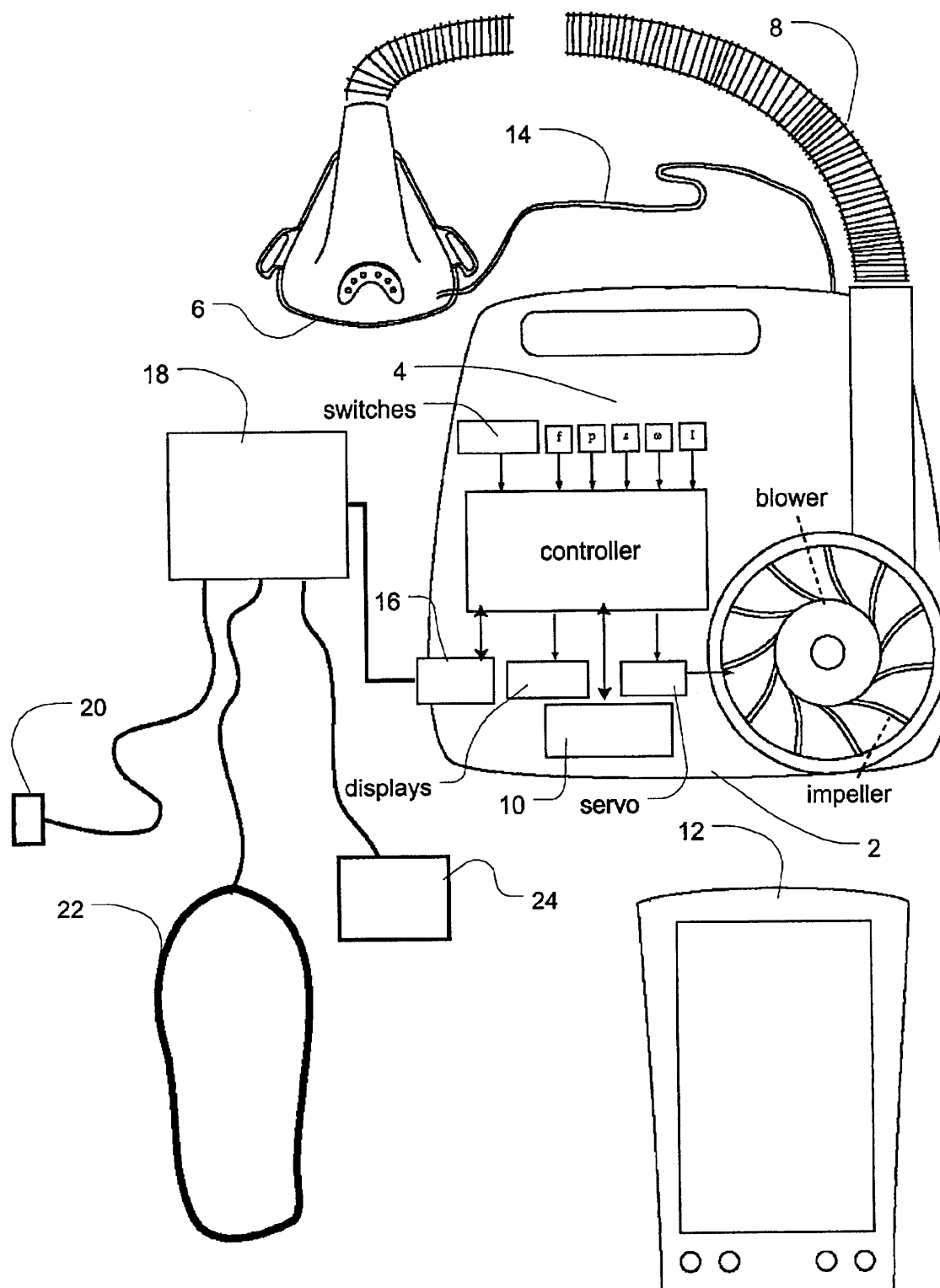
Family 92/100 - FAMPAT - ©Questel

**Title**

(EP1349600)

Apparatus for stroke patient assessment and treatment

**Images**



## Abstract

(EP1349600)

Methods and apparatus for assessing the condition of and treating patients for stroke during the delivery of continuous positive airway pressure (CPAP) are disclosed. By determining central and obstructive apnea occurrences or the percentile of pressure delivered to the patient from patient airflow, stroke indicators may be calculated and analyzed to provide information on the type of stroke a patient has suffered and the degree of a patient's neuro-recovery. The apparatus may be programmed with a particular protocol intended to identify between alternative forms of CPAP treatment appropriate for the patient based upon an assessment of the patient's condition. The device can select and recommend between the various treatment forms, identify billing reimbursement codes and generate data to track patient response to stroke treatments.

## Inventors

WRIGHT JONATHAN CALDWELL

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UJHAZY ANTHONY JOHN

**Latest standardized assignees - inventors removed**

RESMED

**Publication dates**

2002-06-20

2002-06-20

2002-06-24

2002-12-12

2003-10-08

2004-03-31

2004-07-15

2004-07-29

2004-12-21

2005-11-25

2006-03-28

2007-01-05

2007-01-10

2007-02-01

2007-03-30

2007-05-17

2008-06-20

2009-01-29

2009-05-20

2009-10-21

2010-10-28

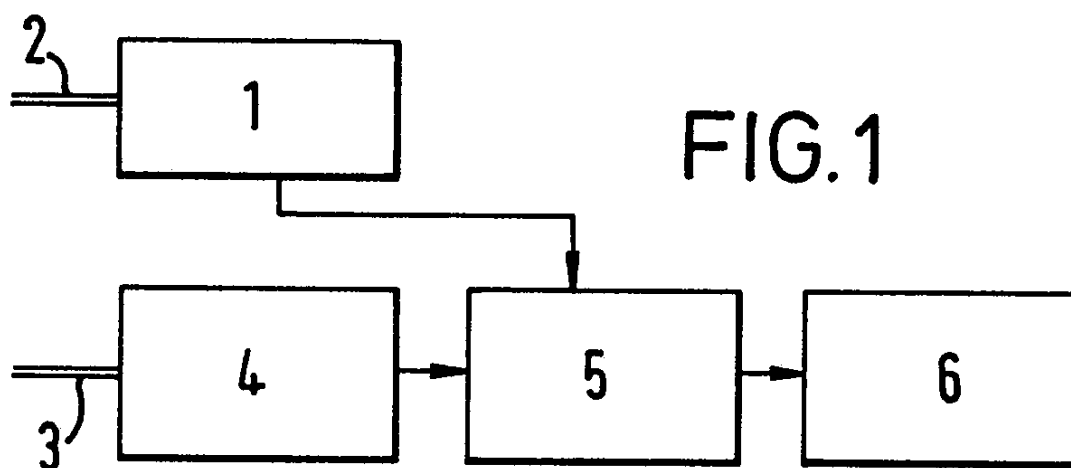
2017-03-08

Family 93/100 - FAMPAT - ©Questel

**Title**

(US5088493)

Multiple wavelength light photometer for non-invasive monitoring

**Images****Abstract**

(US5088493)

A multiple wavelength light spectrophotometer for non-invasive monitoring of a body organ in vivo comprising: a single pulsed light source, optical fibers for transmitting to and receiving the infrared radiation from the organ, a radiation detector capable of branching received radiation into several different wavelengths, an amplifier, and a data acquisition system including a microprocessor capable of compensating for light diffusion effects by employing a specific algorithm.

**Inventors**

GIANNINI IVO

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**Latest standardized assignees - inventors removed**

SCLAVO

**Publication dates**

1984-08-07

1985-08-02

1985-08-05

1985-08-05

1985-08-29

1986-02-08

1986-02-08

1986-02-08

1986-02-10

1986-02-12

1986-02-13

1986-04-11

1986-10-01

1986-10-01

1988-07-12

1988-09-28

1989-04-27

1990-04-20

1992-02-18

Family 94/100 - FAMPAT - ©Questel

**Title**

(EP-504945)

Device for simultaneous diagnosis and quantitative analysis of apnea and other diseases

**Images**

FIG. 1

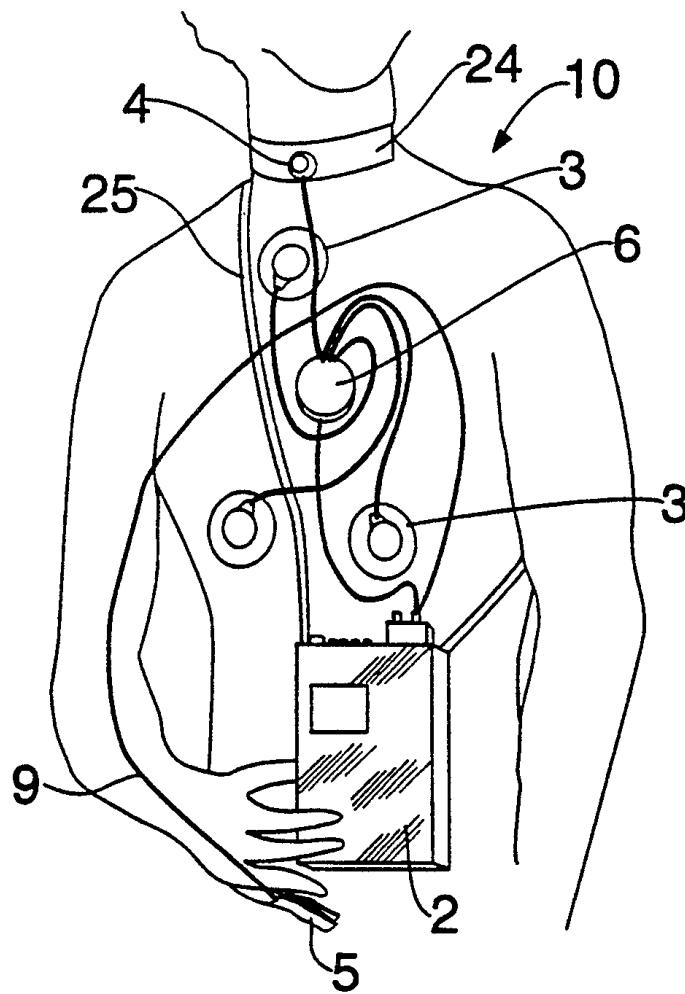
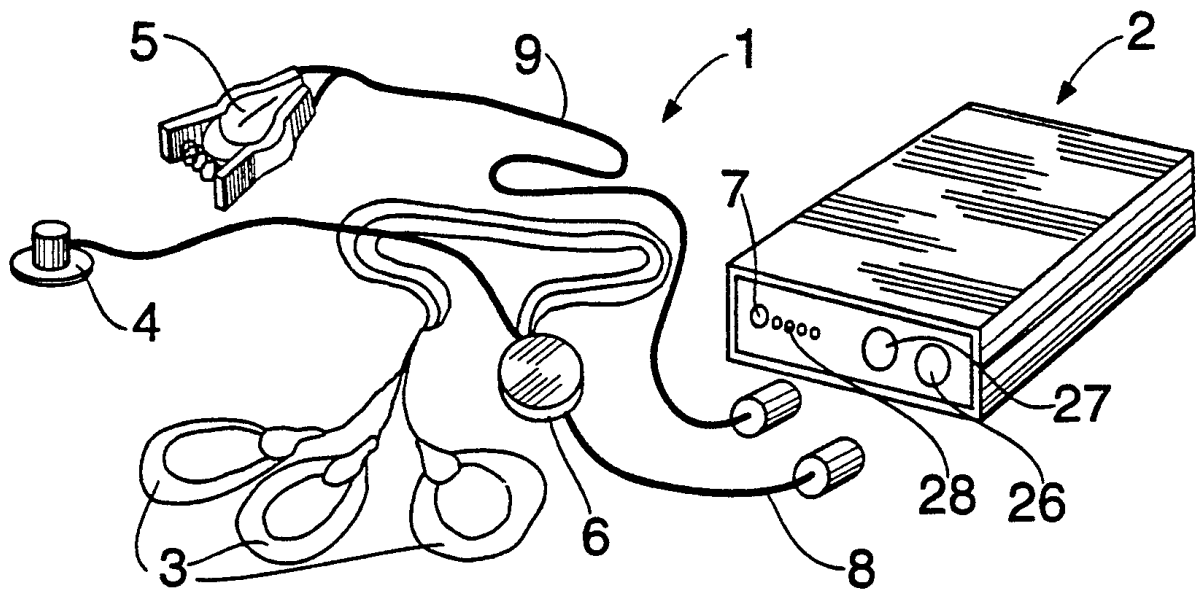


FIG. 2

The invention describes a device for the recognition and diagnosis, outside hospital, of the sleep apnoea syndrome in which the physiological parameters of heart rate, breathing and snoring sounds, degree of oxygen saturation of the blood and the posture of the patient are recorded with a mobile device and stored in encoded form. The stored data are transferred to a computer and then analysed. The mobile device comprises a recording and storage unit (2) and the following measurement sensors: three ECG electrodes (3), a laryngeal microphone (4), an oximeter finger sensor (5) and a position sensor (6). The device according to the invention permits diagnosis outside hospital of sleep apnoea, the significance of which is comparable with diagnoses based on investigations in a hospital sleep laboratory.

**Inventors**

GRIEBEL PETER

**Latest standardized assignees - inventors removed**

MAP MEDIZINTECHNIK FUR ARZT &amp; PATIENT

**Publication dates**

1992-03-20

1992-05-28

1992-07-30

1992-09-23

1992-09-23

1992-09-23

1992-09-24

1992-10-01

1992-10-14

1993-05-19

1993-08-10

1994-01-04

1994-04-20

1994-04-28

1994-05-19

1994-10-26

1995-02-08

1997-11-27

1997-11-27

1997-12-10

1997-12-15

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1998-06-30

1998-08-24

1998-10-28

1998-12-18

1999-01-12

2002-02-13

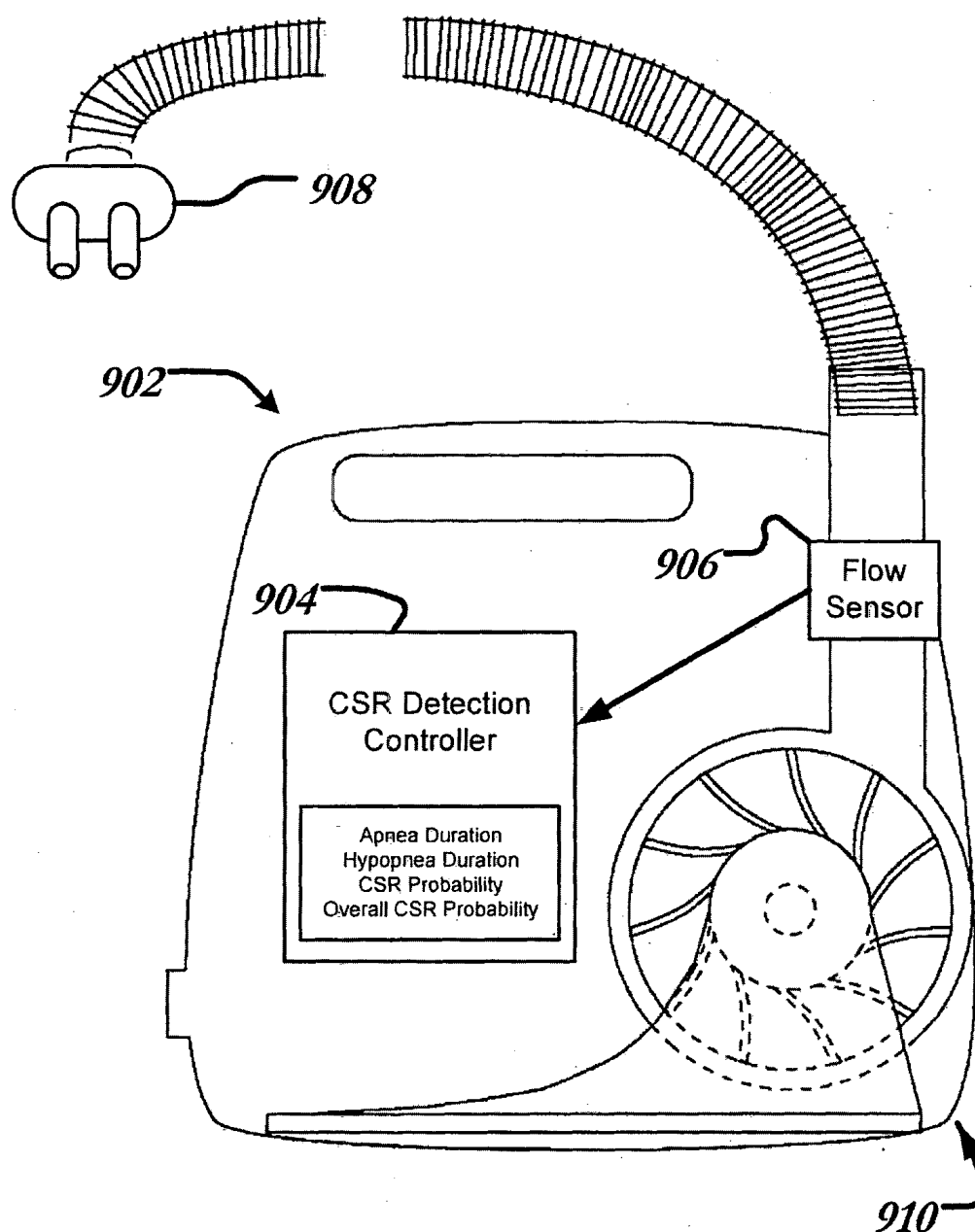
Family 95/100 - FAMPAT - ©Questel

**Title**

(EP2806932)

Discrimination of cheyne-stokes breathing patterns

**Images**

**Abstract**

(EP2806932)

A method of a processor for detecting a presence of Cheyne-Stokes respiration from a respiration signal includes accessing data representative of a respiration signal. Data is assessed to detect apnea and/or hypopnea events. A cycle length histogram is determined based on the events and an incident of Cheyne-Stokes respiration is detected based on the cycle length histogram.

**Inventors**

ARMITSTEAD JEFFREY PETER

RAMANAN DINESH

**Latest standardized assignees - inventors removed**

RESMED

**Publication dates**

2013-08-01  
2014-07-03  
2014-12-03  
2015-02-05  
2015-02-16  
2015-04-16  
2015-05-20  
2015-09-16  
2016-03-31  
2017-07-28  
2017-09-20  
2017-12-29

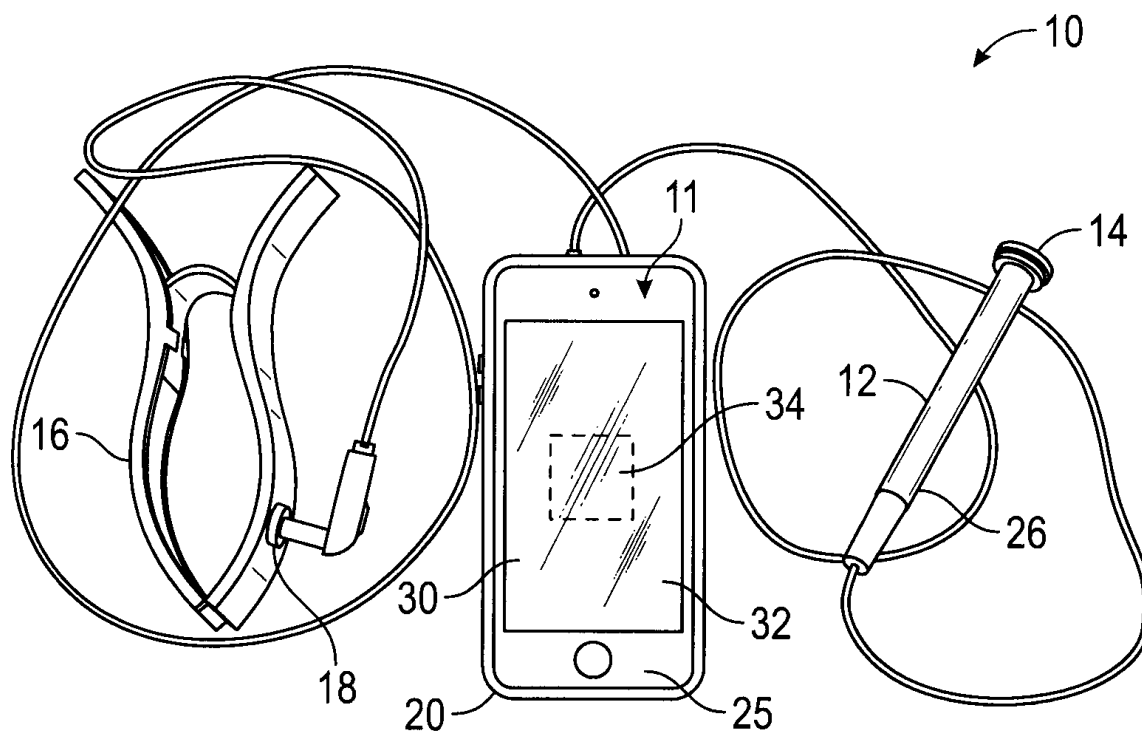
Family 96/100 - FAMPAT - ©Questel

**Title**

(US9833158)

Two electrode apparatus and methods for twelve lead ECG

**Images**



**Abstract**

(US9833158)

Described herein are methods, apparatuses, and systems for heart monitoring of a patient. The heart monitoring system can be used to take an electrocardiogram (ECG) using only two electrodes. A handheld device can be used to sequentially measure the electrical signal between different positions on a patient's body. The electrical signals can be processed and analyzed to prepare an ECG for the patient, including a 12-lead ECG.

**Inventors**

ALBERT DAVID E

**Latest standardized assignees - inventors removed**

ALIVECOR

**Publication dates**

2016-08-18

2017-12-05

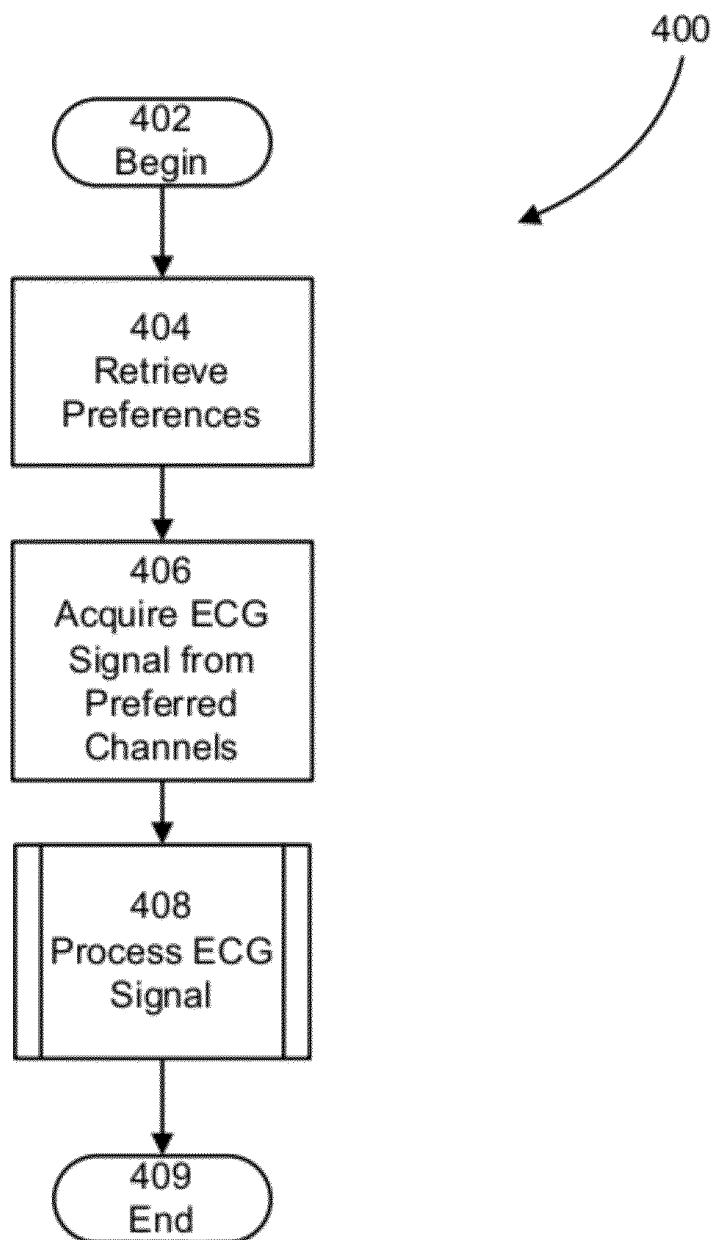
2018-01-25

Family 97/100 - FAMPAT - ©Questel

**Title**

(WO2012135062)

Selection of optimal channel for rate determination

**Images****Abstract**

(WO2012135062)

According to at least one example, an ambulatory medical device is provided. The device includes a plurality of electrodes disposed at spaced apart positions about a patient's body and a control unit. The control unit includes a sensor interface, a memory and a processor. The sensor interface is coupled to the plurality of electrodes and configured to receive a first ECG

signal from a first pairing of the plurality of electrodes and to receive a second ECG signal from a second pairing of the plurality of electrodes. The memory stores information indicating a preferred pairing, the preferred pairing being either the first pairing or the second pairing. The processor is coupled to the sensor interface and the memory and is configured to resolve conflicts between interpretations of first ECG signal and the second ECG signal in favor of the preferred pairing.

**Inventors**

VOLPE SHANE S

KAIB THOMAS E

**Latest standardized assignees - inventors removed**

ZOLL MEDICAL

**Publication dates**

2012-10-04

2012-11-29

2014-11-25

2015-03-05

2016-08-09

2016-11-03

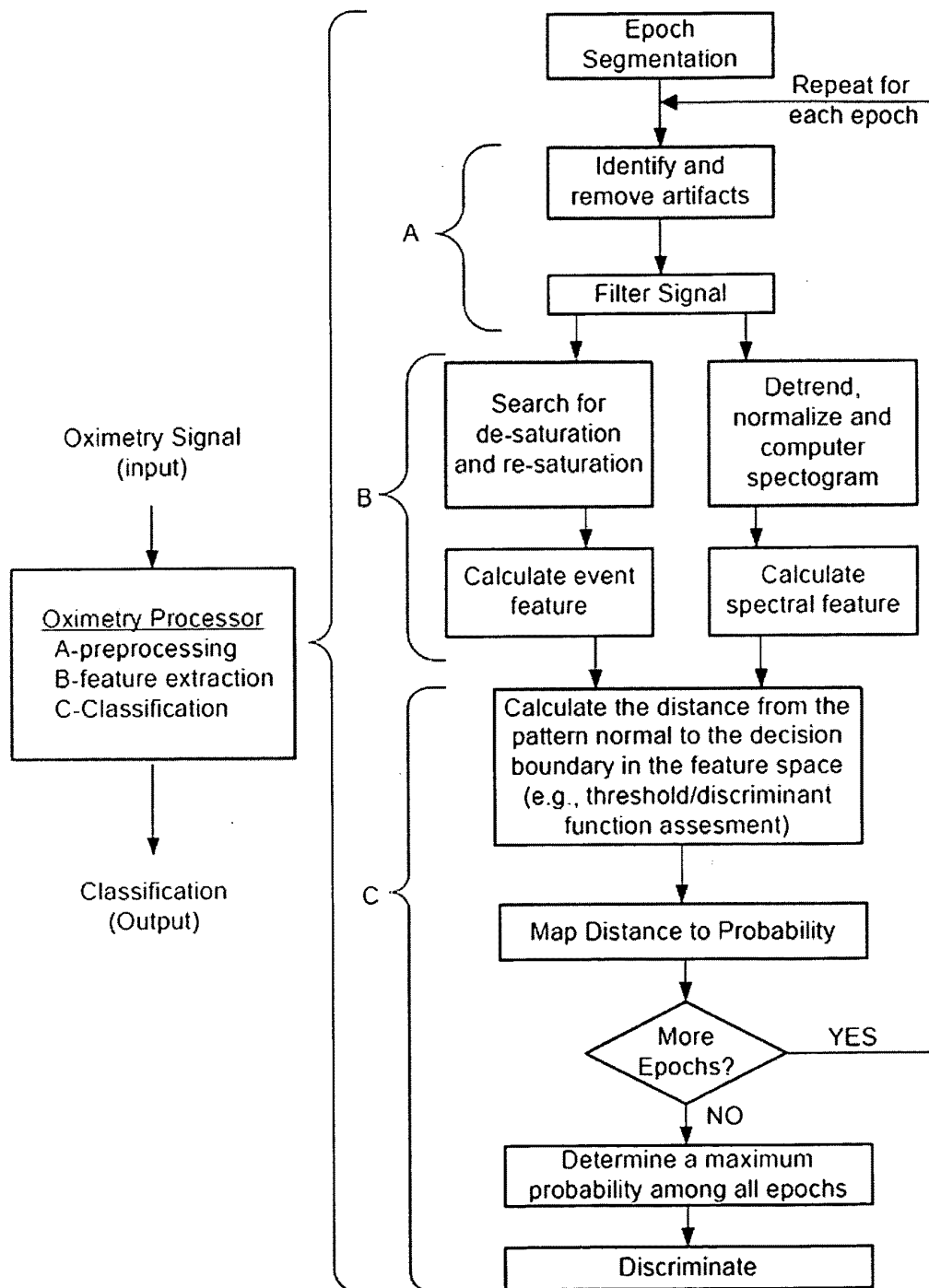
Family 98/100 - FAMPAT - ©Questel

**Title**

(US20160120464)

Discrimination of cheyne-stokes breathing patterns by use of oximetry signals

**Images**



## Abstract

(US20160120464)

Methods and apparatus provide Cheyne-Stokes respiration ("CSR") detection based on a blood gas measurements such as oximetry. In some embodiments, a duration, such as a mean duration of contiguous periods of changing saturation or re-saturation occurring in an epoch taken from a processed oximetry signal, is determined. An occurrence of CSR may be detected from a comparison of the duration and a threshold derived to differentiate saturation changes due to CSR respiration and saturation changes due to obstructive sleep apnea. The threshold may be a discriminant function derived as a classifier by an automated training method. The discriminant function may be further implemented to characterize the epoch for CSR based on a frequency analysis of the oximetry data. Distance from the discriminant function may be utilized to generate probability values for the CSR detection.

**Inventors**

LAU CHUN YUI

ARMITSTEAD JEFFREY PETER

**Latest standardized assignees - inventors removed**

RESMED

**Publication dates**

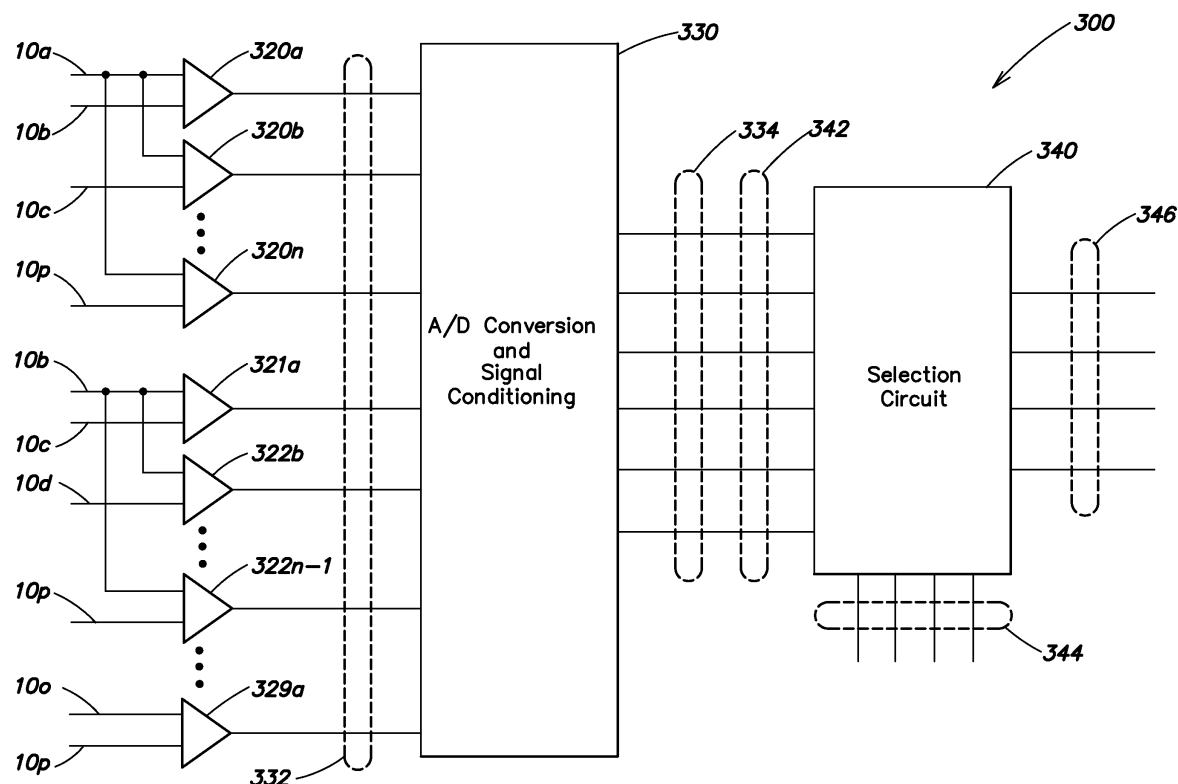
2016-05-05

Family 99/100 - FAMPAT - ©Questel

**Title**

(EP2571419)

Wearable ambulatory medical device with multiple sensing electrodes

**Images****Abstract**

(EP2571419)

An ambulatory medical device including a plurality of electrodes configured to be disposed at spaced apart positions about a patient's body, an electrode signal acquisition circuit, and a monitoring circuit. The acquisition circuit has a plurality of inputs each electrically coupled to a respective electrode of the plurality of electrodes and is configured to sense a respective signal provided by a plurality of different pairings of the plurality of electrodes. The monitoring circuit is electrically coupled to an output of the acquisition circuit and is configured to analyze the respective signal provided by each of the plurality of different pairings and to instruct the acquisition circuit to select at least one of the plurality of different pairings to monitor based on at least one of the quality of the respective signal, a phase difference between the respective signal and that of other pairings, and other criteria.

**Inventors**

KAIB THOMAS E

VOLPE SHANE S

MACHO JOHN D

**Latest standardized assignees - inventors removed**

ZOLL MEDICAL

**Publication dates**

2011-11-24

2011-11-24

2013-03-27

2013-03-27

2013-07-08

2014-01-07

2014-01-31

2014-04-22

2014-11-13

2014-11-26

2015-08-26

2015-12-22

2016-02-18

2016-05-24

2016-08-18

2016-10-11

2016-12-22

2017-05-30

2018-04-03

Family 100/100 - FAMPAT - ©Questel

**Title**

(WO201709880)

Customizable monitoring system for correlated vital signs

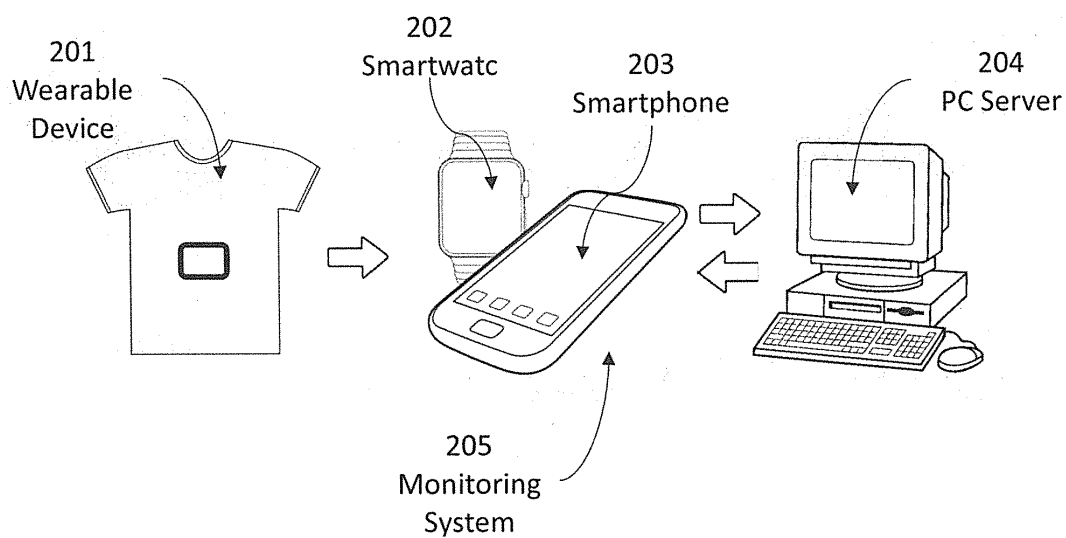
**Images**

FIG 2 Monitoring System

**Abstract**

(WO201709880)

Method of monitoring of vital parameters of an individual comprising the steps of: - Matching to the individual body, of

sensors and electrodes suitable for the detection of vital parameter concerning the cardiovascular and respiratory activity, temperature and physiological data such as activity, movement, and placement. • Processing of presented data in order to detect interpretable information on vital parameter and physiological information and sings obtained through the correlation of different parameter. • System for customized analyses on the collected data or on the correlation between multiple data. Analysis based on the comparison with threshold values or intelligent algorithms. Threshold values are automatically detected according to personal informations, medical history, level of activity, individual evidences, or manually by specialized personnel. Customizable system in which indices of activity and critical issues are the result of the combination of the most, vital parameters detected and clinical information /and registry individual data.

**Inventors**

BOLDI FRANCO

**Latest standardized assignees - inventors removed**

XEOS

**Publication dates**

2017-01-10

2017-01-19