PATENTS
P7276USC1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Gloria Lin et al.

Application No. : *not yet assigned*
(continuation of US 12/358,905)

Filed : *herewith*

For : SEAMLESSLY EMBEDDED HEART RATE MONITOR

New York, New York 10003
December 20, 2013

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

PRELIMINARY AMENDMENT

Sir:

Prior to examination, applicants hereby amend the application as follows:

Amendments to the Specification begin on page 2 of this paper;

Amendments to the Claims are reflected in the listing of claims that begin on page 6 of this paper; and

Remarks begin on page 11 of this paper.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.1

Amendments to the Specification

Please amend paragraph [0001] as follows:

[0001] This application is a continuation of U.S. Patent Application No. 12/358,905, filed January 23, 2009 (now U.S. Patent No. 8,615,290), which claims priority to U.S. Provisional Patent Application No. 61/111,498, filed November 5, 2008.~~, which~~ Each of these earlier applications is incorporated by reference herein in its entirety.

Please amend paragraph [0025] as follows:

[0025] Electronic device 100 can include any suitable mechanism or component for allowing a user to provide inputs to input/output circuitry 108. For example, electronic device 100 can include any suitable input mechanism, such as for example, a button, keypad, dial, a click wheel, or a touch screen. In some embodiments, electronic device 100 can include a capacitive sensing mechanism, or a multi-touch capacitive sensing mechanism. Some sensing mechanisms are described in commonly owned ~~Hotelling et al. U.S. Published Patent Application No. 1006/0026521, filed July 30, 1004, entitled "Gestures for Touch Sensitive Input Device,"~~ U.S. Patent Nos. 8,479,122 and 8,239,784, ~~and Hotelling et al. U.S. Published Patent Application No. 1006/0026535, filed January 18, 2005, entitled "Mode-Based Graphical User Interfaces for Touch Sensitive Input Device,"~~ both of which are incorporated herein in their entirety.

Please amend paragraph [0034] as follows:

[0034] The heart sensor leads can be constructed from any suitable material. In some embodiments, the heart sensor leads can be constructed from a specific material selected for particular conductive properties that permit a more effective transmission of the electrical signals reflecting the user's cardiac activity. For example, the heart sensor leads can be constructed from a silver

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.2

based compound, which can provide superior conductivity relative to other metallic compounds (e.g., steel or aluminum). In addition, the size and location of the leads can be selected to ensure that sufficient contact is made between the user (e.g., the user's hand or finger) and the leads for cardiac signals to be detected. For example, each lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing. The pad or extended area can then be coupled to a wire or other connector for providing cardiac signals to a processor for processing. As another example, an entire portion of the electronic device enclosure (e.g., a portion of a bezel or housing) can serve as a lead for the heart sensor. In such embodiments, the portion of the enclosure can be sufficiently electrically isolated from other conductive portions of the electronic device housing to ensure that lead portions of the device do not short. In some embodiments, an accessory coupled to the electronic device can be used to detect a user's heart rate. For example, the leads can be located in one or more earbuds or in a headset, for example as is described in commonly assigned U.S. ~~Patent Application No. 11/729,075, filed March 3, 2007, entitled "Integrated Sensors For Tracking Performance Metrics,"~~ Publication No. 2008/0076972, which is incorporated by reference herein in its entirety.

Please amend paragraph [0042] as follows:

[0042] The heart sensor of the electronic device can include several leads for detecting the user's heart activity. The leads can be integrated in any suitable portion of the electronic device. FIG. 3 is a schematic view of an illustrative electronic device having several integrated leads in accordance with one embodiment of the invention. Electronic device 300 can include display 302 and bezel 310, and be portable such that a user can hold electronic device with fingers extending against one of sides 312 and 314 of bezel 310, and the user's thumb extending against the other of

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.3

sides 312 and 314. Leads 322 and 324, which can include conductive pads, can be coupled to sides 312 and ~~324~~ 314 of bezel 310, respectively, such that when the user holds the device, the user's thumb and fingers are placed in contact with leads 322 and 324. Alternatively, bezel 310 can include any other suitable number of leads, or any other suitable distribution of leads along bezel 310 and in other portions of electronic device 300. The leads can detect the user's cardiac activity through the contact with the user's thumb and fingers, and provide the detected activity to the electronic device processor for processing. The size of leads 322 and 324 can be selected based on any suitable consideration, including for example the different possible positions of a user's hands on the device, the amount of contact necessary to detect the user's cardiac activity, preventing or reducing short circuits and other cardiac signal detection errors, manufacturing considerations (e.g., the minimum or maximum size leads that can be integrated in the bezel), aesthetic considerations (e.g., sizing leads 322 and 324 to reduce the visibility of leads 322 and 324), or any other suitable consideration.

Please amend paragraph [0053] as follows:

[0053] In some embodiments, the electronic device can use the detected heart rate or heartbeat characteristics to determine the user's mood. In particular, because the allowable determined characteristics associated with each user can include a range of values, the electronic device can determine the distribution of the detected characteristics in the allowable characteristic ranges. Using the determined distribution, the electronic device can establish a user's mood and provide electronic device operations or data (e.g., media) associated with the extrapolated mood. Systems and methods for providing mood-based electronic device operations are discussed in more detail in commonly assigned U.S. ~~Patent Application No. 12/218,203, filed July 10, 2008 and entitled "System and Method~~

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.4

~~for Creating a Playlist Based on Mood,"~~ Publication No. 2010/0011388, which is incorporated by reference herein in its entirety.

Please amend paragraph [0056] as follows:

[0056] At step 608, the electronic device can prevent access to restricted electronic device operations. For example, the electronic device can prevent the user from accessing personal or private information associated with other users. As another example, the electronic device can prevent the user from accessing applications or operations associated with particular users (e.g., applications purchased by particular users). As still another example, the electronic device can prevent the user from accessing any electronic device operation (e.g., no operation except for emergency calls). Process 600 can then end at step 610.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.5

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-23. (Cancelled).

24. (New) An electronic device comprising:

a bezel, wherein an outer surface of at least a portion of the bezel comprises a first visual characteristic; and

a heart sensor coupled to the at least a portion of the bezel and operative to detect a user's cardiac signal, wherein an outer surface of the heart sensor comprises a second visual characteristic that matches the first visual characteristic.

25. (New) The electronic device of claim 24, wherein each of the outer surface of the at least a portion of the bezel and the outer surface of the heart sensor comprises a portion of an outer surface of the electronic device.

26. (New) The electronic device of claim 24, wherein:

the outer surface of the at least a portion of the bezel comprises a first finish; and

the outer surface of the heart sensor comprises a second finish that matches the first finish.

27. (New) The electronic device of claim 24, wherein the outer surface of the heart sensor comprises a conductive coating that provides the second visual characteristic.

28. (New) The electronic device of claim 24, wherein each of the first visual characteristic and the second visual characteristic comprises at least one of:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.6

a particular color;

a particular tone; and

a particular reflectivity.

29. (New) An electronic device for detecting a user's cardiac signal, comprising:

an enclosure;

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the enclosure, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the enclosure; and

a second lead embedded in a second portion of the enclosure, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the enclosure; and

a processor coupled to the heart sensor and configured to receive and process the detected cardiac signal.

30. (New) The electronic device of claim 29, wherein the first portion and the second portion are located on opposite sides of the electronic device.

31. (New) The electronic device of claim 29, wherein the first portion is electrically isolated from the second portion.

32. (New) The electronic device of claim 29, wherein:

the first portion is separated from the second portion by a third portion of the enclosure;

at least the third portion is constructed from a

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.7

material having a first conductivity; and

the first conductivity is insufficient to transmit the first electrical signal from the first lead to the second lead via the third portion.

33. (New) The electronic device of claim 32, wherein:

the material having the first conductivity comprises one of aluminum and steel; and

the second lead is constructed from a silver based compound.

34. (New) The electronic device of claim 32, wherein:

the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with an exterior surface of the second portion;

the second lead is positioned from the exterior surface of the second portion by a thickness of the second portion;

at least the thickness of the second portion is constructed from a material having a second conductivity; and

the second conductivity is defined such that the second electrical signal is not transmitted over a distance larger than the thickness of the second portion.

35. (New) The electronic device of claim 34, wherein the first lead and the second lead are positioned apart from one another at a distance larger than the thickness of the second portion.

36. (New) The electronic device of claim 29, wherein:

the enclosure further comprises at least one pocket underneath an outer surface of the enclosure; and

at least one of the first lead and the second lead is placed within the at least one pocket.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.8

37. (New) The electronic device of claim 29, wherein:

an exterior surface of the enclosure comprises an exterior surface of the first portion; and

the first lead is positioned underneath the exterior surface of the first portion.

38. (New) The electronic device of claim 37, wherein the first lead is configured to detect the first electrical signal via the user's contact with the exterior surface of the first portion.

39. (New) The electronic device of claim 29, further comprising:

a display, wherein the enclosure supports the display, and wherein the enclosure forms an exterior surface of the electronic device behind the display; and

a third lead embedded with the display, wherein the third lead is configured to detect a third electrical signal of the user's cardiac signal via the user's contact with at least one of the third lead and the display.

40. (New) An electronic device for detecting a user's cardiac signal, comprising:

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the electronic device; and

a second lead embedded in a second portion of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.9

of the electronic device; and

a processor coupled to the heart sensor and configured to process the first and second electrical signals of the user's cardiac signal.

41. (New) The electronic device of claim 40, wherein:

the first portion of the electronic device comprises an enclosure of the electronic device; and

the second portion of the electronic device comprises a display screen exposed to the user through an opening in the enclosure of the electronic device.

42. (New) The electronic device of claim 41, wherein:

the first portion of the electronic device comprises a bezel of the enclosure;

the electronic device further comprises a non-conductive component positioned between the bezel and the display screen for electrically isolating the first portion of the electronic device from the second portion of the electronic device.

43. (New) The electronic device of claim 40, wherein:

the first portion of the electronic device comprises a first portion of an enclosure of the electronic device; and

the second portion of the electronic device comprises a second portion of the enclosure of the electronic device.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.10

Remarks

The specification has been amended to update information on related applications and to correct various minor typographical errors. A marked-up Substitute Specification and a clean copy of the Substitute Specification are submitted herewith. These documents include all of the desired changes made in this Preliminary Amendment.

Claims 1-23 have been cancelled without prejudice. Applicants respectfully reserve the right to pursue the subject matter of one or more of the cancelled claims in one or more continuation applications. New claims 24-43 have been added.

No new subject matter has been introduced and all amendments are fully supported by the parent application as originally filed.

Consideration and prompt allowance of this application are respectfully requested.

Respectfully submitted,

Date: December 20, 2013 /Jeffrey C. Aldridge/

Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
411 Lafayette Street, 6th Floor
New York, New York 10003
Tel.: (347) 470-6620
Fax: (646) 722-7301

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.11

SEAMLESSLY EMBEDDED HEART RATE MONITOR

Cross-Reference to Related Application

[0001] This application is a continuation of U.S. Patent Application No. 12/358,905, filed January 23, 2009 (now U.S. Patent No. 8,615,290), which claims priority to U.S. Provisional Patent Application No. 61/111,498, filed November 5, 2008., ~~which~~ Each of these earlier applications is incorporated by reference herein in its entirety.

Background of the Invention

[0001] This is directed to providing a seamless heart-rate monitor in an electronic device.

[0002] Many electronic devices are used to store personal or confidential information. In particular, portable electronic devices such as cellular telephones, personal assistants, and music players are often used to store or access e-mail, contact lists, communications history, remotely accessed accounts (e.g., telephone, banking or credit card accounts), or other information that a user may regard as personal or private. In addition, several users may use the same electronic device. For example, several users in a

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.12

household may use the same computer or portable music player. As another example, a user may lend an electronic device to a friend (e.g., lend an iPod, available from Apple Inc. to a friend for a workout or a trip). To enhance each user's experience with the electronic device, the electronic device can include several profiles that can be loaded and provided to the users of the device. Each profile can be associated with a particular user, and include several settings that allow the electronic device interface user interaction components, and available data or applications to be personalized for the user.

[0003] The electronic device can use several approaches to identify the user of the electronic device and provide access to the user's private and personal information, or to load the user's personal profile. In some embodiments, the electronic device can identify or authenticate a user based on an input provided by the user, such as a password or key provided using an input mechanism. In some embodiments, the electronic device can include one or more sensors operative to detect a fingerprint, voice print, facial features, or other biometric characteristics of a user.

[0004] Other biometric-based approaches can be used to authenticate a user. In some embodiments, an electronic device can authenticate a user based on the attributes of the user's heartbeat. For example, the durations of particular portions of a user's heart rhythm, or the relative size of peaks of a user's electrocardiogram (EKG) can be processed and compared to a stored profile to authenticate a user of the device. To detect a user's heartbeat or heart rhythm,

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.13

however, the electronic device must provide at least two leads that the user contacts to detect the user's cardiac signals. Although the leads can simply be placed on the exterior surface of the device housing, for example in a defined location where the user may place a finger, this approach is not aesthetically pleasing, and may cause some prospective buyers to consider other devices. In addition, such an approach may require the user to perform a specific authentication action - viz., placing a finger on the one or more leads, then unlocking or accessing the electronic device features (e.g., by moving a slider across the screen). This additional step may in fact be so encumbering that users disable the authentication feature and instead use an unsecured electronic device.

Summary of the Invention

[0005] This is directed to an electronic device having a seamlessly integrated cardiac sensor. The cardiac sensor can be integrated in any suitable portion of the electronic device, including for example a portion with which the user is typically in contact (e.g., an input mechanism or a housing held by the user), or metallic or conductive portions of the device.

[0006] The electronic device can include any suitable type of electronic device, including for example a portable electronic device that the user may hold in hand (e.g., a portable media player or a cellular telephone), a larger portable electronic device (e.g., a laptop computer), or a substantially fixed electronic device. The electronic device may include software or hardware operative to process the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.14

output of a cardiac sensor to extract, from the received output, characteristics of the user's heartbeat, heart rate, or other cardiac signals. For example, the electronic device may extract one or more characteristic durations associated with the user's heart rate. As another example, the electronic device may extract one or more characteristic amplitudes or amplitude ratios associated with the user's heart rate.

[0007] Once the electronic device has identified one or more characteristics of the user's heart rate, heartbeat, or other cardiac signals, the electronic device can compare the one or more identified characteristics with cardiac signal characteristics of authorized users that have been stored in memory. In response to determining that the identified characteristics correspond to those of an authorized user (e.g., match those stored in memory), the electronic device can provide the user with access to the electronic device and load the identified user's personal settings and data.

[0008] To determine the user's heart rate, heartbeat, or other cardiac signals, the electronic device can include one or more sensors embedded in the device. The one or more sensors can include leads for receiving electrical signals from the user's heart. For example, the one or more sensors can include leads associated with the user's left and right sides, and lead associated with the ground. To provide an electrical signal from the user to the processing circuitry, the leads can be exposed such that the user may directly contact the leads, or may instead or in addition be coupled to an electrically conductive

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.15

portion of the device enclosure (e.g., a metallic bezel or housing forming the exterior of the device).

[0009] Because each electronic device can include several leads, the leads may be electrically isolated to avoid shorting or interference among leads. In some embodiments, an electrically isolating component can be inserted between adjacent leads. Alternatively, if the electronic device enclosure is constructed from a material having insufficient conductivity for transmitting detected cardiac electrical signals, the distance along the enclosure between adjacent leads can be sufficient to isolate the leads. In addition, to ensure that the aesthetic appeal and appearance of the electronic device is retained, one or more of the isolating components, the leads themselves, and the device enclosure can be finished using a suitable process to disguise the leads.

[0010] In some embodiments, if the electrical conductivity of portions of the electronic device enclosure and the leads are suitably selected and designed, the leads can be positioned underneath the exterior surface of the enclosure while providing sufficient conductivity for detecting cardiac electrical signals and avoiding shorting or interference between adjacent leads. For example, the sensor leads can be constructed from a silver based compound having high electrical conductivity, while the electronic device enclosure can be constructed from steel and aluminum, both having lower electrical conductivity. By placing several leads at substantially larger distances apart along the electronic device enclosure than the thickness of the enclosure, electronic signals can be transmitted

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.16

through the steel or aluminum enclosure to a silver based lead underneath the enclosure, but not along the surface of the enclosure to cause adjacent leads to short.

Brief Description of the Drawings

[0011] The above and other features of the present invention, its nature and various advantages will be more apparent upon consideration of the following detailed description, taken in conjunction with the accompanying drawings in which:

[0012] FIG. 1 is a schematic view of an illustrative electronic device for receiving the output of one or more sensors in accordance with one embodiment of the invention;

[0013] FIG. 2 is a graphical representation of illustrative electrical activity of a heart during a heartbeat;

[0014] FIG. 3 is a schematic view of an illustrative electronic device having several integrated leads in accordance with one embodiment of the invention;

[0015] FIG. 4A is a cross-sectional view of an illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention;

[0016] FIG. 4B is a cross-sectional view of another illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention;

[0017] FIG. 5 is a schematic view of an illustrative electronic device using portions of the bezel as leads in accordance with one embodiment of the invention; and

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.17

[0018] FIG. 6 is a flowchart of an illustrative process for performing an electronic device operation based on a user's cardiac signal in accordance with one embodiment of the invention.

Detailed Description

[0019] FIG. 1 is a schematic view of an illustrative electronic device for receiving the output of one or more sensors in accordance with one embodiment of the invention. Electronic device 100 can include control circuitry 102, storage 104, memory 106, input/output circuitry 108, communications circuitry 110, and heart sensor 112. In some embodiments, one or more of electronic device components 100 can be combined or omitted (e.g., combine storage 104 and memory 106). In some embodiments, electronic device 100 can include other components not combined or included in those shown in FIG. 1 (e.g., motion detection components, a power supply such as a battery or kinetics, a display, bus, or input mechanism), or several instances of the components shown in FIG. 1. For the sake of simplicity, only one of each of the components is shown in FIG. 1.

[0020] Control circuitry 102 can include any processing circuitry or processor operative to control the operations and performance of electronic device 100. For example, control circuitry 100 can be used to run operating system applications, firmware applications, media playback applications, media editing applications, or any other application. In some embodiments, the control circuitry can drive a display and process inputs received from a user interface.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.18

[0021] Storage 104 can include, for example, one or more storage mediums including a hard-drive, solid state drive, flash memory, permanent memory such as ROM, any other suitable type of storage component, or any combination thereof. Storage 104 can store, for example, media data (e.g., music and video files), application data (e.g., for implementing functions on device 100), firmware, user preference information data (e.g., media playback preferences), authentication information (e.g. libraries of data associated with authorized users), lifestyle information data (e.g., food preferences), exercise information data (e.g., information obtained by exercise monitoring equipment), transaction information data (e.g., information such as credit card information), wireless connection information data (e.g., information that can enable electronic device 100 to establish a wireless connection), subscription information data (e.g., information that keeps track of podcasts or television shows or other media a user subscribes to), contact information data (e.g., telephone numbers and email addresses), calendar information data, and any other suitable data or any combination thereof.

[0022] Memory 106 can include cache memory, semi-permanent memory such as RAM, and/or one or more different types of memory used for temporarily storing data. In some embodiments, memory 106 can also be used for storing data used to operate electronic device applications, or any other type of data that can be stored in storage 104. In some embodiments, memory 106 and storage 104 can be combined as a single storage medium.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.19

[0023] Input/output circuitry 108 can be operative to convert (and encode/decode, if necessary) analog signals and other signals into digital data. In some embodiments, input/output circuitry 108 can also convert digital data into any other type of signal, and vice-versa. For example, input/output circuitry 108 can receive and convert physical contact inputs (e.g., from a multi-touch screen), physical movements (e.g., from a mouse or sensor), analog audio signals (e.g., from a microphone), or any other input. The digital data can be provided to and received from processor 102, storage 104, memory 106, heart sensor 112, or any other component of electronic device 100. Although input/output circuitry 108 is illustrated in FIG. 1 as a single component of electronic device 100, several instances of input/output circuitry can be included in electronic device 100.

[0024] Electronic device 100 can include any suitable mechanism or component for allowing a user to provide inputs to input/output circuitry 108. For example, electronic device 100 can include any suitable input mechanism, such as for example, a button, keypad, dial, a click wheel, or a touch screen. In some embodiments, electronic device 100 can include a capacitive sensing mechanism, or a multi-touch capacitive sensing mechanism. Some sensing mechanisms are described in commonly owned ~~Hotelling et al. U.S. Published Patent Application No. 1006/0026521, filed July 30, 1004, entitled "Gestures for Touch Sensitive Input Device,"~~ U.S. Patent Nos. 8,479,122 and 8,239,784, ~~and Hotelling et al. U.S. Published Patent Application No. 1006/0026535, filed January 18, 2005,~~

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.20

~~entitled "Mode-Based Graphical User Interfaces for Touch Sensitive Input Device,"~~ both of which are incorporated herein in their entirety.

[0025] In some embodiments, electronic device 100 can include specialized output circuitry associated with output devices such as, for example, one or more audio outputs. The audio output can include one or more speakers (e.g., mono or stereo speakers) built into electronic device 100, or an audio component that is remotely coupled to electronic device 100 (e.g., a headset, headphones or earbuds that can be coupled to communications device with a wire or wirelessly).

[0026] In some embodiments, I/O circuitry 108 can include display circuitry (e.g., a screen or projection system) for providing a display visible to the user. For example, the display circuitry can include a screen (e.g., an LCD screen) that is incorporated in electronics device 100. As another example, the display circuitry can include a movable display or a projecting system for providing a display of content on a surface remote from electronic device 100 (e.g., a video projector). In some embodiments, the display circuitry can include a coder/decoder (Codec) to convert digital media data into analog signals. For example, the display circuitry (or other appropriate circuitry within electronic device 100) can include video Codecs, audio Codecs, or any other suitable type of Codec.

[0027] The display circuitry also can include display driver circuitry, circuitry for driving display drivers, or both. The display circuitry can be operative to display content (e.g., media playback information, application screens for applications

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.21

implemented on the electronic device, information regarding ongoing communications operations, information regarding incoming communications requests, or device operation screens) under the direction of control circuitry 102. Alternatively, the display circuitry can be operative to provide instructions to a remote display (e.g., display 130, FIG. 1).

[0028] Communications circuitry 110 can include any suitable communications circuitry operative to connect to a communications network and to transmit communications (e.g., voice or data) from communications device 100 to other devices within the communications network. Communications circuitry 110 can be operative to interface with the communications network using any suitable communications protocol such as, for example, Wi-Fi (e.g., a 802.11 protocol), Bluetooth®, radio frequency systems (e.g., 900 MHz, 1.4 GHz, and 5.6 GHz communication systems), infrared, GSM, GSM plus EDGE, CDMA, quadband, and other cellular protocols, VOIP, or any other suitable protocol.

[0029] In some embodiments, communications circuitry 110 can be operative to create a communications network using any suitable communications protocol. For example, communications circuitry 110 can create a short-range communications network using a short-range communications protocol to connect to other devices. For example, communications circuitry 110 can be operative to create a local communications network using the Bluetooth® protocol to couple electronic device 100 with a Bluetooth® headset.

[0030] Electronic device 100 can include one more instances of communications circuitry 110 for simultaneously performing several communications

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.22

operations using different communications networks, although only one is shown in FIG. 1 to avoid overcomplicating the drawing. For example, electronic device 100 can include a first instance of communications circuitry 110 for communicating over a cellular network, and a second instance of communications circuitry 110 for communicating over Wi-Fi or using Bluetooth®. In some embodiments, the same instance of communications circuitry 110 can be operative to provide for communications over several communications networks.

[0031] In some embodiments, electronic device 100 can be coupled a host device for data transfers, synching the communications device, software or firmware updates, providing performance information to a remote source (e.g., providing riding characteristics to a remove server) or performing any other suitable operation that can require electronic device 100 to be coupled to a host device. Several electronic devices 100 can be coupled to a single host device using the host device as a server, and instead or in addition electronic device 100 can be coupled to several host devices (e.g., for each of the plurality of the host devices to serve as a backup for data stored in electronic device 100).

[0032] Heart sensor 112 can include any suitable sensor operative to detect a user's heartbeat, heart rate, or any other signal generated by the user's heart. In some embodiments, heart sensor 112 can serve as an EKG monitor. Heart sensor 112 can include one or more leads connected to the exterior of the electronic device such that the user may contact one or more of the leads to provide an electrical signal associated

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.23

with the user's heart to heart sensor 112. The cardiac signals detected by the heart sensor leads can be coupled to a processor incorporated in heart sensor 112, or instead provided to processor 102. The processor may then analyze the received signals and generate, from the received signals, one or more characteristic quantities of the user's heartbeat or heart rate for authentication.

[0033] The heart sensor leads can be constructed from any suitable material. In some embodiments, the heart sensor leads can be constructed from a specific material selected for particular conductive properties that permit a more effective transmission of the electrical signals reflecting the user's cardiac activity. For example, the heart sensor leads can be constructed from a silver based compound, which can provide superior conductivity relative to other metallic compounds (e.g., steel or aluminum). In addition, the size and location of the leads can be selected to ensure that sufficient contact is made between the user (e.g., the user's hand or finger) and the leads for cardiac signals to be detected. For example, each lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing. The pad or extended area can then be coupled to a wire or other connector for providing cardiac signals to a processor for processing. As another example, an entire portion of the electronic device enclosure (e.g., a portion of a bezel or housing) can serve as a lead for the heart sensor. In such embodiments, the portion of the enclosure can be sufficiently electrically isolated from other conductive portions of the electronic device

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.24

housing to ensure that lead portions of the device do not short. In some embodiments, an accessory coupled to the electronic device can be used to detect a user's heart rate. For example, the leads can be located in one or more earbuds or in a headset, for example as is described in commonly assigned U.S. ~~Patent Application No. 11/729,075, filed March 3, 2007, entitled "Integrated Sensors For Tracking Performance Metrics,"~~ Publication No. 2008/0076972, which is incorporated by reference herein in its entirety.

[0034] Using a heart sensor, the electronic device can detect and analyze the electrical activity of the heart over time. FIG. 2 is a graphical representation of illustrative electrical activity of a heart during a heartbeat. Representation 200 may include a plot of the variation of the heart's electrical potential over time. A typical heartbeat may include several variations of electrical potential, which may be classified into waves and a complex. For example, representation 200 can include P wave 202, QRS complex 210, and T wave 220. Some representations can in addition include a U wave (not shown). The P wave can represent normal atrial depolarization, when the main electrical vector spreads from the right atrium to the left atrium. The shape and duration of the P wave can be related to the size of the user's atrium (e.g., indicating atrial enlargement), and can be a first source of heartbeat characteristics unique to a user.

[0035] The QRS complex can correspond to the depolarization of the heart ventricles, and can be separated into three distinct waves - a Q wave, a R wave and a S wave. Because the ventricles contain more muscle mass than the atria, the QRS complex is larger

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.25

than the P wave. In addition, the His/Purkinje system of the heart, which can increase the conduction velocity to coordinate the depolarization of the ventricles, can cause the QRS complex to look "spiked" rather than rounded. The duration of the QRS complex of a healthy heart can be in the range of 60 to 100ms, but can vary due to abnormalities of conduction. The duration of the QRS complex can therefore serve as a second source of heartbeat characteristics unique to a user.

[0036] The duration, amplitude, and morphology of each of the Q, R and S waves can vary in different individuals, and in particular can vary significantly for users having cardiac diseases or cardiac irregularities. For example, a Q wave that is greater than 1/3 of the height of the R wave, or greater than 40ms in duration can be indicative of a myocardial infarction and provide a unique characteristic of the user's heart. Similarly, other healthy ratios of Q and R waves can be used to distinguish different users' heartbeats.

[0037] Representation 200 may include one or more characteristic durations or intervals that can be used to distinguish different users. For example, representation 200 can include PR interval 204 and ST segment 212. PR interval 204 can be measured from the beginning of P wave 202 to the beginning of QRS complex 210. PR interval 204 can typically last 120 to 200ms. A PR interval 204 having a different duration can indicate one or more defects in the heart, such as a first degree heart block (e.g., PR interval 204 lasting more than 200ms), a pre-excitation syndrome via an accessory pathway that leads to early activation of

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.26

the ventricles (e.g., PR interval 204 lasts less than 120ms), or another type of heart block (e.g., PR interval 204 is variable). ST segment 212 can be measured from QRS complex 210 to T wave 220, for example starting at the junction between QRS complex 210 and ST segment 212 and ending at the beginning of T wave 220. ST segment 212 can typically last from 80 to 120ms, and normally has a slight upward concavity. The combination of the length of ST segment 212, and the concavity or elevation of ST segment 212 can also be used to generate characteristic information unique to each user's heartbeat.

[0038] T wave 220 can represent the repolarization or recovery of the ventricles. The interval from the beginning of the QRS complex to the apex of the T wave can be referred to as the absolute refractory period. The last half of the T wave can be referred to as the relative refractory period or vulnerable period. The amplitude of T wave 220, the duration of the absolute refractory period, and the relative refractory period can also be used to define a characteristic of the user's heart rate.

[0039] QT interval 222, which can represent the total time needed for the ventricles to depolarize and repolarize, can be measured from the beginning of QRS complex 210 to the end of T wave 220. QT interval 222 can typically last between 300 and 450ms, and can vary based on the condition of the user's heart rate. Several correction factors have been developed to correct QT interval 222 for the heart rate. Both the measured and corrected QT interval 222 values can be used to define a unique characteristic of a user's heartbeat.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.27

[0040] Because a user's heartbeat or heart rate can vary slightly based on the user's activity or mood, each authorized user can initially provide a base or standard heart rate, heartbeat, or electrical activity to the device prior to first use. For example, the electronic device can sample several heartbeats or electrical activity at several different times to detect variations in the user's cardiac electrical activity. The electronic device can process detected signals to determine several unique characteristics of the user's heart activity, and identify a range of suitable characteristic values for each of the processed characteristics. Based on the characteristic values and associated ranges, the electronic device can select one, all or a subset of the characteristics to define a unique heart activity profile for the authorized user. The particular combination of characteristics and associated ranges can be selected to minimize overlap with other authorized users, or based on characteristic values and ranges that do not fall within a range of average values and ranges (e.g., do not use characteristic values and ranges that an average user of the device would have).

[0041] The heart sensor of the electronic device can include several leads for detecting the user's heart activity. The leads can be integrated in any suitable portion of the electronic device. FIG. 3 is a schematic view of an illustrative electronic device having several integrated leads in accordance with one embodiment of the invention. Electronic device 300 can include display 302 and bezel 310, and be portable such that a user can hold electronic device with fingers extending against one of sides 312 and 314 of

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.28

bezel 310, and the user's thumb extending against the other of sides 312 and 314. Leads 322 and 324, which can include conductive pads, can be coupled to sides 312 and ~~324~~ 314 of bezel 310, respectively, such that when the user holds the device, the user's thumb and fingers are placed in contact with leads 322 and 324. Alternatively, bezel 310 can include any other suitable number of leads, or any other suitable distribution of leads along bezel 310 and in other portions of electronic device 300. The leads can detect the user's cardiac activity through the contact with the user's thumb and fingers, and provide the detected activity to the electronic device processor for processing. The size of leads 322 and 324 can be selected based on any suitable consideration, including for example the different possible positions of a user's hands on the device, the amount of contact necessary to detect the user's cardiac activity, preventing or reducing short circuits and other cardiac signal detection errors, manufacturing considerations (e.g., the minimum or maximum size leads that can be integrated in the bezel), aesthetic considerations (e.g., sizing leads 322 and 324 to reduce the visibility of leads 322 and 324), or any other suitable consideration.

[0042] In some embodiments, electronic device 300 can include additional lead 326 embedded in or behind display 302. Lead 326 can be operative to detect a user's heart activity as the user moves a finger across display 302, for example in the vicinity of or directly over lead 326 (e.g., as the user drags a finger over lead 326 to move a slider when unlocking the electronic device). Using lead 326, the electronic device can

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.29

detect an electrical signal from a different portion of the user's body (e.g., leads 322 and 324 detect signals through a first hand, and lead 326 detects signals through the second hand), which can provide the processor with additional information for determining characteristics of the user's cardiac activity.

[0043] Any suitable approach can be used to prevent leads 322, 324 and 326 from shorting. In particular, electronic device 300 can include at least one non-conductive component positioned between each of leads 322, 324 and 326. For example, a rubber gasket can be positioned between leads 322 and 324 (in bezel 310) and lead 326 (in display 302). In some embodiments, the cardiac electrical signals detected by leads 322, 324 and 326 can be faint or have particular characteristics that require materials having particular properties (e.g., silver-based compounds) to detect and transmit. In such cases, although the material used for bezel 310 or other electronic device components can be conductive, its conductivity can be insufficient to transmit signals detected by lead 322 directly to lead 324 (e.g., shorting leads 322 and 324). This may allow leads 322 and 324 to be embedded directly in bezel 310 without the need for additional isolating material, which can add cost and complexity to the manufacturing process.

[0044] To ensure that electronic device 300, and in particular bezel 310 remains aesthetically pleasing, leads 322 and 324 can be finished to resemble bezel 310. For example, leads 322 and 324 can be polished or roughened to match the finish of bezel 310. As another example, a conductive coating can be applied to leads 322 and 324 to match the color, tone and

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.30

reflectivity of bezel 310. In some embodiments, the texture or feel of leads 322 and 324 can also be selected to render leads 322 and 324 visibly and haptically indistinguishable or nearly indistinguishable from bezel 310.

[0045] Leads 322 and 324 can be integrated in bezel 310 using any suitable approach. In some embodiments, leads 322 and 324 can be positioned on the exterior surface of bezel 310 and include an electrically conductive path to the electronic device processor. FIG. 4A is a cross-sectional view of an illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention. Electronic device 400 can include display 402 and bezel 410. Lead 422 can be embedded along the outer surface of bezel 410 such that lead 422 is exposed to the user during use. Connector 424 can be coupled to the inner surface of lead 422 and extend into electronic device 400 to be coupled with a processor. In some embodiments, electronic device 400 can in addition include an isolating layer positioned between lead 422 and bezel 410 (not shown). The isolating layer can be constructed from any suitable material having non-conductive properties, including for example a ceramic material, plastic, rubber, or any other suitable material. Alternatively, if the material of bezel 410 is not conductive, or insufficiently conductive to cause several distinct leads 422 positioned on bezel 410 from shorting, no isolating layer may be necessary.

[0046] FIG. 4B is a cross-sectional view of another illustrative electronic device having a bezel with an

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.31

embedded heart sensor lead in accordance with one embodiment of the invention. Electronic device 450 can include display 452 and bezel 460. If the electrical conductivity and size of bezel 460, and the strength or characteristics of the cardiac signal provided by the user and detected by the heart sensor are adapted such that the signal can be transmitted along short distances in bezel 460, lead 472 of the heart sensor can be positioned against the back surface of bezel 460. Alternatively, lead 472 can be placed within the thickness of bezel 460 (e.g., in a pocket within the bezel wall), but underneath the outer surface of the bezel. The short thickness of bezel 460 can allow electrical signals to propagate from the user to the outer surface of bezel 460, through bezel 460, and into lead 472, which may in turn transmit the signals to a processor using connector 474. In addition, if several leads are placed along different portions of bezel 460, the distance between adjacent leads can be sufficiently large (e.g., substantially larger than the thickness of bezel 460) that different leads of bezel 460 cannot detect the same electrical signal.

[0047] In some embodiments, entire portions of the bezel can be used as leads for the heart sensor. FIG. 5 is a schematic view of an illustrative electronic device using portions of the bezel as leads in accordance with one embodiment of the invention. Similar to electronic device 300 (FIG. 3), electronic device 500 can include display 502 and bezel 510. Bezel 510 can be separated into several electrically isolated segments, for example segments 522 and 524. The segments can be electrically isolated using

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.32

isolating portions 530 and 532, which can be constructed from any suitable non-conductive material, such as for example a composite material, a plastic, rubber, or any other suitable material. Although FIG. 5 shows bezel 510 broken into two segments having similar sizes, it will be understood that bezel 510 can be separated into any suitable number of electrically isolated segments, and each segment can have any suitable size. In particular, the sizes and distribution of each segment can be selected based on physiological considerations (e.g., where a user's hand will be positioned on the device, or aligning the segments to contact particular portions of the user's body).

[0048] To ensure that electronic device 500 remains aesthetically pleasing, isolating portions 530 and 532 can be finished to resemble bezel 510. For example, isolating portions 530 and 532 can be polished or machined to create a reflective surface matching the reflection of bezel 510. As another example, a reflective or finishing coating can be applied to the surfaces of isolating portions 530 and 532 to match the finish of bezel 510. In some embodiments, the texture of isolating portions 530 and 532 can also be selected to render segments 522 and 524 visually and haptically indistinguishable or nearly indistinguishable from isolating portions 530 and 532.

[0049] Other heart sensor leads can be placed at any other suitable position on the electronic device enclosure. For example, if the enclosure is constructed from a bezel supporting a display and a housing forming the exterior surface of the device behind the display, one or more leads can be embedded

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.33

in or adjacent to the housing. For example, if the housing includes a conductive section (e.g., a plastic housing with a metallic logo in the center of the housing), the lead can be coupled to or integrated in the conductive section.

[0050] The heart sensor and processor can detect and process the user's cardiac activity at any suitable time. For example, the processor can receive and process heart activity when the device is locked and held while in its locked state. As another example, the processor can receive and process heart activity as the user places a finger over lead 326 (e.g., when the user slides a finger across the display to unlock the device) or when an input mechanism detects a particular input. As still another example, the electronic device can receive and process heart activity data in response to a user instruction or request to access a particular application or data that for which access is restricted. Upon receiving the cardiac activity, the electronic device can extract one or more characteristics of the received activity and compare the extracted characteristics with the characteristics previously stored in memory that were associated with authorized users. If the extracted characteristics match those of an authorized user, the electronic device can authenticate the identified user.

[0051] The electronic device can perform any suitable operation in response to identifying and authenticating a user based on detected cardiac signals. In some embodiments, the electronic device can provide access to restricted applications, for example applications for which only particular users have licenses or that only particular users have

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.34

purchased. In some embodiments, the electronic device can provide access to particular data or application settings associated with an authorized user. For example, the electronic device can provide access to the identified user's contact list, or to the identified user's e-mail account or telephone history. As another example, the electronic device can allow the user to access private banking applications, or conduct financial transactions (e.g., transferring funds to different accounts, or purchasing merchandise) using the electronic device. In some embodiments, the electronic device can load user settings and profiles for providing a customized display to the user. For example, the electronic device can display icons or options in the manner set by the user, or provide displays using a color scheme, fonts, or other customizable display attribute that are associated with the identified user.

[0052] In some embodiments, the electronic device can use the detected heart rate or heartbeat characteristics to determine the user's mood. In particular, because the allowable determined characteristics associated with each user can include a range of values, the electronic device can determine the distribution of the detected characteristics in the allowable characteristic ranges. Using the determined distribution, the electronic device can establish a user's mood and provide electronic device operations or data (e.g., media) associated with the extrapolated mood. Systems and methods for providing mood-based electronic device operations are discussed in more detail in commonly assigned U.S. ~~Patent Application No. 12/218,203, filed July 10, 2008 and entitled~~

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.35

~~"System and Method for Creating a Playlist Based on Mood,"~~ Publication No. 2010/0011388, which is incorporated by reference herein in its entirety.

[0053] In some embodiments, the electronic device can provide media playback based on the user's detected cardiac signal. For example, the electronic device can identify media having beats per minute or other characteristics that are associated with or related to the user's cardiac signal or heart rate, and play back the identified media. As another example, the media provided can have beats per minute faster or slower than the user's current heart rate to direct the user to work harder (e.g., during a workout) or to cool or calm the user down (e.g., at the end of a workout).

[0054] FIG. 6 is a flowchart of an illustrative process for performing an electronic device operation based on a user's cardiac signal in accordance with one embodiment of the invention. Process 600 can begin at step 602. At step 604, the electronic device can detect a user's cardiac signal. For example, the electronic device can detect a user's heart rate or heart beat using one or more leads connected to or placed on a housing, bezel, or other exterior surface of the electronic device. The electronic device can process the received signal using any suitable approach, including for example to determine unique characteristics of the signal. Such characteristics can include, for example, durations between peaks in an EKG signal, peak values or rations between peaks in the EKG signal, or any other suitable characteristic. At step 606, the electronic device can determine whether the user detected at step 604 is an authorized user. For example, the electronic device can compare the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.36

determined characteristics of the detected cardiac signals with a library of signals associate with known authorized users. If the electronic device determines that the user is not authorized (e.g., the characteristics of the detected cardiac signal do not match characteristics of a cardiac signal stored in memory), process 600 can move to step 608.

[0055] At step 608, the electronic device can prevent access to restricted electronic device operations. For example, the electronic device can prevent the user from accessing personal or private information associated with other users. As another example, the electronic device can prevent the user from accessing applications or operations associated with particular users (e.g., applications purchased by particular users). As still another example, the electronic device can prevent the user from accessing any electronic device operation (e.g., no operation except for emergency calls). Process 600 can then end at step 610.

[0056] If, at step 606, the electronic device instead determines that the user is authorized, process 600 can move to step 612. At step 612, the electronic device can determine the restricted operations that are associated with the user. For example, the electronic device can determine the particular private data associated with the authorized user (e.g., e-mail accounts, contact lists and banking information). As another example, the electronic device can determine the particular operations or applications associated with the authorized user (e.g., applications purchased by the user using an applications store, or system controlling operations

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.37

associated with an administrative account). At step 614, the electronic device can provide access to the user's determined restricted operations. For example, the electronic device can load determined data. As another example, the electronic device can provide links for launching determined personal or private applications. Process 600 can then end at step 610.

[0057] The above-described embodiments of the present invention are presented for purposes of illustration and not of limitation, and the present invention is limited only by the claims which follow.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.38

SEAMLESSLY EMBEDDED HEART RATE MONITOR

Cross-Reference to Related Application

[0001] This application is a continuation of U.S. Patent Application No. 12/358,905, filed January 23, 2009 (now U.S. Patent No. 8,615,290), which claims priority to U.S. Provisional Patent Application No. 61/111,498, filed November 5, 2008. Each of these earlier applications is incorporated by reference herein in its entirety.

Background of the Invention

[0001] This is directed to providing a seamless heart-rate monitor in an electronic device.

[0002] Many electronic devices are used to store personal or confidential information. In particular, portable electronic devices such as cellular telephones, personal assistants, and music players are often used to store or access e-mail, contact lists, communications history, remotely accessed accounts (e.g., telephone, banking or credit card accounts), or other information that a user may regard as personal or private. In addition, several users may use the same electronic device. For example, several users in a

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.39

household may use the same computer or portable music player. As another example, a user may lend an electronic device to a friend (e.g., lend an iPod, available from Apple Inc. to a friend for a workout or a trip). To enhance each user's experience with the electronic device, the electronic device can include several profiles that can be loaded and provided to the users of the device. Each profile can be associated with a particular user, and include several settings that allow the electronic device interface user interaction components, and available data or applications to be personalized for the user.

[0003] The electronic device can use several approaches to identify the user of the electronic device and provide access to the user's private and personal information, or to load the user's personal profile. In some embodiments, the electronic device can identify or authenticate a user based on an input provided by the user, such as a password or key provided using an input mechanism. In some embodiments, the electronic device can include one or more sensors operative to detect a fingerprint, voice print, facial features, or other biometric characteristics of a user.

[0004] Other biometric-based approaches can be used to authenticate a user. In some embodiments, an electronic device can authenticate a user based on the attributes of the user's heartbeat. For example, the durations of particular portions of a user's heart rhythm, or the relative size of peaks of a user's electrocardiogram (EKG) can be processed and compared to a stored profile to authenticate a user of the device. To detect a user's heartbeat or heart rhythm,

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.40

however, the electronic device must provide at least two leads that the user contacts to detect the user's cardiac signals. Although the leads can simply be placed on the exterior surface of the device housing, for example in a defined location where the user may place a finger, this approach is not aesthetically pleasing, and may cause some prospective buyers to consider other devices. In addition, such an approach may require the user to perform a specific authentication action - viz., placing a finger on the one or more leads, then unlocking or accessing the electronic device features (e.g., by moving a slider across the screen). This additional step may in fact be so encumbering that users disable the authentication feature and instead use an unsecured electronic device.

Summary of the Invention

[0005] This is directed to an electronic device having a seamlessly integrated cardiac sensor. The cardiac sensor can be integrated in any suitable portion of the electronic device, including for example a portion with which the user is typically in contact (e.g., an input mechanism or a housing held by the user), or metallic or conductive portions of the device.

[0006] The electronic device can include any suitable type of electronic device, including for example a portable electronic device that the user may hold in hand (e.g., a portable media player or a cellular telephone), a larger portable electronic device (e.g., a laptop computer), or a substantially fixed electronic device. The electronic device may include software or hardware operative to process the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.41

output of a cardiac sensor to extract, from the received output, characteristics of the user's heartbeat, heart rate, or other cardiac signals. For example, the electronic device may extract one or more characteristic durations associated with the user's heart rate. As another example, the electronic device may extract one or more characteristic amplitudes or amplitude ratios associated with the user's heart rate.

[0007] Once the electronic device has identified one or more characteristics of the user's heart rate, heartbeat, or other cardiac signals, the electronic device can compare the one or more identified characteristics with cardiac signal characteristics of authorized users that have been stored in memory. In response to determining that the identified characteristics correspond to those of an authorized user (e.g., match those stored in memory), the electronic device can provide the user with access to the electronic device and load the identified user's personal settings and data.

[0008] To determine the user's heart rate, heartbeat, or other cardiac signals, the electronic device can include one or more sensors embedded in the device. The one or more sensors can include leads for receiving electrical signals from the user's heart. For example, the one or more sensors can include leads associated with the user's left and right sides, and lead associated with the ground. To provide an electrical signal from the user to the processing circuitry, the leads can be exposed such that the user may directly contact the leads, or may instead or in addition be coupled to an electrically conductive

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.42

portion of the device enclosure (e.g., a metallic bezel or housing forming the exterior of the device).

[0009] Because each electronic device can include several leads, the leads may be electrically isolated to avoid shorting or interference among leads. In some embodiments, an electrically isolating component can be inserted between adjacent leads. Alternatively, if the electronic device enclosure is constructed from a material having insufficient conductivity for transmitting detected cardiac electrical signals, the distance along the enclosure between adjacent leads can be sufficient to isolate the leads. In addition, to ensure that the aesthetic appeal and appearance of the electronic device is retained, one or more of the isolating components, the leads themselves, and the device enclosure can be finished using a suitable process to disguise the leads.

[0010] In some embodiments, if the electrical conductivity of portions of the electronic device enclosure and the leads are suitably selected and designed, the leads can be positioned underneath the exterior surface of the enclosure while providing sufficient conductivity for detecting cardiac electrical signals and avoiding shorting or interference between adjacent leads. For example, the sensor leads can be constructed from a silver based compound having high electrical conductivity, while the electronic device enclosure can be constructed from steel and aluminum, both having lower electrical conductivity. By placing several leads at substantially larger distances apart along the electronic device enclosure than the thickness of the enclosure, electronic signals can be transmitted

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.43

through the steel or aluminum enclosure to a silver based lead underneath the enclosure, but not along the surface of the enclosure to cause adjacent leads to short.

Brief Description of the Drawings

[0011] The above and other features of the present invention, its nature and various advantages will be more apparent upon consideration of the following detailed description, taken in conjunction with the accompanying drawings in which:

[0012] FIG. 1 is a schematic view of an illustrative electronic device for receiving the output of one or more sensors in accordance with one embodiment of the invention;

[0013] FIG. 2 is a graphical representation of illustrative electrical activity of a heart during a heartbeat;

[0014] FIG. 3 is a schematic view of an illustrative electronic device having several integrated leads in accordance with one embodiment of the invention;

[0015] FIG. 4A is a cross-sectional view of an illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention;

[0016] FIG. 4B is a cross-sectional view of another illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention;

[0017] FIG. 5 is a schematic view of an illustrative electronic device using portions of the bezel as leads in accordance with one embodiment of the invention; and

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.44

[0018] FIG. 6 is a flowchart of an illustrative process for performing an electronic device operation based on a user's cardiac signal in accordance with one embodiment of the invention.

Detailed Description

[0019] FIG. 1 is a schematic view of an illustrative electronic device for receiving the output of one or more sensors in accordance with one embodiment of the invention. Electronic device 100 can include control circuitry 102, storage 104, memory 106, input/output circuitry 108, communications circuitry 110, and heart sensor 112. In some embodiments, one or more of electronic device components 100 can be combined or omitted (e.g., combine storage 104 and memory 106). In some embodiments, electronic device 100 can include other components not combined or included in those shown in FIG. 1 (e.g., motion detection components, a power supply such as a battery or kinetics, a display, bus, or input mechanism), or several instances of the components shown in FIG. 1. For the sake of simplicity, only one of each of the components is shown in FIG. 1.

[0020] Control circuitry 102 can include any processing circuitry or processor operative to control the operations and performance of electronic device 100. For example, control circuitry 100 can be used to run operating system applications, firmware applications, media playback applications, media editing applications, or any other application. In some embodiments, the control circuitry can drive a display and process inputs received from a user interface.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.45

[0021] Storage 104 can include, for example, one or more storage mediums including a hard-drive, solid state drive, flash memory, permanent memory such as ROM, any other suitable type of storage component, or any combination thereof. Storage 104 can store, for example, media data (e.g., music and video files), application data (e.g., for implementing functions on device 100), firmware, user preference information data (e.g., media playback preferences), authentication information (e.g. libraries of data associated with authorized users), lifestyle information data (e.g., food preferences), exercise information data (e.g., information obtained by exercise monitoring equipment), transaction information data (e.g., information such as credit card information), wireless connection information data (e.g., information that can enable electronic device 100 to establish a wireless connection), subscription information data (e.g., information that keeps track of podcasts or television shows or other media a user subscribes to), contact information data (e.g., telephone numbers and email addresses), calendar information data, and any other suitable data or any combination thereof.

[0022] Memory 106 can include cache memory, semi-permanent memory such as RAM, and/or one or more different types of memory used for temporarily storing data. In some embodiments, memory 106 can also be used for storing data used to operate electronic device applications, or any other type of data that can be stored in storage 104. In some embodiments, memory 106 and storage 104 can be combined as a single storage medium.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.46

[0023] Input/output circuitry 108 can be operative to convert (and encode/decode, if necessary) analog signals and other signals into digital data. In some embodiments, input/output circuitry 108 can also convert digital data into any other type of signal, and vice-versa. For example, input/output circuitry 108 can receive and convert physical contact inputs (e.g., from a multi-touch screen), physical movements (e.g., from a mouse or sensor), analog audio signals (e.g., from a microphone), or any other input. The digital data can be provided to and received from processor 102, storage 104, memory 106, heart sensor 112, or any other component of electronic device 100. Although input/output circuitry 108 is illustrated in FIG. 1 as a single component of electronic device 100, several instances of input/output circuitry can be included in electronic device 100.

[0024] Electronic device 100 can include any suitable mechanism or component for allowing a user to provide inputs to input/output circuitry 108. For example, electronic device 100 can include any suitable input mechanism, such as for example, a button, keypad, dial, a click wheel, or a touch screen. In some embodiments, electronic device 100 can include a capacitive sensing mechanism, or a multi-touch capacitive sensing mechanism. Some sensing mechanisms are described in commonly owned U.S. Patent Nos. 8,479,122 and 8,239,784, both of which are incorporated herein in their entirety.

[0025] In some embodiments, electronic device 100 can include specialized output circuitry associated with output devices such as, for example, one or more

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.47

audio outputs. The audio output can include one or more speakers (e.g., mono or stereo speakers) built into electronic device 100, or an audio component that is remotely coupled to electronic device 100 (e.g., a headset, headphones or earbuds that can be coupled to communications device with a wire or wirelessly).

[0026] In some embodiments, I/O circuitry 108 can include display circuitry (e.g., a screen or projection system) for providing a display visible to the user. For example, the display circuitry can include a screen (e.g., an LCD screen) that is incorporated in electronics device 100. As another example, the display circuitry can include a movable display or a projecting system for providing a display of content on a surface remote from electronic device 100 (e.g., a video projector). In some embodiments, the display circuitry can include a coder/decoder (Codec) to convert digital media data into analog signals. For example, the display circuitry (or other appropriate circuitry within electronic device 100) can include video Codecs, audio Codecs, or any other suitable type of Codec.

[0027] The display circuitry also can include display driver circuitry, circuitry for driving display drivers, or both. The display circuitry can be operative to display content (e.g., media playback information, application screens for applications implemented on the electronic device, information regarding ongoing communications operations, information regarding incoming communications requests, or device operation screens) under the direction of control circuitry 102. Alternatively, the display

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.48

circuitry can be operative to provide instructions to a remote display (e.g., display 130, FIG. 1).

[0028] Communications circuitry 110 can include any suitable communications circuitry operative to connect to a communications network and to transmit communications (e.g., voice or data) from communications device 100 to other devices within the communications network. Communications circuitry 110 can be operative to interface with the communications network using any suitable communications protocol such as, for example, Wi-Fi (e.g., a 802.11 protocol), Bluetooth®, radio frequency systems (e.g., 900 MHz, 1.4 GHz, and 5.6 GHz communication systems), infrared, GSM, GSM plus EDGE, CDMA, quadband, and other cellular protocols, VOIP, or any other suitable protocol.

[0029] In some embodiments, communications circuitry 110 can be operative to create a communications network using any suitable communications protocol. For example, communications circuitry 110 can create a short-range communications network using a short-range communications protocol to connect to other devices. For example, communications circuitry 110 can be operative to create a local communications network using the Bluetooth® protocol to couple electronic device 100 with a Bluetooth® headset.

[0030] Electronic device 100 can include one more instances of communications circuitry 110 for simultaneously performing several communications operations using different communications networks, although only one is shown in FIG. 1 to avoid overcomplicating the drawing. For example, electronic device 100 can include a first instance of communications circuitry 110 for communicating over a

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.49

cellular network, and a second instance of communications circuitry 110 for communicating over Wi-Fi or using Bluetooth®. In some embodiments, the same instance of communications circuitry 110 can be operative to provide for communications over several communications networks.

[0031] In some embodiments, electronic device 100 can be coupled a host device for data transfers, synching the communications device, software or firmware updates, providing performance information to a remote source (e.g., providing riding characteristics to a remove server) or performing any other suitable operation that can require electronic device 100 to be coupled to a host device. Several electronic devices 100 can be coupled to a single host device using the host device as a server, and instead or in addition electronic device 100 can be coupled to several host devices (e.g., for each of the plurality of the host devices to serve as a backup for data stored in electronic device 100).

[0032] Heart sensor 112 can include any suitable sensor operative to detect a user's heartbeat, heart rate, or any other signal generated by the user's heart. In some embodiments, heart sensor 112 can serve as an EKG monitor. Heart sensor 112 can include one or more leads connected to the exterior of the electronic device such that the user may contact one or more of the leads to provide an electrical signal associated with the user's heart to heart sensor 112. The cardiac signals detected by the heart sensor leads can be coupled to a processor incorporated in heart sensor 112, or instead provided to processor 102. The processor may then analyze the received signals and

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.50

generate, from the received signals, one or more characteristic quantities of the user's heartbeat or heart rate for authentication.

[0033] The heart sensor leads can be constructed from any suitable material. In some embodiments, the heart sensor leads can be constructed from a specific material selected for particular conductive properties that permit a more effective transmission of the electrical signals reflecting the user's cardiac activity. For example, the heart sensor leads can be constructed from a silver based compound, which can provide superior conductivity relative to other metallic compounds (e.g., steel or aluminum). In addition, the size and location of the leads can be selected to ensure that sufficient contact is made between the user (e.g., the user's hand or finger) and the leads for cardiac signals to be detected. For example, each lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing. The pad or extended area can then be coupled to a wire or other connector for providing cardiac signals to a processor for processing. As another example, an entire portion of the electronic device enclosure (e.g., a portion of a bezel or housing) can serve as a lead for the heart sensor. In such embodiments, the portion of the enclosure can be sufficiently electrically isolated from other conductive portions of the electronic device housing to ensure that lead portions of the device do not short. In some embodiments, an accessory coupled to the electronic device can be used to detect a user's heart rate. For example, the leads can be located in one or more earbuds or in a headset, for example as is

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.51

described in commonly assigned U.S. Publication No. 2008/0076972, which is incorporated by reference herein in its entirety.

[0034] Using a heart sensor, the electronic device can detect and analyze the electrical activity of the heart over time. FIG. 2 is a graphical representation of illustrative electrical activity of a heart during a heartbeat. Representation 200 may include a plot of the variation of the heart's electrical potential over time. A typical heartbeat may include several variations of electrical potential, which may be classified into waves and a complex. For example, representation 200 can include P wave 202, QRS complex 210, and T wave 220. Some representations can in addition include a U wave (not shown). The P wave can represent normal atrial depolarization, when the main electrical vector spreads from the right atrium to the left atrium. The shape and duration of the P wave can be related to the size of the user's atrium (e.g., indicating atrial enlargement), and can be a first source of heartbeat characteristics unique to a user.

[0035] The QRS complex can correspond to the depolarization of the heart ventricles, and can be separated into three distinct waves - a Q wave, a R wave and a S wave. Because the ventricles contain more muscle mass than the atria, the QRS complex is larger than the P wave. In addition, the His/Purkinje system of the heart, which can increase the conduction velocity to coordinate the depolarization of the ventricles, can cause the QRS complex to look "spiked" rather than rounded. The duration of the QRS complex of a healthy heart can be in the range of 60 to 100ms, but can vary due to abnormalities of conduction. The

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.52

duration of the QRS complex can therefore serve as a second source of heartbeat characteristics unique to a user.

[0036] The duration, amplitude, and morphology of each of the Q, R and S waves can vary in different individuals, and in particular can vary significantly for users having cardiac diseases or cardiac irregularities. For example, a Q wave that is greater than 1/3 of the height of the R wave, or greater than 40ms in duration can be indicative of a myocardial infarction and provide a unique characteristic of the user's heart. Similarly, other healthy ratios of Q and R waves can be used to distinguish different users' heartbeats.

[0037] Representation 200 may include one or more characteristic durations or intervals that can be used to distinguish different users. For example, representation 200 can include PR interval 204 and ST segment 212. PR interval 204 can be measured from the beginning of P wave 202 to the beginning of QRS complex 210. PR interval 204 can typically last 120 to 200ms. A PR interval 204 having a different duration can indicate one or more defects in the heart, such as a first degree heart block (e.g., PR interval 204 lasting more than 200ms), a pre-excitation syndrome via an accessory pathway that leads to early activation of the ventricles (e.g., PR interval 204 lasts less than 120ms), or another type of heart block (e.g., PR interval 204 is variable). ST segment 212 can be measured from QRS complex 210 to T wave 220, for example starting at the junction between QRS complex 210 and ST segment 212 and ending at the beginning of T wave 220. ST segment 212 can typically

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.53

last from 80 to 120ms, and normally has a slight upward concavity. The combination of the length of ST segment 212, and the concavity or elevation of ST segment 212 can also be used to generate characteristic information unique to each user's heartbeat.

[0038] T wave 220 can represent the repolarization or recovery of the ventricles. The interval from the beginning of the QRS complex to the apex of the T wave can be referred to as the absolute refractory period. The last half of the T wave can be referred to as the relative refractory period or vulnerable period. The amplitude of T wave 220, the duration of the absolute refractory period, and the relative refractory period can also be used to define a characteristic of the user's heart rate.

[0039] QT interval 222, which can represent the total time needed for the ventricles to depolarize and repolarize, can be measured from the beginning of QRS complex 210 to the end of T wave 220. QT interval 222 can typically last between 300 and 450ms, and can vary based on the condition of the user's heart rate. Several correction factors have been developed to correct QT interval 222 for the heart rate. Both the measured and corrected QT interval 222 values can be used to define a unique characteristic of a user's heartbeat.

[0040] Because a user's heartbeat or heart rate can vary slightly based on the user's activity or mood, each authorized user can initially provide a base or standard heart rate, heartbeat, or electrical activity to the device prior to first use. For example, the electronic device can sample several heartbeats or electrical activity at several different times to

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.54

detect variations in the user's cardiac electrical activity. The electronic device can process detected signals to determine several unique characteristics of the user's heart activity, and identify a range of suitable characteristic values for each of the processed characteristics. Based on the characteristic values and associated ranges, the electronic device can select one, all or a subset of the characteristics to define a unique heart activity profile for the authorized user. The particular combination of characteristics and associated ranges can be selected to minimize overlap with other authorized users, or based on characteristic values and ranges that do not fall within a range of average values and ranges (e.g., do not use characteristic values and ranges that an average user of the device would have).

[0041] The heart sensor of the electronic device can include several leads for detecting the user's heart activity. The leads can be integrated in any suitable portion of the electronic device. FIG. 3 is a schematic view of an illustrative electronic device having several integrated leads in accordance with one embodiment of the invention. Electronic device 300 can include display 302 and bezel 310, and be portable such that a user can hold electronic device with fingers extending against one of sides 312 and 314 of bezel 310, and the user's thumb extending against the other of sides 312 and 314. Leads 322 and 324, which can include conductive pads, can be coupled to sides 312 and 314 of bezel 310, respectively, such that when the user holds the device, the user's thumb and fingers are placed in contact with leads 322 and 324. Alternatively, bezel 310 can include any other suitable

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.55

number of leads, or any other suitable distribution of leads along bezel 310 and in other portions of electronic device 300. The leads can detect the user's cardiac activity through the contact with the user's thumb and fingers, and provide the detected activity to the electronic device processor for processing. The size of leads 322 and 324 can be selected based on any suitable consideration, including for example the different possible positions of a user's hands on the device, the amount of contact necessary to detect the user's cardiac activity, preventing or reducing short circuits and other cardiac signal detection errors, manufacturing considerations (e.g., the minimum or maximum size leads that can be integrated in the bezel), aesthetic considerations (e.g., sizing leads 322 and 324 to reduce the visibility of leads 322 and 324), or any other suitable consideration.

[0042] In some embodiments, electronic device 300 can include additional lead 326 embedded in or behind display 302. Lead 326 can be operative to detect a user's heart activity as the user moves a finger across display 302, for example in the vicinity of or directly over lead 326 (e.g., as the user drags a finger over lead 326 to move a slider when unlocking the electronic device). Using lead 326, the electronic device can detect an electrical signal from a different portion of the user's body (e.g., leads 322 and 324 detect signals through a first hand, and lead 326 detects signals through the second hand), which can provide the processor with additional information for determining characteristics of the user's cardiac activity.

[0043] Any suitable approach can be used to prevent leads 322, 324 and 326 from shorting. In particular,

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.56

electronic device 300 can include at least one non-conductive component positioned between each of leads 322, 324 and 326. For example, a rubber gasket can be positioned between leads 322 and 324 (in bezel 310) and lead 326 (in display 302). In some embodiments, the cardiac electrical signals detected by leads 322, 324 and 326 can be faint or have particular characteristics that require materials having particular properties (e.g., silver-based compounds) to detect and transmit. In such cases, although the material used for bezel 310 or other electronic device components can be conductive, its conductivity can be insufficient to transmit signals detected by lead 322 directly to lead 324 (e.g., shorting leads 322 and 324). This may allow leads 322 and 324 to be embedded directly in bezel 310 without the need for additional isolating material, which can add cost and complexity to the manufacturing process.

[0044] To ensure that electronic device 300, and in particular bezel 310 remains aesthetically pleasing, leads 322 and 324 can be finished to resemble bezel 310. For example, leads 322 and 324 can be polished or roughened to match the finish of bezel 310. As another example, a conductive coating can be applied to leads 322 and 324 to match the color, tone and reflectivity of bezel 310. In some embodiments, the texture or feel of leads 322 and 324 can also be selected to render leads 322 and 324 visibly and haptically indistinguishable or nearly indistinguishable from bezel 310.

[0045] Leads 322 and 324 can be integrated in bezel 310 using any suitable approach. In some embodiments, leads 322 and 324 can be positioned on the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.57

exterior surface of bezel 310 and include an electrically conductive path to the electronic device processor. FIG. 4A is a cross-sectional view of an illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention. Electronic device 400 can include display 402 and bezel 410. Lead 422 can be embedded along the outer surface of bezel 410 such that lead 422 is exposed to the user during use. Connector 424 can be coupled to the inner surface of lead 422 and extend into electronic device 400 to be coupled with a processor. In some embodiments, electronic device 400 can in addition include an isolating layer positioned between lead 422 and bezel 410 (not shown). The isolating layer can be constructed from any suitable material having non-conductive properties, including for example a ceramic material, plastic, rubber, or any other suitable material. Alternatively, if the material of bezel 410 is not conductive, or insufficiently conductive to cause several distinct leads 422 positioned on bezel 410 from shorting, no isolating layer may be necessary.

[0046] FIG. 4B is a cross-sectional view of another illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention. Electronic device 450 can include display 452 and bezel 460. If the electrical conductivity and size of bezel 460, and the strength or characteristics of the cardiac signal provided by the user and detected by the heart sensor are adapted such that the signal can be transmitted along short distances in bezel 460, lead 472 of the heart sensor

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.58

can be positioned against the back surface of bezel 460. Alternatively, lead 472 can be placed within the thickness of bezel 460 (e.g., in a pocket within the bezel wall), but underneath the outer surface of the bezel. The short thickness of bezel 460 can allow electrical signals to propagate from the user to the outer surface of bezel 460, through bezel 460, and into lead 472, which may in turn transmit the signals to a processor using connector 474. In addition, if several leads are placed along different portions of bezel 460, the distance between adjacent leads can be sufficiently large (e.g., substantially larger than the thickness of bezel 460) that different leads of bezel 460 cannot detect the same electrical signal.

[0047] In some embodiments, entire portions of the bezel can be used as leads for the heart sensor. FIG. 5 is a schematic view of an illustrative electronic device using portions of the bezel as leads in accordance with one embodiment of the invention. Similar to electronic device 300 (FIG. 3), electronic device 500 can include display 502 and bezel 510. Bezel 510 can be separated into several electrically isolated segments, for example segments 522 and 524. The segments can be electrically isolated using isolating portions 530 and 532, which can be constructed from any suitable non-conductive material, such as for example a composite material, a plastic, rubber, or any other suitable material. Although FIG. 5 shows bezel 510 broken into two segments having similar sizes, it will be understood that bezel 510 can be separated into any suitable number of electrically isolated segments, and each segment can have any

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.59

suitable size. In particular, the sizes and distribution of each segment can be selected based on physiological considerations (e.g., where a user's hand will be positioned on the device, or aligning the segments to contact particular portions of the user's body).

[0048] To ensure that electronic device 500 remains aesthetically pleasing, isolating portions 530 and 532 can be finished to resemble bezel 510. For example, isolating portions 530 and 532 can be polished or machined to create a reflective surface matching the reflection of bezel 510. As another example, a reflective or finishing coating can be applied to the surfaces of isolating portions 530 and 532 to match the finish of bezel 510. In some embodiments, the texture of isolating portions 530 and 532 can also be selected to render segments 522 and 524 visually and haptically indistinguishable or nearly indistinguishable from isolating portions 530 and 532.

[0049] Other heart sensor leads can be placed at any other suitable position on the electronic device enclosure. For example, if the enclosure is constructed from a bezel supporting a display and a housing forming the exterior surface of the device behind the display, one or more leads can be embedded in or adjacent to the housing. For example, if the housing includes a conductive section (e.g., a plastic housing with a metallic logo in the center of the housing), the lead can be coupled to or integrated in the conductive section.

[0050] The heart sensor and processor can detect and process the user's cardiac activity at any suitable time. For example, the processor can receive and

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.60

process heart activity when the device is locked and held while in its locked state. As another example, the processor can receive and process heart activity as the user places a finger over lead 326 (e.g., when the user slides a finger across the display to unlock the device) or when an input mechanism detects a particular input. As still another example, the electronic device can receive and process heart activity data in response to a user instruction or request to access a particular application or data that for which access is restricted. Upon receiving the cardiac activity, the electronic device can extract one or more characteristics of the received activity and compare the extracted characteristics with the characteristics previously stored in memory that were associated with authorized users. If the extracted characteristics match those of an authorized user, the electronic device can authenticate the identified user.

[0051] The electronic device can perform any suitable operation in response to identifying and authenticating a user based on detected cardiac signals. In some embodiments, the electronic device can provide access to restricted applications, for example applications for which only particular users have licenses or that only particular users have purchased. In some embodiments, the electronic device can provide access to particular data or application settings associated with an authorized user. For example, the electronic device can provide access to the identified user's contact list, or to the identified user's e-mail account or telephone history. As another example, the electronic device can allow the user to access private banking applications, or conduct

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.61

financial transactions (e.g., transferring funds to different accounts, or purchasing merchandise) using the electronic device. In some embodiments, the electronic device can load user settings and profiles for providing a customized display to the user. For example, the electronic device can display icons or options in the manner set by the user, or provide displays using a color scheme, fonts, or other customizable display attribute that are associated with the identified user.

[0052] In some embodiments, the electronic device can use the detected heart rate or heartbeat characteristics to determine the user's mood. In particular, because the allowable determined characteristics associated with each user can include a range of values, the electronic device can determine the distribution of the detected characteristics in the allowable characteristic ranges. Using the determined distribution, the electronic device can establish a user's mood and provide electronic device operations or data (e.g., media) associated with the extrapolated mood. Systems and methods for providing mood-based electronic device operations are discussed in more detail in commonly assigned U.S. Publication No. 2010/0011388, which is incorporated by reference herein in its entirety.

[0053] In some embodiments, the electronic device can provide media playback based on the user's detected cardiac signal. For example, the electronic device can identify media having beats per minute or other characteristics that are associated with or related to the user's cardiac signal or heart rate, and play back the identified media. As another example, the media

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.62

provided can have beats per minute faster or slower than the user's current heart rate to direct the user to work harder (e.g., during a workout) or to cool or calm the user down (e.g., at the end of a workout).

[0054] FIG. 6 is a flowchart of an illustrative process for performing an electronic device operation based on a user's cardiac signal in accordance with one embodiment of the invention. Process 600 can begin at step 602. At step 604, the electronic device can detect a user's cardiac signal. For example, the electronic device can detect a user's heart rate or heart beat using one or more leads connected to or placed on a housing, bezel, or other exterior surface of the electronic device. The electronic device can process the received signal using any suitable approach, including for example to determine unique characteristics of the signal. Such characteristics can include, for example, durations between peaks in an EKG signal, peak values or rations between peaks in the EKG signal, or any other suitable characteristic. At step 606, the electronic device can determine whether the user detected at step 604 is an authorized user. For example, the electronic device can compare the determined characteristics of the detected cardiac signals with a library of signals associate with known authorized users. If the electronic device determines that the user is not authorized (e.g., the characteristics of the detected cardiac signal do not match characteristics of a cardiac signal stored in memory), process 600 can move to step 608.

[0055] At step 608, the electronic device can prevent access to restricted electronic device operations. For example, the electronic device can

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.63

prevent the user from accessing personal or private information associated with other users. As another example, the electronic device can prevent the user from accessing applications or operations associated with particular users (e.g., applications purchased by particular users). As still another example, the electronic device can prevent the user from accessing any electronic device operation (e.g., no operation except for emergency calls). Process 600 can then end at step 610.

[0056] If, at step 606, the electronic device instead determines that the user is authorized, process 600 can move to step 612. At step 612, the electronic device can determine the restricted operations that are associated with the user. For example, the electronic device can determine the particular private data associated with the authorized user (e.g., e-mail accounts, contact lists and banking information). As another example, the electronic device can determine the particular operations or applications associated with the authorized user (e.g., applications purchased by the user using an applications store, or system controlling operations associated with an administrative account). At step 614, the electronic device can provide access to the user's determined restricted operations. For example, the electronic device can load determined data. As another example, the electronic device can provide links for launching determined personal or private applications. Process 600 can then end at step 610.

[0057] The above-described embodiments of the present invention are presented for purposes of

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.64

illustration and not of limitation, and the present invention is limited only by the claims which follow.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.65

SEAMLESSLY EMBEDDED HEART RATE MONITOR

Cross-Reference to Related Application

[0001] This application claims priority to U.S. Provisional Application No. 61/111,498, filed November 5, 2008, which is incorporated by reference herein in its entirety.

Background of the Invention

[0002] This is directed to providing a seamless heart-rate monitor in an electronic device.

[0003] Many electronic devices are used to store personal or confidential information. In particular, portable electronic devices such as cellular telephones, personal assistants, and music players are often used to store or access e-mail, contact lists, communications history, remotely accessed accounts (e.g., telephone, banking or credit card accounts), or other information that a user may regard as personal or private. In addition, several users may use the same electronic device. For example, several users in a household may use the same computer or portable music player. As another example, a user may lend an electronic device to a friend (e.g., lend an iPod,

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.66

available from Apple Inc. to a friend for a workout or a trip). To enhance each user's experience with the electronic device, the electronic device can include several profiles that can be loaded and provided to the users of the device. Each profile can be associated with a particular user, and include several settings that allow the electronic device interface user interaction components, and available data or applications to be personalized for the user.

[0004] The electronic device can use several approaches to identify the user of the electronic device and provide access to the user's private and personal information, or to load the user's personal profile. In some embodiments, the electronic device can identify or authenticate a user based on an input provided by the user, such as a password or key provided using an input mechanism. In some embodiments, the electronic device can include one or more sensors operative to detect a fingerprint, voice print, facial features, or other biometric characteristics of a user.

[0005] Other biometric-based approaches can be used to authenticate a user. In some embodiments, an electronic device can authenticate a user based on the attributes of the user's heartbeat. For example, the durations of particular portions of a user's heart rhythm, or the relative size of peaks of a user's electrocardiogram (EKG) can be processed and compared to a stored profile to authenticate a user of the device. To detect a user's heartbeat or heart rhythm, however, the electronic device must provide at least two leads that the user contacts to detect the user's cardiac signals. Although the leads can simply be

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.67

placed on the exterior surface of the device housing, for example in a defined location where the user may place a finger, this approach is not aesthetically pleasing, and may cause some prospective buyers to consider other devices. In addition, such an approach may require the user to perform a specific authentication action – viz., placing a finger on the one or more leads, then unlocking or accessing the electronic device features (e.g., by moving a slider across the screen). This additional step may in fact be so encumbering that users disable the authentication feature and instead use an unsecured electronic device.

Summary of the Invention

[0006] This is directed to an electronic device having a seamlessly integrated cardiac sensor. The cardiac sensor can be integrated in any suitable portion of the electronic device, including for example a portion with which the user is typically in contact (e.g., an input mechanism or a housing held by the user), or metallic or conductive portions of the device.

[0007] The electronic device can include any suitable type of electronic device, including for example a portable electronic device that the user may hold in hand (e.g., a portable media player or a cellular telephone), a larger portable electronic device (e.g., a laptop computer), or a substantially fixed electronic device. The electronic device may include software or hardware operative to process the output of a cardiac sensor to extract, from the received output, characteristics of the user's heartbeat, heart rate, or other cardiac signals. For

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.68

example, the electronic device may extract one or more characteristic durations associated with the user's heart rate. As another example, the electronic device may extract one or more characteristic amplitudes or amplitude ratios associated with the user's heart rate.

[0008] Once the electronic device has identified one or more characteristics of the user's heart rate, heartbeat, or other cardiac signals, the electronic device can compare the one or more identified characteristics with cardiac signal characteristics of authorized users that have been stored in memory. In response to determining that the identified characteristics correspond to those of an authorized user (e.g., match those stored in memory), the electronic device can provide the user with access to the electronic device and load the identified user's personal settings and data.

[0009] To determine the user's heart rate, heartbeat, or other cardiac signals, the electronic device can include one or more sensors embedded in the device. The one or more sensors can include leads for receiving electrical signals from the user's heart. For example, the one or more sensors can include leads associated with the user's left and right sides, and lead associated with the ground. To provide an electrical signal from the user to the processing circuitry, the leads can be exposed such that the user may directly contact the leads, or may instead or in addition be coupled to an electrically conductive portion of the device enclosure (e.g., a metallic bezel or housing forming the exterior of the device).

[0010] Because each electronic device can include several leads, the leads may be electrically isolated

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.69

to avoid shorting or interference among leads. In some embodiments, an electrically isolating component can be inserted between adjacent leads. Alternatively, if the electronic device enclosure is constructed from a material having insufficient conductivity for transmitting detected cardiac electrical signals, the distance along the enclosure between adjacent leads can be sufficient to isolate the leads. In addition, to ensure that the aesthetic appeal and appearance of the electronic device is retained, one or more of the isolating components, the leads themselves, and the device enclosure can be finished using a suitable process to disguise the leads.

[0011] In some embodiments, if the electrical conductivity of portions of the electronic device enclosure and the leads are suitably selected and designed, the leads can be positioned underneath the exterior surface of the enclosure while providing sufficient conductivity for detecting cardiac electrical signals and avoiding shorting or interference between adjacent leads. For example, the sensor leads can be constructed from a silver based compound having high electrical conductivity, while the electronic device enclosure can be constructed from steel and aluminum, both having lower electrical conductivity. By placing several leads at substantially larger distances apart along the electronic device enclosure than the thickness of the enclosure, electronic signals can be transmitted through the steel or aluminum enclosure to a silver based lead underneath the enclosure, but not along the surface of the enclosure to cause adjacent leads to short.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.70

Brief Description of the Drawings

[0012] The above and other features of the present invention, its nature and various advantages will be more apparent upon consideration of the following detailed description, taken in conjunction with the accompanying drawings in which:

[0013] FIG. 1 is a schematic view of an illustrative electronic device for receiving the output of one or more sensors in accordance with one embodiment of the invention;

[0014] FIG. 2 is a graphical representation of illustrative electrical activity of a heart during a heartbeat;

[0015] FIG. 3 is a schematic view of an illustrative electronic device having several integrated leads in accordance with one embodiment of the invention;

[0016] FIG. 4A is a cross-sectional view of an illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention;

[0017] FIG. 4B is a cross-sectional view of another illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention;

[0018] FIG. 5 is a schematic view of an illustrative electronic device using portions of the bezel as leads in accordance with one embodiment of the invention; and

[0019] FIG. 6 is a flowchart of an illustrative process for performing an electronic device operation based on a user's cardiac signal in accordance with one embodiment of the invention.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.71

Detailed Description

[0020] FIG. 1 is a schematic view of an illustrative electronic device for receiving the output of one or more sensors in accordance with one embodiment of the invention. Electronic device 100 can include control circuitry 102, storage 104, memory 106, input/output circuitry 108, communications circuitry 110, and heart sensor 112. In some embodiments, one or more of electronic device components 100 can be combined or omitted (e.g., combine storage 104 and memory 106). In some embodiments, electronic device 100 can include other components not combined or included in those shown in FIG. 1 (e.g., motion detection components, a power supply such as a battery or kinetics, a display, bus, or input mechanism), or several instances of the components shown in FIG. 1. For the sake of simplicity, only one of each of the components is shown in FIG. 1.

[0021] Control circuitry 102 can include any processing circuitry or processor operative to control the operations and performance of electronic device 100. For example, control circuitry 100 can be used to run operating system applications, firmware applications, media playback applications, media editing applications, or any other application. In some embodiments, the control circuitry can drive a display and process inputs received from a user interface.

[0022] Storage 104 can include, for example, one or more storage mediums including a hard-drive, solid state drive, flash memory, permanent memory such as ROM, any other suitable type of storage component, or any combination thereof. Storage 104 can store, for

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.72

example, media data (e.g., music and video files), application data (e.g., for implementing functions on device 100), firmware, user preference information data (e.g., media playback preferences), authentication information (e.g. libraries of data associated with authorized users), lifestyle information data (e.g., food preferences), exercise information data (e.g., information obtained by exercise monitoring equipment), transaction information data (e.g., information such as credit card information), wireless connection information data (e.g., information that can enable electronic device 100 to establish a wireless connection), subscription information data (e.g., information that keeps track of podcasts or television shows or other media a user subscribes to), contact information data (e.g., telephone numbers and email addresses), calendar information data, and any other suitable data or any combination thereof.

[0023] Memory 106 can include cache memory, semi-permanent memory such as RAM, and/or one or more different types of memory used for temporarily storing data. In some embodiments, memory 106 can also be used for storing data used to operate electronic device applications, or any other type of data that can be stored in storage 104. In some embodiments, memory 106 and storage 104 can be combined as a single storage medium.

[0024] Input/output circuitry 108 can be operative to convert (and encode/decode, if necessary) analog signals and other signals into digital data. In some embodiments, input/output circuitry 108 can also convert digital data into any other type of signal, and vice-versa. For example, input/output circuitry 108

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.73

can receive and convert physical contact inputs (e.g., from a multi-touch screen), physical movements (e.g., from a mouse or sensor), analog audio signals (e.g., from a microphone), or any other input. The digital data can be provided to and received from processor 102, storage 104, memory 106, heart sensor 112, or any other component of electronic device 100. Although input/output circuitry 108 is illustrated in FIG. 1 as a single component of electronic device 100, several instances of input/output circuitry can be included in electronic device 100.

[0025] Electronic device 100 can include any suitable mechanism or component for allowing a user to provide inputs to input/output circuitry 108. For example, electronic device 100 can include any suitable input mechanism, such as for example, a button, keypad, dial, a click wheel, or a touch screen. In some embodiments, electronic device 100 can include a capacitive sensing mechanism, or a multi-touch capacitive sensing mechanism. Some sensing mechanisms are described in commonly owned Hotelling et al. U.S. Published Patent Application No. 1006/0026521, filed July 30, 1004, entitled "Gestures for Touch Sensitive Input Device," and Hotelling et al. U.S. Published Patent Application No. 1006/0026535, filed January 18, 2005, entitled "Mode-Based Graphical User Interfaces for Touch Sensitive Input Device," both of which are incorporated herein in their entirety.

[0026] In some embodiments, electronic device 100 can include specialized output circuitry associated with output devices such as, for example, one or more audio outputs. The audio output can include one or

more speakers (e.g., mono or stereo speakers) built into electronic device 100, or an audio component that is remotely coupled to electronic device 100 (e.g., a headset, headphones or earbuds that can be coupled to communications device with a wire or wirelessly).

[0027] In some embodiments, I/O circuitry 108 can include display circuitry (e.g., a screen or projection system) for providing a display visible to the user. For example, the display circuitry can include a screen (e.g., an LCD screen) that is incorporated in electronics device 100. As another example, the display circuitry can include a movable display or a projecting system for providing a display of content on a surface remote from electronic device 100 (e.g., a video projector). In some embodiments, the display circuitry can include a coder/decoder (Codec) to convert digital media data into analog signals. For example, the display circuitry (or other appropriate circuitry within electronic device 100) can include video Codecs, audio Codecs, or any other suitable type of Codec.

[0028] The display circuitry also can include display driver circuitry, circuitry for driving display drivers, or both. The display circuitry can be operative to display content (e.g., media playback information, application screens for applications implemented on the electronic device, information regarding ongoing communications operations, information regarding incoming communications requests, or device operation screens) under the direction of control circuitry 102. Alternatively, the display circuitry can be operative to provide instructions to a remote display (e.g., display 130, FIG. 1).

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.75

[0029] Communications circuitry 110 can include any suitable communications circuitry operative to connect to a communications network and to transmit communications (e.g., voice or data) from communications device 100 to other devices within the communications network. Communications circuitry 110 can be operative to interface with the communications network using any suitable communications protocol such as, for example, Wi-Fi (e.g., a 802.11 protocol), Bluetooth®, radio frequency systems (e.g., 900 MHz, 1.4 GHz, and 5.6 GHz communication systems), infrared, GSM, GSM plus EDGE, CDMA, quadband, and other cellular protocols, VOIP, or any other suitable protocol.

[0030] In some embodiments, communications circuitry 110 can be operative to create a communications network using any suitable communications protocol. For example, communications circuitry 110 can create a short-range communications network using a short-range communications protocol to connect to other devices. For example, communications circuitry 110 can be operative to create a local communications network using the Bluetooth® protocol to couple electronic device 100 with a Bluetooth® headset.

[0031] Electronic device 100 can include one more instances of communications circuitry 110 for simultaneously performing several communications operations using different communications networks, although only one is shown in FIG. 1 to avoid overcomplicating the drawing. For example, electronic device 100 can include a first instance of communications circuitry 110 for communicating over a cellular network, and a second instance of communications circuitry 110 for communicating over Wi-

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.76

Fi or using Bluetooth®. In some embodiments, the same instance of communications circuitry 110 can be operative to provide for communications over several communications networks.

[0032] In some embodiments, electronic device 100 can be coupled a host device for data transfers, synching the communications device, software or firmware updates, providing performance information to a remote source (e.g., providing riding characteristics to a remove server) or performing any other suitable operation that can require electronic device 100 to be coupled to a host device. Several electronic devices 100 can be coupled to a single host device using the host device as a server, and instead or in addition electronic device 100 can be coupled to several host devices (e.g., for each of the plurality of the host devices to serve as a backup for data stored in electronic device 100).

[0033] Heart sensor 112 can include any suitable sensor operative to detect a user's heartbeat, heart rate, or any other signal generated by the user's heart. In some embodiments, heart sensor 112 can serve as an EKG monitor. Heart sensor 112 can include one or more leads connected to the exterior of the electronic device such that the user may contact one or more of the leads to provide an electrical signal associated with the user's heart to heart sensor 112. The cardiac signals detected by the heart sensor leads can be coupled to a processor incorporated in heart sensor 112, or instead provided to processor 102. The processor may then analyze the received signals and generate, from the received signals, one or more

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.77

characteristic quantities of the user's heartbeat or heart rate for authentication.

[0034] The heart sensor leads can be constructed from any suitable material. In some embodiments, the heart sensor leads can be constructed from a specific material selected for particular conductive properties that permit a more effective transmission of the electrical signals reflecting the user's cardiac activity. For example, the heart sensor leads can be constructed from a silver based compound, which can provide superior conductivity relative to other metallic compounds (e.g., steel or aluminum). In addition, the size and location of the leads can be selected to ensure that sufficient contact is made between the user (e.g., the user's hand or finger) and the leads for cardiac signals to be detected. For example, each lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing. The pad or extended area can then be coupled to a wire or other connector for providing cardiac signals to a processor for processing. As another example, an entire portion of the electronic device enclosure (e.g., a portion of a bezel or housing) can serve as a lead for the heart sensor. In such embodiments, the portion of the enclosure can be sufficiently electrically isolated from other conductive portions of the electronic device housing to ensure that lead portions of the device do not short. In some embodiments, an accessory coupled to the electronic device can be used to detect a user's heart rate. For example, the leads can be located in one or more earbuds or in a headset, for example as is described in commonly assigned U.S. Patent Application

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.78

No. 11/729,075, filed March 3, 2007, entitled "Integrated Sensors For Tracking Performance Metrics," which is incorporated by reference herein in its entirety.

[0035] Using a heart sensor, the electronic device can detect and analyze the electrical activity of the heart over time. FIG. 2 is a graphical representation of illustrative electrical activity of a heart during a heartbeat. Representation 200 may include a plot of the variation of the heart's electrical potential over time. A typical heartbeat may include several variations of electrical potential, which may be classified into waves and a complex. For example, representation 200 can include P wave 202, QRS complex 210, and T wave 220. Some representations can in addition include a U wave (not shown). The P wave can represent normal atrial depolarization, when the main electrical vector spreads from the right atrium to the left atrium. The shape and duration of the P wave can be related to the size of the user's atrium (e.g., indicating atrial enlargement), and can be a first source of heartbeat characteristics unique to a user.

[0036] The QRS complex can correspond to the depolarization of the heart ventricles, and can be separated into three distinct waves – a Q wave, a R wave and a S wave. Because the ventricles contain more muscle mass than the atria, the QRS complex is larger than the P wave. In addition, the His/Purkinje system of the heart, which can increase the conduction velocity to coordinate the depolarization of the ventricles, can cause the QRS complex to look "spiked" rather than rounded. The duration of the QRS complex of a healthy heart can be in the range of 60 to 100ms,

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.79

but can vary due to abnormalities of conduction. The duration of the QRS complex can therefore serve as a second source of heartbeat characteristics unique to a user.

[0037] The duration, amplitude, and morphology of each of the Q, R and S waves can vary in different individuals, and in particular can vary significantly for users having cardiac diseases or cardiac irregularities. For example, a Q wave that is greater than 1/3 of the height of the R wave, or greater than 40ms in duration can be indicative of a myocardial infarction and provide a unique characteristic of the user's heart. Similarly, other healthy ratios of Q and R waves can be used to distinguish different users' heartbeats.

[0038] Representation 200 may include one or more characteristic durations or intervals that can be used to distinguish different users. For example, representation 200 can include PR interval 204 and ST segment 212. PR interval 204 can be measured from the beginning of P wave 202 to the beginning of QRS complex 210. PR interval 204 can typically last 120 to 200ms. A PR interval 204 having a different duration can indicate one or more defects in the heart, such as a first degree heart block (e.g., PR interval 204 lasting more than 200ms), a pre-excitation syndrome via an accessory pathway that leads to early activation of the ventricles (e.g., PR interval 204 lasts less than 120ms), or another type of heart block (e.g., PR interval 204 is variable). ST segment 212 can be measured from QRS complex 210 to T wave 220, for example starting at the junction between QRS complex 210 and ST segment 212 and ending at the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.80

beginning of T wave 220. ST segment 212 can typically last from 80 to 120ms, and normally has a slight upward concavity. The combination of the length of ST segment 212, and the concavity or elevation of ST segment 212 can also be used to generate characteristic information unique to each user's heartbeat.

[0039] T wave 220 can represent the repolarization or recovery of the ventricles. The interval from the beginning of the QRS complex to the apex of the T wave can be referred to as the absolute refractory period. The last half of the T wave can be referred to as the relative refractory period or vulnerable period. The amplitude of T wave 220, the duration of the absolute refractory period, and the relative refractory period can also be used to define a characteristic of the user's heart rate.

[0040] QT interval 222, which can represent the total time needed for the ventricles to depolarize and repolarize, can be measured from the beginning of QRS complex 210 to the end of T wave 220. QT interval 222 can typically last between 300 and 450ms, and can vary based on the condition of the user's heart rate. Several correction factors have been developed to correct QT interval 222 for the heart rate. Both the measured and corrected QT interval 222 values can be used to define a unique characteristic of a user's heartbeat.

[0041] Because a user's heartbeat or heart rate can vary slightly based on the user's activity or mood, each authorized user can initially provide a base or standard heart rate, heartbeat, or electrical activity to the device prior to first use. For example, the electronic device can sample several heartbeats or

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.81

electrical activity at several different times to detect variations in the user's cardiac electrical activity. The electronic device can process detected signals to determine several unique characteristics of the user's heart activity, and identify a range of suitable characteristic values for each of the processed characteristics. Based on the characteristic values and associated ranges, the electronic device can select one, all or a subset of the characteristics to define a unique heart activity profile for the authorized user. The particular combination of characteristics and associated ranges can be selected to minimize overlap with other authorized users, or based on characteristic values and ranges that do not fall within a range of average values and ranges (e.g., do not use characteristic values and ranges that an average user of the device would have).

[0042] The heart sensor of the electronic device can include several leads for detecting the user's heart activity. The leads can be integrated in any suitable portion of the electronic device. FIG. 3 is a schematic view of an illustrative electronic device having several integrated leads in accordance with one embodiment of the invention. Electronic device 300 can include display 302 and bezel 310, and be portable such that a user can hold electronic device with fingers extending against one of sides 312 and 314 of bezel 310, and the user's thumb extending against the other of sides 312 and 314. Leads 322 and 324, which can include conductive pads, can be coupled to sides 312 and 324 of bezel 310, respectively, such that when the user holds the device, the user's thumb and fingers are placed in contact with leads 322 and 324.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.82

Alternatively, bezel 310 can include any other suitable number of leads, or any other suitable distribution of leads along bezel 310 and in other portions of electronic device 300. The leads can detect the user's cardiac activity through the contact with the user's thumb and fingers, and provide the detected activity to the electronic device processor for processing. The size of leads 322 and 324 can be selected based on any suitable consideration, including for example the different possible positions of a user's hands on the device, the amount of contact necessary to detect the user's cardiac activity, preventing or reducing short circuits and other cardiac signal detection errors, manufacturing considerations (e.g., the minimum or maximum size leads that can be integrated in the bezel), aesthetic considerations (e.g., sizing leads 322 and 324 to reduce the visibility of leads 322 and 324), or any other suitable consideration.

[0043] In some embodiments, electronic device 300 can include additional lead 326 embedded in or behind display 302. Lead 326 can be operative to detect a user's heart activity as the user moves a finger across display 302, for example in the vicinity of or directly over lead 326 (e.g., as the user drags a finger over lead 326 to move a slider when unlocking the electronic device). Using lead 326, the electronic device can detect an electrical signal from a different portion of the user's body (e.g., leads 322 and 324 detect signals through a first hand, and lead 326 detects signals through the second hand), which can provide the processor with additional information for determining characteristics of the user's cardiac activity.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.83

[0044] Any suitable approach can be used to prevent leads 322, 324 and 326 from shorting. In particular, electronic device 300 can include at least one non-conductive component positioned between each of leads 322, 324 and 326. For example, a rubber gasket can be positioned between leads 322 and 324 (in bezel 310) and lead 326 (in display 302). In some embodiments, the cardiac electrical signals detected by leads 322, 324 and 326 can be faint or have particular characteristics that require materials having particular properties (e.g., silver-based compounds) to detect and transmit. In such cases, although the material used for bezel 310 or other electronic device components can be conductive, its conductivity can be insufficient to transmit signals detected by lead 322 directly to lead 324 (e.g., shorting leads 322 and 324). This may allow leads 322 and 324 to be embedded directly in bezel 310 without the need for additional isolating material, which can add cost and complexity to the manufacturing process.

[0045] To ensure that electronic device 300, and in particular bezel 310 remains aesthetically pleasing, leads 322 and 324 can be finished to resemble bezel 310. For example, leads 322 and 324 can be polished or roughened to match the finish of bezel 310. As another example, a conductive coating can be applied to leads 322 and 324 to match the color, tone and reflectivity of bezel 310. In some embodiments, the texture or feel of leads 322 and 324 can also be selected to render leads 322 and 324 visibly and haptically indistinguishable or nearly indistinguishable from bezel 310.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.84

[0046] Leads 322 and 324 can be integrated in bezel 310 using any suitable approach. In some embodiments, leads 322 and 324 can be positioned on the exterior surface of bezel 310 and include an electrically conductive path to the electronic device processor. FIG. 4A is a cross-sectional view of an illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention. Electronic device 400 can include display 402 and bezel 410. Lead 422 can be embedded along the outer surface of bezel 410 such that lead 422 is exposed to the user during use. Connector 424 can be coupled to the inner surface of lead 422 and extend into electronic device 400 to be coupled with a processor. In some embodiments, electronic device 400 can in addition include an isolating layer positioned between lead 422 and bezel 410 (not shown). The isolating layer can be constructed from any suitable material having non-conductive properties, including for example a ceramic material, plastic, rubber, or any other suitable material. Alternatively, if the material of bezel 410 is not conductive, or insufficiently conductive to cause several distinct leads 422 positioned on bezel 410 from shorting, no isolating layer may be necessary.

[0047] FIG. 4B is a cross-sectional view of another illustrative electronic device having a bezel with an embedded heart sensor lead in accordance with one embodiment of the invention. Electronic device 450 can include display 452 and bezel 460. If the electrical conductivity and size of bezel 460, and the strength or characteristics of the cardiac signal provided by the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.85

user and detected by the heart sensor are adapted such that the signal can be transmitted along short distances in bezel 460, lead 472 of the heart sensor can be positioned against the back surface of bezel 460. Alternatively, lead 472 can be placed within the thickness of bezel 460 (e.g., in a pocket within the bezel wall), but underneath the outer surface of the bezel. The short thickness of bezel 460 can allow electrical signals to propagate from the user to the outer surface of bezel 460, through bezel 460, and into lead 472, which may in turn transmit the signals to a processor using connector 474. In addition, if several leads are placed along different portions of bezel 460, the distance between adjacent leads can be sufficiently large (e.g., substantially larger than the thickness of bezel 460) that different leads of bezel 460 cannot detect the same electrical signal.

[0048] In some embodiments, entire portions of the bezel can be used as leads for the heart sensor. FIG. 5 is a schematic view of an illustrative electronic device using portions of the bezel as leads in accordance with one embodiment of the invention. Similar to electronic device 300 (FIG. 3), electronic device 500 can include display 502 and bezel 510. Bezel 510 can be separated into several electrically isolated segments, for example segments 522 and 524. The segments can be electrically isolated using isolating portions 530 and 532, which can be constructed from any suitable non-conductive material, such as for example a composite material, a plastic, rubber, or any other suitable material. Although FIG. 5 shows bezel 510 broken into two segments having

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.86

similar sizes, it will be understood that bezel 510 can be separated into any suitable number of electrically isolated segments, and each segment can have any suitable size. In particular, the sizes and distribution of each segment can be selected based on physiological considerations (e.g., where a user's hand will be positioned on the device, or aligning the segments to contact particular portions of the user's body).

[0049] To ensure that electronic device 500 remains aesthetically pleasing, isolating portions 530 and 532 can be finished to resemble bezel 510. For example, isolating portions 530 and 532 can be polished or machined to create a reflective surface matching the reflection of bezel 510. As another example, a reflective or finishing coating can be applied to the surfaces of isolating portions 530 and 532 to match the finish of bezel 510. In some embodiments, the texture of isolating portions 530 and 532 can also be selected to render segments 522 and 524 visually and haptically indistinguishable or nearly indistinguishable from isolating portions 530 and 532.

[0050] Other heart sensor leads can be placed at any other suitable position on the electronic device enclosure. For example, if the enclosure is constructed from a bezel supporting a display and a housing forming the exterior surface of the device behind the display, one or more leads can be embedded in or adjacent to the housing. For example, if the housing includes a conductive section (e.g., a plastic housing with a metallic logo in the center of the housing), the lead can be coupled to or integrated in the conductive section.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.87

[0051] The heart sensor and processor can detect and process the user's cardiac activity at any suitable time. For example, the processor can receive and process heart activity when the device is locked and held while in its locked state. As another example, the processor can receive and process heart activity as the user places a finger over lead 326 (e.g., when the user slides a finger across the display to unlock the device) or when an input mechanism detects a particular input. As still another example, the electronic device can receive and process heart activity data in response to a user instruction or request to access a particular application or data that for which access is restricted. Upon receiving the cardiac activity, the electronic device can extract one or more characteristics of the received activity and compare the extracted characteristics with the characteristics previously stored in memory that were associated with authorized users. If the extracted characteristics match those of an authorized user, the electronic device can authenticate the identified user.

[0052] The electronic device can perform any suitable operation in response to identifying and authenticating a user based on detected cardiac signals. In some embodiments, the electronic device can provide access to restricted applications, for example applications for which only particular users have licenses or that only particular users have purchased. In some embodiments, the electronic device can provide access to particular data or application settings associated with an authorized user. For example, the electronic device can provide access to the identified user's contact list, or to the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.88

identified user's e-mail account or telephone history. As another example, the electronic device can allow the user to access private banking applications, or conduct financial transactions (e.g., transferring funds to different accounts, or purchasing merchandise) using the electronic device. In some embodiments, the electronic device can load user settings and profiles for providing a customized display to the user. For example, the electronic device can display icons or options in the manner set by the user, or provide displays using a color scheme, fonts, or other customizable display attribute that are associated with the identified user.

[0053] In some embodiments, the electronic device can use the detected heart rate or heartbeat characteristics to determine the user's mood. In particular, because the allowable determined characteristics associated with each user can include a range of values, the electronic device can determine the distribution of the detected characteristics in the allowable characteristic ranges. Using the determined distribution, the electronic device can establish a user's mood and provide electronic device operations or data (e.g., media) associated with the extrapolated mood. Systems and methods for providing mood-based electronic device operations are discussed in more detail in commonly assigned U.S. Patent Application No. 12/218,203, filed July 10, 2008 and entitled "System and Method for Creating a Playlist Based on Mood," which is incorporated by reference herein in its entirety.

[0054] In some embodiments, the electronic device can provide media playback based on the user's detected

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.89

cardiac signal. For example, the electronic device can identify media having beats per minute or other characteristics that are associated with or related to the user's cardiac signal or heart rate, and play back the identified media. As another example, the media provided can have beats per minute faster or slower than the user's current heart rate to direct the user to work harder (e.g., during a workout) or to cool or calm the user down (e.g., at the end of a workout).

[0055] FIG. 6 is a flowchart of an illustrative process for performing an electronic device operation based on a user's cardiac signal in accordance with one embodiment of the invention. Process 600 can begin at step 602. At step 604, the electronic device can detect a user's cardiac signal. For example, the electronic device can detect a user's heart rate or heart beat using one or more leads connected to or placed on a housing, bezel, or other exterior surface of the electronic device. The electronic device can process the received signal using any suitable approach, including for example to determine unique characteristics of the signal. Such characteristics can include, for example, durations between peaks in an EKG signal, peak values or rations between peaks in the EKG signal, or any other suitable characteristic. At step 606, the electronic device can determine whether the user detected at step 604 is an authorized user. For example, the electronic device can compare the determined characteristics of the detected cardiac signals with a library of signals associate with known authorized users. If the electronic device determines that the user is not authorized (e.g., the characteristics of the detected cardiac signal do not

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.90

match characteristics of a cardiac signal stored in memory), process 600 can move to step 608.

[0056] At step 608, the electronic device can prevent access to restricted electronic device operations. For example, the electronic device can prevent the user from accessing personal or private information associated with other users. As another example, the electronic device can prevent the user from accessing applications or operations associated with particular users (e.g., applications purchased by particular users). As still another example, the electronic device can prevent the user from accessing any electronic device operation (e.g., no operation except for emergency calls). Process 600 can then end at step 610

[0057] If, at step 606, the electronic device instead determines that the user is authorized, process 600 can move to step 612. At step 612, the electronic device can determine the restricted operations that are associated with the user. For example, the electronic device can determine the particular private data associated with the authorized user (e.g., e-mail accounts, contact lists and banking information). As another example, the electronic device can determine the particular operations or applications associated with the authorized user (e.g., applications purchased by the user using an applications store, or system controlling operations associated with an administrative account). At step 614, the electronic device can provide access to the user's determined restricted operations. For example, the electronic device can load determined data. As another example, the electronic device can

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.91

provide links for launching determined personal or private applications. Process 600 can then end at step 610.

[0058] The above-described embodiments of the present invention are presented for purposes of illustration and not of limitation, and the present invention is limited only by the claims which follow.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.92

What is Claimed is:

1. An electronic device operative to detect a user's cardiac signal, comprising:

a housing;

a bezel coupled to the housing to form an enclosure for the electronic device;

a heart sensor operative to detect the user's cardiac signal, the heart sensor comprising at least one lead placed in contact with an interior surface of at least one of the bezel and the housing; and

a processor operative to receive and process the detected cardiac electrical signal.

2. The electronic device of claim 1, wherein:

the bezel comprises a first section and a second section, the first and second sections located on opposite sides of the electronic device; and

the heart sensor comprising a first and second lead, the first lead coupled to the first section and the second lead coupled to the second section.

3. The electronic device of claim 2, wherein the first section is electrically isolated from the second portion.

4. The electronic device of claim 1, wherein:

the bezel is constructed from a material having a first conductivity; and

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.93

the at least one lead is constructed from a material having a second conductivity, the second conductivity being substantially higher than the first conductivity.

5. The electronic device of claim 4, wherein the bezel is constructed from one of aluminum and steel, and wherein the at least one lead is constructed from a silver based compound.

6. The electronic device of claim 4, wherein the conductivity of the first material is such that the detected cardiac electrical signal is not transmitted over a distance substantially larger than the thickness of the bezel.

7. The electronic device of claim 6, wherein the heart sensor comprises a first lead and a second lead placed in contact with the bezel, the first and second leads positioned apart at distances substantially larger than the thickness of the bezel.

8. The electronic device of claim 1, wherein:

the bezel further comprises a pocket underneath the outer surface of the bezel; and

the at least one lead is placed within the pocket.

9. A bezel for use in an electronic device operative to detect a user’s cardiac signal, the bezel operative to be coupled to a housing to form an electronic device enclosure, the bezel comprising:

an outer surface operative to be contacted by the user; and

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.94

a pad coupled to a heart sensor lead, the pad embedded in the outer surface, wherein the pad and outer surface are visibly indistinguishable to the user.

10. The bezel of claim 9, wherein the bezel is constructed from a conductive material.

11. The bezel of claim 10, further comprising:

a second pad coupled to a second heart sensor lead, the second pad embedded in the outer surface of the bezel, wherein the conductivity of the bezel is insufficient to transmit a cardiac electrical signal detected by the pad to the second pad.

12. The bezel of claim 9, wherein:

a first finishing process is applied to the bezel; and

a second finishing process, different from the first finishing process, is applied to the pad to render the outer surfaces of the bezel and pad visibly indistinguishable.

13. The bezel of claim 9, further comprising an isolating layer placed between the bezel and the pad, such that a cardiac signal detected by pad is not transmitted to the bezel.

14. The bezel of claim 9, wherein the bezel is constructed from one of steel and aluminum.

15. The bezel of claim 9, wherein the pad is constructed from a silver based compound.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.95

16. An electronic device operative to detect a user's cardiac electrical signals, comprising:

a display;

a housing;

a bezel operative to retain the display and couple to the housing;

a sensor operative to process the user's cardiac electrical signals;

a first lead connected to the sensor, the first lead coupled to an interior surface of the bezel; and

a second lead connected to the sensor, the second lead coupled to an interior surface of the housing, wherein the first and second leads are operative to detect the user's cardiac electrical signals from contacts of the bezel and housing with the user's skin

17. The electronic device of claim 16, wherein the first and second leads are electrically isolated such that the user's cardiac electrical signal is not propagated between the first and second leads through the bezel and housing.

18. The electronic device of claim 16, wherein the first lead further comprises a pad embedded underneath the outer surface of the bezel.

19. The electronic device of claim 18, wherein the pad is constructed from a silver based compound, and the bezel is constructed from at least one of aluminum and steel.

20. A method for authenticating a user, comprising:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.96

detecting a user's cardiac signal from contacts between the user and at least one lead, the at least one lead placed in contact with an inner surface of at least one of a bezel and housing of an electronic device;

processing the detected cardiac signal to extract at least one unique characteristic of the cardiac signal;

comparing the at least one unique characteristic with a library of characteristics associated with authorized users;

determining that the at least one unique characteristic matches a characteristic in the library of characteristics; and

providing access to a restricted electronic device operation in response to determining.

21. The method of claim 20, wherein providing further comprises providing access to restricted data.

22. The method of claim 20, wherein providing further comprises providing access to at least one restricted application.

23. The method of claim 20, wherein the at least one unique characteristic further comprises at least one of a duration, peak height, and ratio of peak heights.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.97

Abstract

[0059] This is directed to an electronic device having an integrated sensor for detecting a user's cardiac activity and cardiac electrical signals. The electronic device can include a heart sensor having several leads for detecting a user's cardiac signals. The leads can be coupled to interior surfaces of the electronic device housing to hide the sensor from view, such that electrical signals generated by the user can be transmitted from the user's skin through the electronic device housing to the leads. In some embodiments, the leads can be coupled to pads placed on the exterior of the housing. The pads and housing can be finished to ensure that the pads are not visibly or haptically distinguishable on the device, thus improving the aesthetic qualities of the device. Using the detected signals, the electronic device can identify or authenticate the user and perform an operation based on the identity of the user. In some embodiments, the electronic device can determine the user's mood from the cardiac signals and provide data related to the user's mood.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.98

SEAMLESSLY EMBEDDED HEART RATE MONITOR
Gloria Lin et al.
Docket No. P7276US1
Paul E. Leblond, Reg. No. 58,397

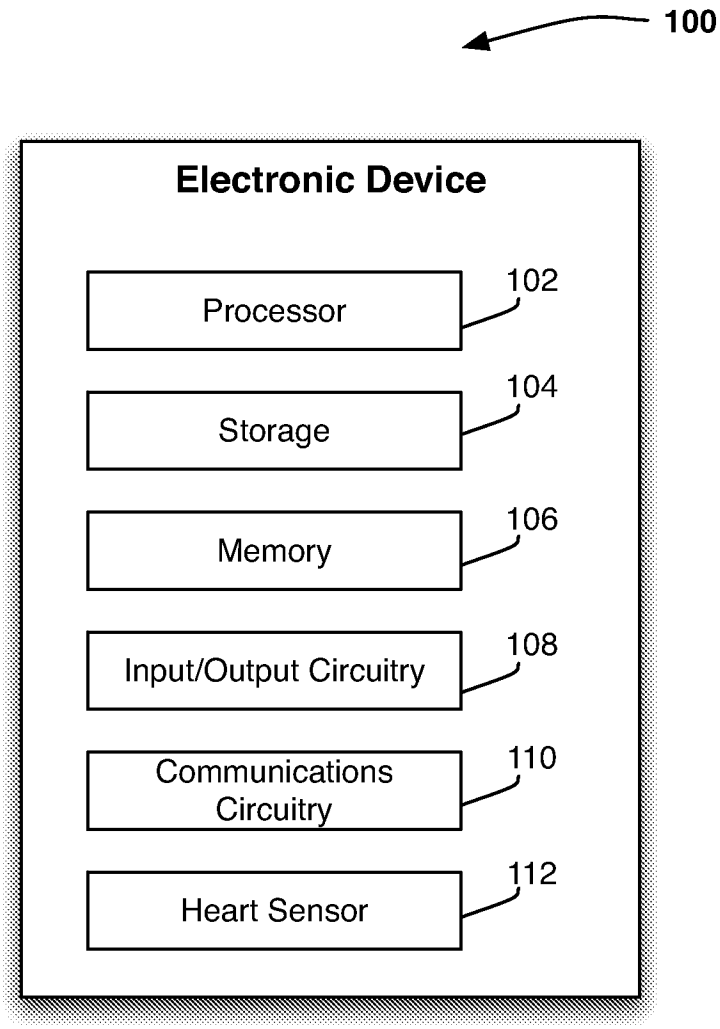


FIG. 1

SEAMLESSLY EMBEDDED HEART RATE MONITOR
Gloria Lin et al.
Docket No. P7276US1
Paul E. Leblond, Reg. No. 58,397

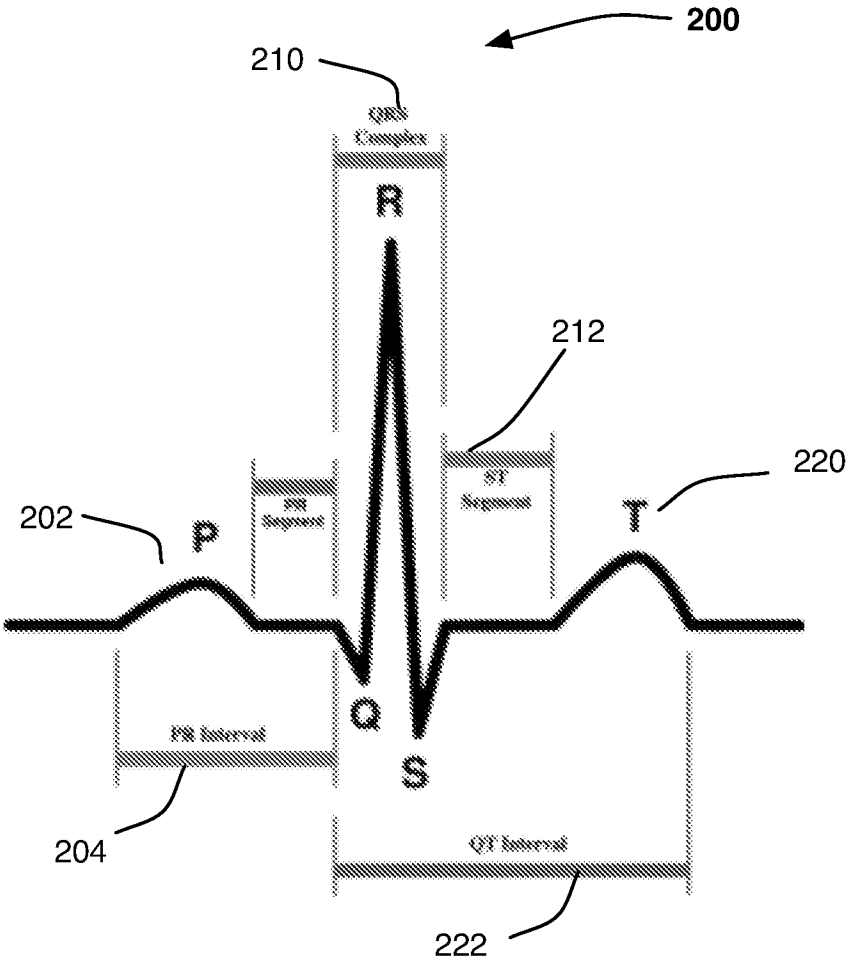


FIG. 2

SEAMLESSLY EMBEDDED HEART RATE MONITOR
Gloria Lin et al.
Docket No. P7276US1
Paul E. Leblond, Reg. No. 58,397

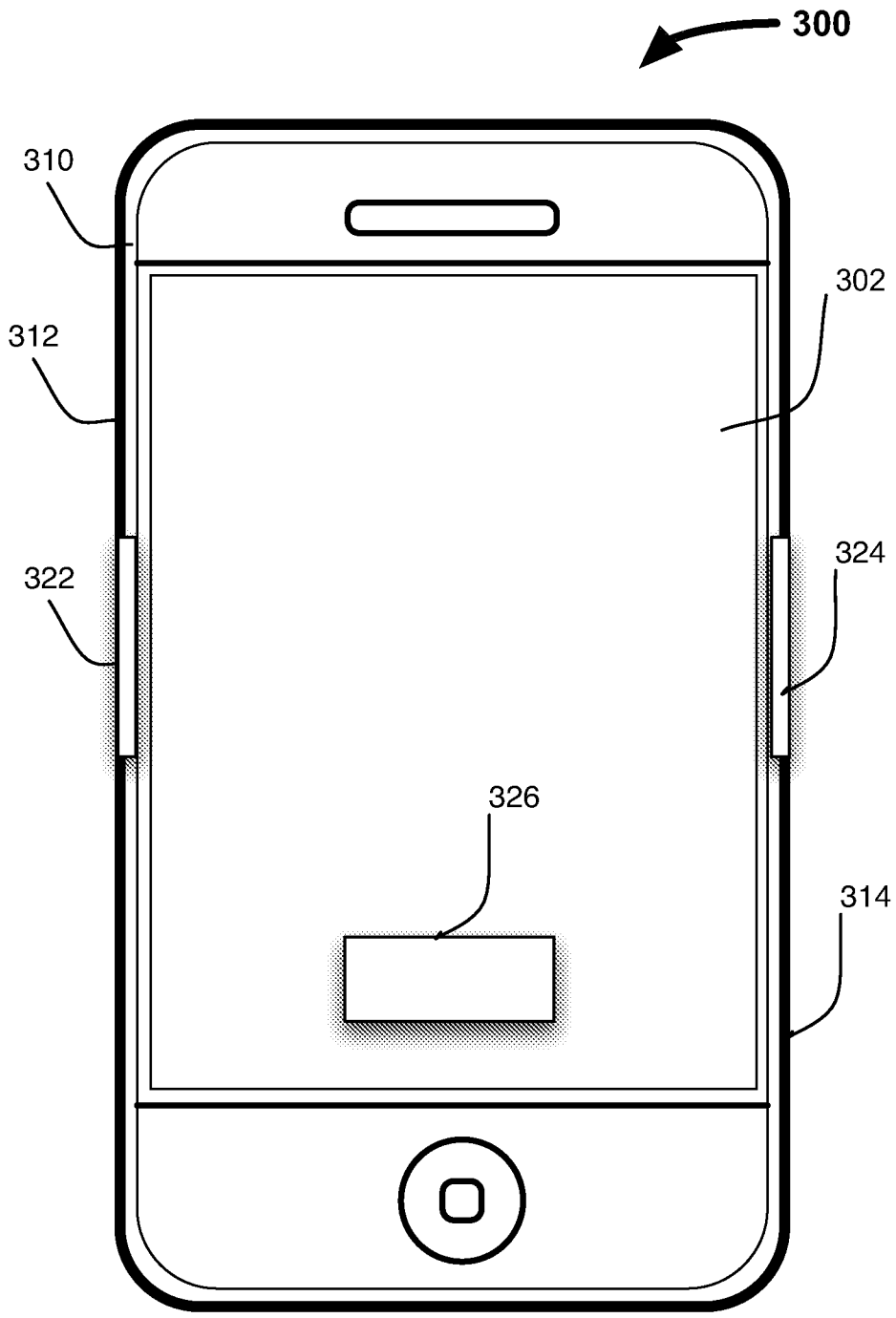


FIG. 3

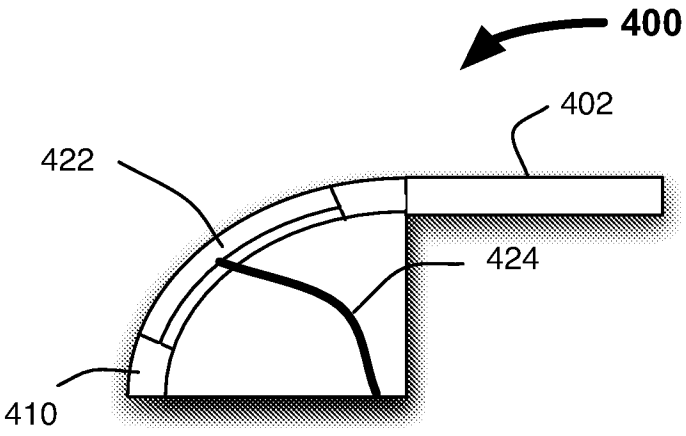


FIG. 4A

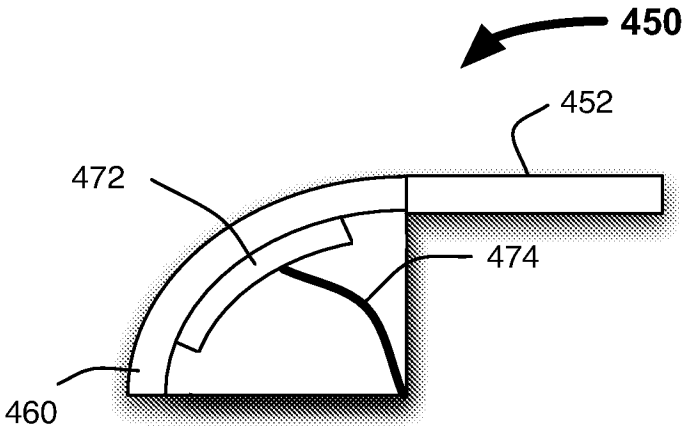


FIG. 4B

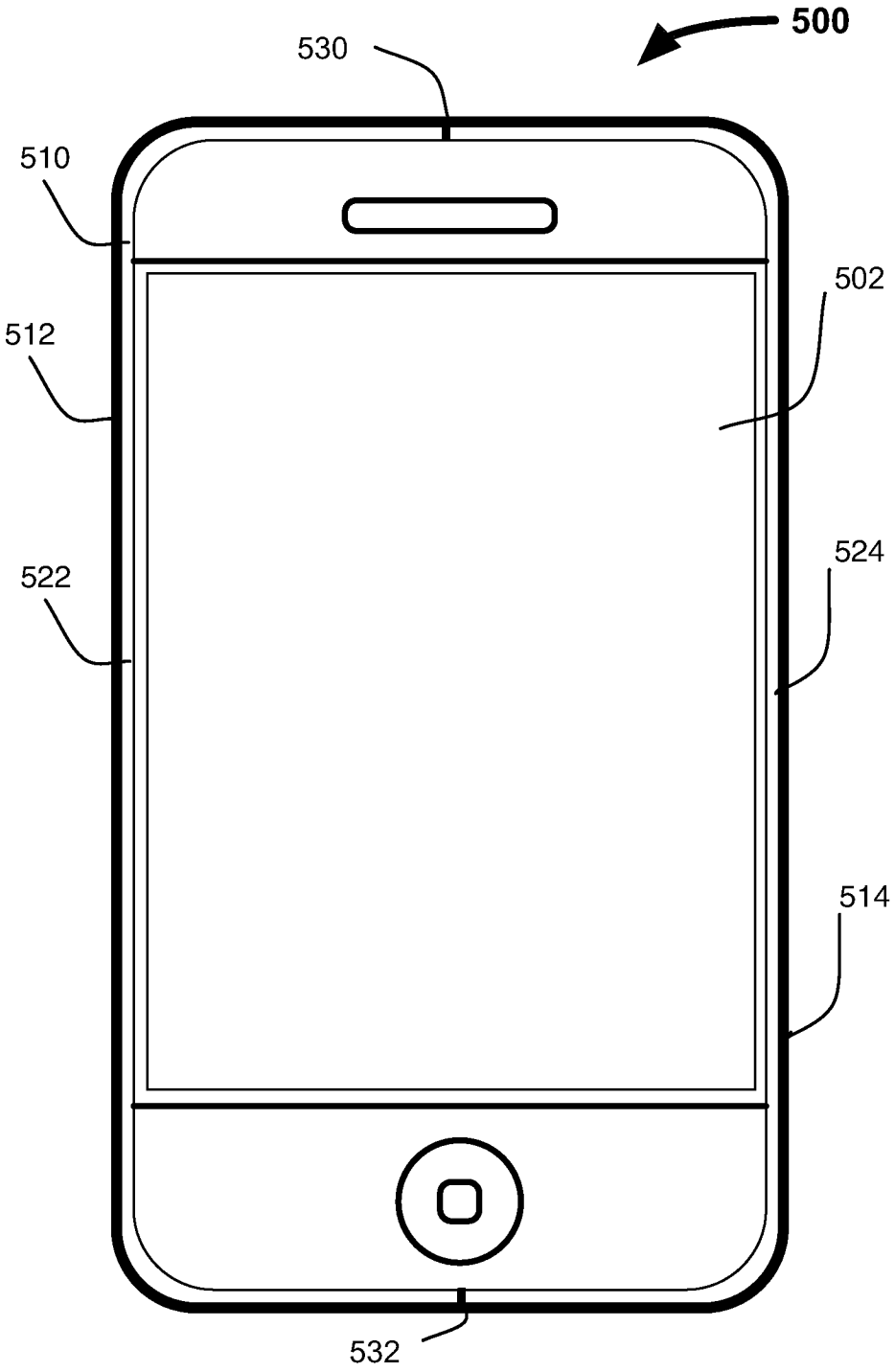


FIG. 5

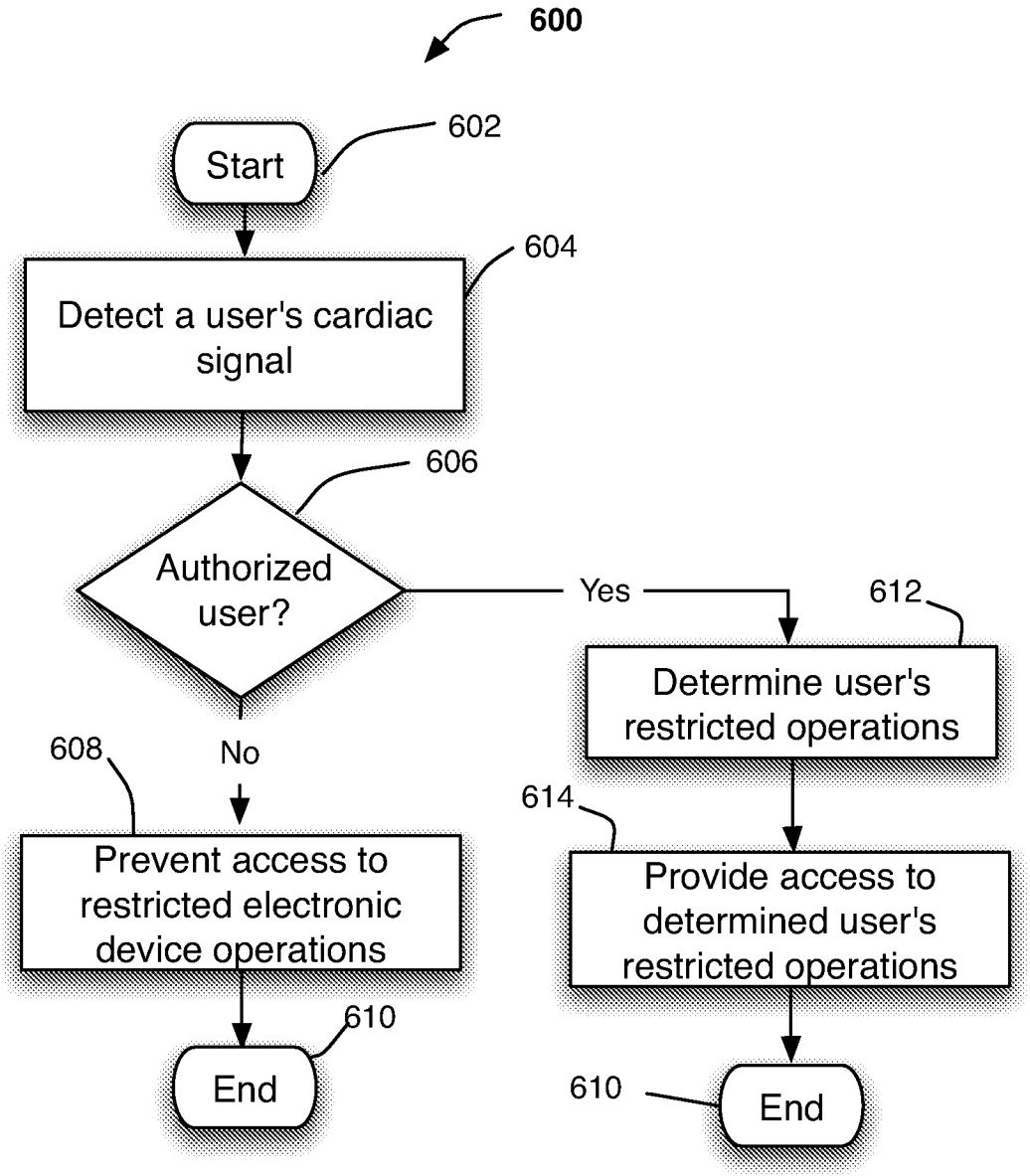

600
Start
602
Detect a user's cardiac signal
604
Authorized user?
606
Yes
612
Determine user's restricted operations
614
Provide access to determined user's restricted operations
610
End
No
608
Prevent access to restricted electronic device operations
610
End

FIG. 6

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Gloria Lin
Art Unit	
Examiner Name	
Attorney Docket Number	P7276USC1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4635646		1987-01-13	Gilles et al.	
	2	6522915		2003-02-18	Ceballos et al.	
	3	7689833		2010-03-30	Lange	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20060026521		2006-02-02	Hotelling et al.	
	2	20060026535		2006-02-02	Hotelling et al.	
	3	20080076972		2008-03-27	Dorogusker et al.	

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.105

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Gloria Lin
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P7276USC1

	4	20080113650		2008-05-15	Engstrom	
	5	20090070266		2009-03-12	Shah et al.	
	6	20100011388		2010-01-14	Bullet al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2008073461	JP		2008-04-03	Seiko Instruments Inc.		☐
	2	2008073462	JP		2008-04-03	Seiko Instruments Inc.		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.106

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Gloria Lin
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P7276USC1

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.107

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Gloria Lin
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P7276USC1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Jeffrey C. Aldridge/	Date (YYYY-MM-DD)	2013-12-20
Name/Print	Jeffrey C. Aldridge	Registration Number	51390

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.108

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

~~AliveCor, Inc. Exhibit 1002~~
IPR2023-00950
Ex. 1002.109

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Attorney Docket Number:	P7276USC1

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	1051	1	140	140
Petition:				

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.110

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1740**

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.111

Electronic Acknowledgement Receipt

EFS ID:	17728288
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Filer Authorized By:	Jeffrey Charles Aldridge
Attorney Docket Number:	P7276USC1
Receipt Date:	20-DEC-2013
Filing Date:	
Time Stamp:	15:45:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1740
RAM confirmation Number	5503
Deposit Account	506007
Authorized User	ALDRIDGE, JEFFREY

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.112

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	2013-12-20_P7276USC1-ADS.pdf	1279626 096479d5d238d2013d4760b04c001de3713cc87c	no	7
Warnings:					
Information:					
2		2013-12-20_P7276USC1-new-CON-appln-docs.pdf	18503952 3cb57de63a530649687eae0b658f8b9f9e7125bd	yes	113

Multipart Description/PDF files in .zip description

Document Description	Start	End
Preliminary Amendment	1	1
Specification	2	5
Claims	6	10
Applicant Arguments/Remarks Made in an Amendment	11	11
Specification	12	38
Specification	39	65
Specification	66	92
Claims	93	97
Abstract	98	98
Drawings-only black and white line drawings	99	104
Power of Attorney	105	105
Assignee showing of ownership per 37 CFR 3.73.	106	111
Transmittal Letter	112	113

Warnings:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.113

Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	2013-12-20_P7276USC1-SB-08.pdf	612585 d8cc00423d4656309797da565ecdcce7573c93c6	no	5
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	36456 94a5fb413dfd0ef431494a1e549441ecb22c6277	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	20432619		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P7276USC1
	Application Number	
Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Gloria		Lin	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Ramon	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	1 Infinite Loop
Address 2	

City	Cupertino	State/Province	CA
Postal Code	95014	Country i	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Taido	L.	Nakajima	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Cupertino	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	1 Infinite Loop
Address 2	

City	Cupertino	State/Province	CA
Postal Code	95014	Country i	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Pareet		Rahul	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.115

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P7276USC1
	Application Number	
Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR	

City	Markham, Ontario	Country of Residence i	CA

Mailing Address of Inventor:

Address 1	1 Infinite Loop		
Address 2			
City	Cupertino	**State/Province**	CA
Postal Code	95014	**Country** i	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Andrew	B.	Hodge	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	Palo Alto	State/Province	CA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	1 Infinite Loop		
Address 2			
City	Cupertino	**State/Province**	CA
Postal Code	95014	**Country** i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	111349		
Email Address	docket@vcaiplaw.com	Add Email	Remove Email

Application Information:

Title of the Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR		
Attorney Docket Number	P7276USC1	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	**Suggested Figure for Publication (if any)**	

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.116

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P7276USC1
	Application Number	
Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	111349		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
	Continuation of	12/358905	2009-01-23	8615290	2013-12-24

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12/358905	Claims benefit of provisional	61/111498	2008-11-05

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.117

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P7276USC1
	Application Number	
Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR	

Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code [i] (if applicable)

Remove

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.118

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P7276USC1
	Application Number	
Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR	

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(●) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. [X]

Organization Name	Apple Inc.		
Mailing Address Information:			
Address 1	1 Infinite Loop		
Address 2			
City	Cupertino	**State/Province**	CA
Country [i]	US	Postal Code	95014
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. [ ]

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.119

PTO/AIA/14 (11-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	P7276USC1
	Application Number	
Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR	

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

Signature	/Jeffrey C. Aldridge/			Date (YYYY-MM-DD)	2013-12-20
First Name	Jeffrey	Last Name	Aldridge	Registration Number	51390

Additional Signature may be generated within this form by selecting the Add button. Add

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.120

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.121

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 111349

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☑ The address associated with Customer Number: 111349

OR

☐	Firm or Individual Name			
	Address			
	City		State	Zip
	Country			
	Telephone		Email	

Assignee Name and Address: Apple Inc.
1 Infinite Loop
Cupertino, CA 95014

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	June 10 2013
Name	Bruce H. Watrous JL	Telephone	408-974-5653
Title	Vice President and Chief IP Counsel		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Gloria Lin, Taido L. Nakajima, Pareet Rahul, and Andrew B. Hodge

Application No./Patent No.: not yet assigned Filed/Issue Date: herewith

Titled: SEAMLESSLY EMBEDDED HEART RATE MONITOR

Apple Inc., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 022149, Frame 0561, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

   Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

   Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.123

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Jeffrey C. Aldridge/	December 20, 2013
Signature	Date
Jeffrey C. Aldridge	51,390
Printed or Typed Name	Title or Registration Number

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.124

A S S I G N M E N T

WHEREAS, we, Gloria Lin, Taido Nakajima, Pareet Rahul, and Andrew Hodge, residing in San Ramon, California; Cupertino, California; Markham, Canada; and Palo Alto, California, respectively have made an invention in:

SEAMLESSLY EMBEDDED HEART RATE MONITOR

and are about to make application for United States Letters Patent therefor, the same having been executed by us on even date(s) herewith; and

WHEREAS, Apple Inc., a corporation organized and existing under the laws of California and having an office and place of business at 1 Infinite Loop, Cupertino, CA 95014 is desirous of acquiring the entire interest in said invention, said United States patent application and in any Letters Patent which may issue thereon;

NOW, THEREFORE, be it known that for and in consideration of the sum of One Dollar ($1.00) paid to us, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, we do hereby sell, assign and transfer unto the said Apple Inc., its successors, assigns and legal representatives, all right, title and interest in and to said invention and any improvements thereon for all countries of the world, and in and to said United States patent application, including any continuations, continuations-in-part, and divisions thereof, and any substitute applications therefor, and any patents which may issue thereon, and any reissues of the same, and including the right to claim priority under the International Convention based on said patent application; and all right, title and interest in and to every patent application filed or to be filed on said invention in any other country,

including renewals, revivals, continuations, continuations-in-part and divisions thereof, and any substitute applications therefor, and any and all patents which may issue thereon, and any reissues and extensions of the same; and we hereby authorize and request competent authorities to grant and issue any and all patents on said invention to the said Apple Inc., as the assignee of the entire interest therein; and we further agree to execute upon request of the assignee such additional documents, if any, as are necessary and proper to secure patent protection on said invention throughout all countries of the world, and to otherwise give full effect to and perfect the rights of the assignee under this Assignment.

IN TESTIMONY WHEREOF, we have hereunto signed our names on the date indicated hereinafter.

1/21/09 Date	Gloria Lin
1/21/2009 Date	Taido Nakajima
Date	Pareet Rahul
1/21/2009 Date	Andrew Hodge

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.126

A S S I G N M E N T

WHEREAS, we, Gloria Lin, Taido Nakajima, Pareet Rahul, and Andrew Hodge, residing in San Ramon, California; Cupertino, California; Markham, Canada; and Palo Alto, California, respectively have made an invention in:

SEAMLESSLY EMBEDDED HEART RATE MONITOR

and are about to make application for United States Letters Patent therefor, the same having been executed by us on even date(s) herewith; and

WHEREAS, Apple Inc., a corporation organized and existing under the laws of California and having an office and place of business at 1 Infinite Loop, Cupertino, CA 95014 is desirous of acquiring the entire interest in said invention, said United States patent application and in any Letters Patent which may issue thereon;

NOW, THEREFORE, be it known that for and in consideration of the sum of One Dollar ($1.00) paid to us, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, we do hereby sell, assign and transfer unto the said Apple Inc., its successors, assigns and legal representatives, all right, title and interest in and to said invention and any improvements thereon for all countries of the world, and in and to said United States patent application, including any continuations, continuations-in-part, and divisions thereof, and any substitute applications therefor, and any patents which may issue thereon, and any reissues of the same, and including the right to claim priority under the International Convention based on said patent application; and all right, title and interest in and to every patent application filed or to be filed on said invention in any other country,

including renewals, revivals, continuations, continuations-in-part and divisions thereof, and any substitute applications therefor, and any and all patents which may issue thereon, and any reissues and extensions of the same; and we hereby authorize and request competent authorities to grant and issue any and all patents on said invention to the said Apple Inc., as the assignee of the entire interest therein; and we further agree to execute upon request of the assignee such additional documents, if any, as are necessary and proper to secure patent protection on said invention throughout all countries of the world, and to otherwise give full effect to and perfect the rights of the assignee under this Assignment.

IN TESTIMONY WHEREOF, we have hereunto signed our names on the date indicated hereinafter.

Date	Gloria Lin
Date	Taido Nakajima
Date	Parvez Kabul
Date	Andrew Hodge

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.128

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	*not yet assigned* *(continuation of US 12/358,905)*
Filed	:	*herewith*
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

New York, New York 10003
December 20, 2013

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. § 1.56, 1.97 and 1.98, applicants wish to call the attention of the Examiner to the documents listed on the accompanying Form PTO/SB/08a.

Pursuant to 37 C.F.R. § 1.98(a)(2)(ii), applicants have not submitted copies of the US patent and publication documents.

Copies of the listed Foreign Patent Documents were originally submitted in parent US 12/358,905, so applicants have not provided additional copies herewith.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

It is respectfully requested that the aforementioned documents be: (1) fully considered by the Patent and Trademark Office during the examination of this application; and (2)

printed on any patent which may issue on this application. Applicants request that a copy of the Form PTO/SB/08a, as considered and initialed by the Examiner, be returned with the next communication.

This Information Disclosure Statement is being filed concurrently with the application. The Director is hereby authorized to charge any fee(s) deemed necessary to Deposit Account No. 50-6007.

Respectfully submitted,

Date: December 20, 2013 /Jeffrey C. Aldridge/

Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
411 Lafayette Street, 6th Floor
New York, New York 10003
Tel.: (347) 470-6620
Fax: (646) 722-7301

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.130

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/136,658

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.131

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/136,658	12/20/2013	2172	1740	P7276USC1	20	3

CONFIRMATION NO. 2657

111349
Van Court & Aldridge LLP
Apple Inc.
411 Lafayette Street, 6th Floor
New York, NY 10003

FILING RECEIPT

OC000000065979110

Date Mailed: 01/10/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Gloria Lin, San Ramon, CA;
Taido L. Nakajima, Cupertino, CA;
Pareet Rahul, Markham, CANADA;
Andrew B. Hodge, Palo Alto, CA;

Applicant(s)

Apple Inc., Cupertino, CA

Assignment For Published Patent Application

Apple Inc., Cupertino, CA

Power of Attorney: The patent practitioners associated with Customer Number 111349

Domestic Priority data as claimed by applicant

This application is a CON of 12/358,905 01/23/2009 PAT 8615290
which claims benefit of 61/111,498 11/05/2008

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 01/07/2014

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.132

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/136,658**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

Non-Publication Request: No

Early Publication Request: No

Title

SEAMLESSLY EMBEDDED HEART RATE MONITOR

Preliminary Class

715

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.133

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.134

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/136,658	12/20/2013	Gloria Lin	P7276USC1

CONFIRMATION NO. 2657

111349
Van Court & Aldridge LLP
Apple Inc.
411 Lafayette Street, 6th Floor
New York, NY 10003

FORMALITIES LETTER

OC00000065979111

Date Mailed: 01/10/2014

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawings submitted to the Office are not electronically reproducible because portions of figures 2 are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Gloria Lin
  Taido L. Nakajima
  Pareet Rahul
  Andrew B. Hodge

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.135

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/mkanno/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.136

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/136,658	12/20/2013	Gloria Lin	P7276USC1

CONFIRMATION NO. 2657

POA ACCEPTANCE LETTER

111349
Van Court & Aldridge LLP
Apple Inc.
411 Lafayette Street, 6th Floor
New York, NY 10003

OC000000065941237

Date Mailed: 01/10/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/20/2013.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/sfu/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.137

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658
Conf. No.	:	2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	2172

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

New York, New York 10003
February 25, 2014

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS

Sir:

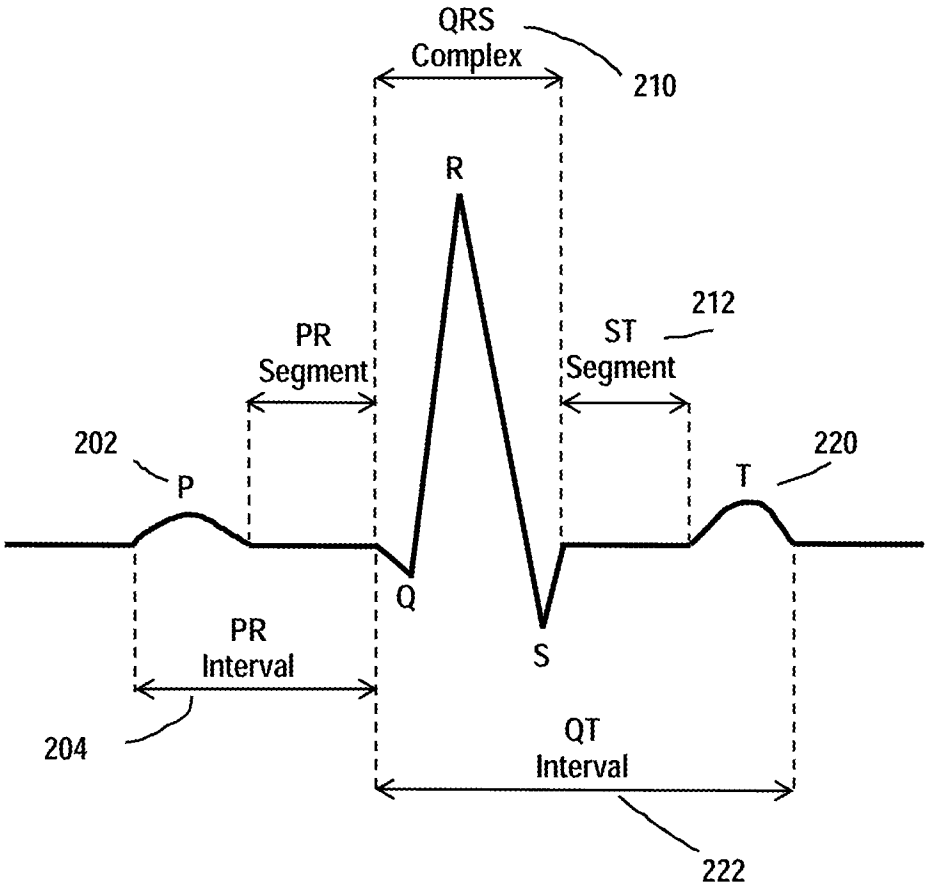
In response to the Notice to File Corrected Application Papers mailed January 10, 2014, Applicants submit herewith a replacement sheet of the drawings containing Figure 2. No new subject matter has been added.

The Director is authorized to charge any required fees to Deposit Account No. 50-6007.

Respectfully submitted,

Date: February 25, 2014

/Jeffrey C. Aldridge/
Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
411 Lafayette Street, 6th Floor
New York, New York 10003
Tel.: (347) 470-6620
Fax: (646) 722-7301


QRS
Complex
210
R
212
PR
Segment
ST
Segment
202
P
220
T
Q
S
PR
Interval
204
QT
Interval
222

200
FIG. 2

Electronic Acknowledgement Receipt

EFS ID:	18297355
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Filer Authorized By:	Jeffrey Charles Aldridge
Attorney Docket Number:	P7276USC1
Receipt Date:	25-FEB-2014
Filing Date:	20-DEC-2013
Time Stamp:	15:57:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2014-02-25_P7276USC1-Response-to-NtFCAP-docs.pdf	270114 9c0b722896cf3b4a9657fedb3b366e71485af71b	yes	2

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.140

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Response to Pre-Exam Formalities Notice	1	1
	Drawings-only black and white line drawings	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	270114	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/136,658	12/20/2013	Gloria Lin	P7276USC1

CONFIRMATION NO. 2657

111349
Van Court & Aldridge LLP
Apple Inc.
411 Lafayette Street, 6th Floor
New York, NY 10003

NOTICE

OC000000066899000

Date Mailed: 03/11/2014

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Gloria Lin
  Taido L. Nakajima
  Pareet Rahul
  Andrew B. Hodge

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.142

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/136,658

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.143

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/136,658	12/20/2013	2172	1740	P7276USC1	20	3

CONFIRMATION NO. 2657

UPDATED FILING RECEIPT

111349
Van Court & Aldridge LLP
Apple Inc.
411 Lafayette Street, 6th Floor
New York, NY 10003

OC000000066898999

Date Mailed: 03/11/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Gloria Lin, San Ramon, CA;
Taido L. Nakajima, Cupertino, CA;
Pareet Rahul, Markham, CANADA;
Andrew B. Hodge, Palo Alto, CA;

Applicant(s)

Apple Inc., Cupertino, CA

Assignment For Published Patent Application

Apple Inc., Cupertino, CA

Power of Attorney: The patent practitioners associated with Customer Number 111349

Domestic Priority data as claimed by applicant

This application is a CON of 12/358,905 01/23/2009 PAT 8615290
which claims benefit of 61/111,498 11/05/2008

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 01/07/2014

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.144

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/136,658**

Projected Publication Date: 06/19/2014

Non-Publication Request: No

Early Publication Request: No

Title

SEAMLESSLY EMBEDDED HEART RATE MONITOR

Preliminary Class

715

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.145

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.146

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/136,658	12/20/2013	Gloria Lin	P7276USC1

CONFIRMATION NO. 2657

PUBLICATION NOTICE

111349
Van Court & Aldridge LLP
Apple Inc.
411 Lafayette Street, 6th Floor
New York, NY 10003

OC000000069124725

Title:SEAMLESSLY EMBEDDED HEART RATE MONITOR

Publication No.US-2014-0171776-A1
Publication Date:06/19/2014

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.147

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658
Conf. No.	:	2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschauser

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

New York, New York 10003
November 7, 2014

SUBMISSION OF DECLARATION

Sir:

Applicants submit herewith executed Declarations. The required fee for late submission has already been paid.

Respectfully submitted,

Date: November 7, 2014

/Jeffrey C. Aldridge/
Jeffrey C. Aldridge
Registration No. 48,506
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
154 Grand St.
New York, NY 10013
t: (347) 470-6620

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/136,658 filed on December 20, 2013.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

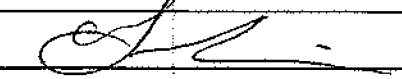
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Gloria Lin Date (Optional): 3/11/14

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/136,658

filed on December 20, 2013

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Taido L. Nakajima Date (Optional): APR 23, 2014

Signature:

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. This information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 14/136,658

filed on December 20, 2013

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Pareet Rahul Date (Optional): March 11, 2014

Signature: Pareet Rahul

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SEAMLESSLY EMBEDDED HEART RATE MONITOR

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ■ United States application or PCT international application number 14/136,658 filed on December 20, 2013

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR	
Inventor: Andrew B. Hyde	Date (optional):
Signature:	

Note: An application data sheet (PTO/SB/14 or equivalent), including any supplemental application data sheets, must accompany this form and must be completed for the inventor executing this form to identify the application to which this form pertains.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.152

Electronic Acknowledgement Receipt

EFS ID:	20641785
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Filer Authorized By:	Jeffrey Charles Aldridge
Attorney Docket Number:	P7276USC1
Receipt Date:	07-NOV-2014
Filing Date:	20-DEC-2013
Time Stamp:	16:56:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2014-11-07_P7276USC1-Subm-Decl-docs.pdf	3319162 035fad0c44522288331f03b7efea4e76e26e7c3a	yes	5

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.153

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Response to Pre-Exam Formalities Notice	1	1
	Oath or Declaration filed	2	5

Warnings:	
Information:	
Total Files Size (in bytes):	3319162

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

111349 7590 02/17/2015

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER
ALTER MORSCHAUSER, ALYSSA MARGO

ART UNIT	PAPER NUMBER
3762	

NOTIFICATION DATE	DELIVERY MODE
02/17/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@vcaiplaw.com
jaldridge@vcaiplaw.com
avancourt@vcaiplaw.com

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.155

Office Action Summary	Application No. 14/136,658	Applicant(s) LIN ET AL.	
	Examiner Alyssa M. Alter	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2013*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *24-43* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☐ Claim(s) _____ is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☒ Claim(s) *24-43* are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.156

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 24-28, drawn to an apparatus with a bezel and heart sensor, classified in A61B 5/0404.

II. Claims 29-43, drawn to an apparatus with lead wires and a heart sensor, classified in A61B 5/024.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are directed to related apparatuses. The related inventions are distinct if: (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have different designs and modes of operation. Invention I requires a bezel and wireless heart sensor. Conversely, Invention II does not require a bezel and instead requires a wired heart sensor with two leads. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

3. Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above

and there would be a serious search and/or examination burden if restriction were not required because one or more of the following reasons apply: the divergent subject matter would necessitate a divergent search.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of an invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention**.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103 or pre-AIA 35 U.S.C. 103(a) of the other invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be corrected in compliance with 37 CFR 1.48(a) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. A request to correct inventorship under 37 CFR 1.48(a) must be accompanied by an application data sheet in accordance with 37 CFR 1.76 that identifies each inventor by his or her legal name and by the processing fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alyssa M. Alter whose telephone number is (571)272-4939. The examiner can normally be reached on M-F 7am to 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Niketa Patel can be reached on (571) 272-4156. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alyssa M Alter/
Primary Examiner
Art Unit 3762

PATENTS
P7276USC1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658 Confirmation No.: 2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschauser

New York, New York 10013
April 17, 2015

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

REPLY TO RESTRICTION REQUIREMENT

Sir:

This is in response to the Office Action mailed February 17, 2015, which did not address the merits of the above-identified patent application, but required restriction of the application to one of two alleged inventions. Applicants hereby amend the application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper; and

Remarks begin on page 8 of this paper.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.161

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. - 23. (Cancelled)

24. (Withdrawn) An electronic device comprising:

a bezel, wherein an outer surface of at least a portion of the bezel comprises a first visual characteristic; and

a heart sensor coupled to the at least a portion of the bezel and operative to detect a user's cardiac signal, wherein an outer surface of the heart sensor comprises a second visual characteristic that matches the first visual characteristic.

25. (Withdrawn) The electronic device of claim 24, wherein each of the outer surface of the at least a portion of the bezel and the outer surface of the heart sensor comprises a portion of an outer surface of the electronic device.

26. (Withdrawn) The electronic device of claim 24, wherein:

the outer surface of the at least a portion of the bezel comprises a first finish; and

the outer surface of the heart sensor comprises a second finish that matches the first finish.

27. (Withdrawn) The electronic device of claim 24, wherein the outer surface of the heart sensor comprises a conductive coating that provides the second visual characteristic.

28. (Withdrawn) The electronic device of claim 24, wherein each of the first visual characteristic and the second visual

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.162

characteristic comprises at least one of:

a particular color;

a particular tone; and

a particular reflectivity.

29. (Previously Presented) An electronic device for detecting a user's cardiac signal, comprising:

an enclosure;

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the enclosure, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the enclosure; and

a second lead embedded in a second portion of the enclosure, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the enclosure; and

a processor coupled to the heart sensor and configured to receive and process the detected cardiac signal.

30. (Previously Presented) The electronic device of claim 29, wherein the first portion and the second portion are located on opposite sides of the electronic device.

31. (Previously Presented) The electronic device of claim 29, wherein the first portion is electrically isolated from the second portion.

32. (Previously Presented) The electronic device of claim 29, wherein:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.163

the first portion is separated from the second portion by a third portion of the enclosure;

at least the third portion is constructed from a material having a first conductivity; and

the first conductivity is insufficient to transmit the first electrical signal from the first lead to the second lead via the third portion.

33. (Previously Presented) The electronic device of claim 32, wherein:

the material having the first conductivity comprises one of aluminum and steel; and

the second lead is constructed from a silver based compound.

34. (Previously Presented) The electronic device of claim 32, wherein:

the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with an exterior surface of the second portion;

the second lead is positioned from the exterior surface of the second portion by a thickness of the second portion;

at least the thickness of the second portion is constructed from a material having a second conductivity; and

the second conductivity is defined such that the second electrical signal is not transmitted over a distance larger than the thickness of the second portion.

35. (Previously Presented) The electronic device of claim 34, wherein the first lead and the second lead are positioned apart from one another at a distance larger than the thickness of the second portion.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.164

36. (Previously Presented) The electronic device of claim 29, wherein:

the enclosure further comprises at least one pocket underneath an outer surface of the enclosure; and

at least one of the first lead and the second lead is placed within the at least one pocket.

37. (Previously Presented) The electronic device of claim 29, wherein:

an exterior surface of the enclosure comprises an exterior surface of the first portion; and

the first lead is positioned underneath the exterior surface of the first portion.

38. (Previously Presented) The electronic device of claim 37, wherein the first lead is configured to detect the first electrical signal via the user's contact with the exterior surface of the first portion.

39. (Previously Presented) The electronic device of claim 29, further comprising:

a display, wherein the enclosure supports the display, and wherein the enclosure forms an exterior surface of the electronic device behind the display; and

a third lead embedded with the display, wherein the third lead is configured to detect a third electrical signal of the user's cardiac signal via the user's contact with at least one of the third lead and the display.

40. (Previously Presented) An electronic device for detecting a user's cardiac signal, comprising:

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.165

a first lead embedded in a first portion of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the electronic device; and

a second lead embedded in a second portion of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the electronic device; and

a processor coupled to the heart sensor and configured to process the first and second electrical signals of the user's cardiac signal.

41. (Previously Presented) The electronic device of claim 40, wherein:

the first portion of the electronic device comprises an enclosure of the electronic device; and

the second portion of the electronic device comprises a display screen exposed to the user through an opening in the enclosure of the electronic device.

42. (Previously Presented) The electronic device of claim 41, wherein:

the first portion of the electronic device comprises a bezel of the enclosure;

the electronic device further comprises a non-conductive component positioned between the bezel and the display screen for electrically isolating the first portion of the electronic device from the second portion of the electronic device.

43. (Previously Presented) The electronic device of claim 40, wherein:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.166

the first portion of the electronic device comprises a first portion of an enclosure of the electronic device; and

the second portion of the electronic device comprises a second portion of the enclosure of the electronic device.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.167

REMARKS

Introduction

Claims 1-23 have been cancelled without prejudice. Applicants hereby reserve the right to pursue any cancelled claims in one or more continuations. Claims 24-28 have been withdrawn without prejudice. Claims 29-43 are currently pending in the above-identified patent application.

Summary of Office Action

The Examiner found that there are allegedly two distinct inventions in the above-identified patent application and required restriction to one of those inventions, as follows:

Group I: Claims 24-28, allegedly "drawn to an apparatus with a bezel and heart sensor, classified in A61B 5/0404"; and

Group II: Claims 29-43, allegedly "drawn to an apparatus with lead wires and a heart sensor, classified in A61B 5/024.

Applicants' Election

Applicants provisionally elect, without traverse, for examination in this application, the claims of the alleged invention of Group II (i.e., claims 29-43).

Conclusion

Applicants have elected for examination a single alleged invention as required by the Examiner. An early and favorable action is respectfully requested.

Date: April 17, 2015

Respectfully submitted,
/Jeffrey C. Aldridge/
Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
154 Grand Street
New York, New York 10013
Tel.: (347) 470-6620

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.168

Electronic Acknowledgement Receipt

EFS ID:	22097953
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Filer Authorized By:	Jeffrey Charles Aldridge
Attorney Docket Number:	P7276USC1
Receipt Date:	17-APR-2015
Filing Date:	20-DEC-2013
Time Stamp:	16:20:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2015-04-17_P7276USC1-Resp-RR.pdf	95328 5be9b06c4a28dbb18c9bda14d03dccee0d7a73dc	yes	8

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.169

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response to Election / Restriction Filed	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	8
Warnings:			
Information:			
	Total Files Size (in bytes):	95328	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/136,658	Filing Date 12/20/2013	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)		
	04/17/2015	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)		
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/ROSALIND BALL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

111349 7590 06/19/2015

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER
ALTER MORSCHAUSER, ALYSSA MARGO

ART UNIT	PAPER NUMBER
3762	

NOTIFICATION DATE	DELIVERY MODE
06/19/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@vcaiplaw.com
jaldridge@vcaiplaw.com
avancourt@vcaiplaw.com

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.172

Office Action Summary	Application No. 14/136,658	Applicant(s) LIN ET AL.	
	Examiner Alyssa M. Alter	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 April 2015*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *24-43* is/are pending in the application.

5a) Of the above claim(s) *24-28* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *29-43* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *20 December 2013* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.173

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

2. Claims 24-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 17, 2015.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory

double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

4. Claims 29-43 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 8615290. Although the claims at issue are not identical, they are not patentably distinct from each other because both recite an enclosure or housing, a heart sensor, a first lead embedded in a first portion of the device enclosure and a second lead embedded in a second portion of the device enclosure and a processor.

Claim Rejections - 35 USC § 112

5. The following is a quotation of 35 U.S.C. 112(b):

> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 34-35 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

7. As to claim 34, it is unclear how the "second conductivity" is such that the signal cannot is not transmitted over a distance larger than the thickness of the second portion. The examiner requests clarification how the thickness of the second portion impacts the conductivity and how to quantify such conductivity characteristics.

Claim Rejections - 35 USC § 102

8. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

9. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 29-38, 40 and 43 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Ceballos et al. (US 6,522,915 B1).

11. As to claims 29, 40 and 43, Ceballos et al. discloses a subcutaneous electrode array (SEA) around the perimeter of an implantable medical device. The SEA electrodes are positioned in a non-conductive shroud (see figure 6).

12. The examiner considers the surround shroud with the recessed cups (depicted as 49a in figure 6) to be the enclosure. As additionally seen in figure 6, an electrode (coiled electrode depicted as 61) is positioned within the enclosure. An electrode is positioned within the bezel on the housing. The electrode functions as a heart sensor to detect cardiac depolarizations (col. 10, lines 5-13).

13. Additionally Ceballos et al. discloses "there are four recessed openings 50. A cup 49a with a contact plate 49b is fitted into each recessed opening. Into each of recessed openings 50 is placed an electrode such as a helical electrode (see FIG. 9 for details) that, in conjunction with other paired electrodes detect cardiac depolarizations. These electrical signals are passed to contact plate 49b that is electrically connected to hybrid circuitry 42 via insulated wires running on the inner portion of surround shroud 48 (see FIG. 5 for details)" (col. 10, lines 5-13). Thus the electrodes or heart sensor(s) include a lead (tubular wiring depicted as 53 in figure 6) that runs through the channels 62 formed in the inner surface of the housing (surround shroud). The sensors, through the wiring, connect to the hybrid circuitry (depicted as 42 in figure 4) and thus connect to a processor for receiving the signals (col. 10, lines 16-19).

14. Furthermore, since there are a plurality of electrodes and recessed openings (four depicted in figure 4) located in the housing (surround shroud) the examiner considers the housing to have a first section (one of the recessed openings) and a

second section (an additional recessed opening). As seen in figure 6, for example, the portion of the housing with the recessed opening depicted as 60 is considered to the first section (with a first associated lead, i.e. tubular wiring 53) while the second recessed opening depicted as the coil electrode 61 in figure 6 (with a second associated lead, i.e. tubular wiring 53) is considered to be the second section.

15. As to claim 30, as depicted in figure 6, for example, the first portion and second portion are located on opposite sides of the electronic device.

16. As to claim 31, since the housing (surround shroud) is non-conducting the first section with the first recessed opening is electrically isolated from the second section with the second recessed opening.

17. As to claim 32, as additionally depicted in figure 6, there is a third recessed opening depicted between the first and second portions. The examiner considers the third recessed opening to be the third portion. Additionally, since the surround shroud or housing, is constructed from non-conducting material, the third portion of the housing in constructed from a material having a first conductivity that is insufficient to transmit the first electrical signals via the first lead to the second lead.

18. As to claim 34, as best understood in light of the 112 rejections above, the thickness of the second portion of the housing is constructed from a non-conductive material and thus a material having a second conductivity such that a second electrical signal is not transmitted over the distance larger than a thickness of the second portion (i.e. the signal is not transmitted through the second portion since it is non-conductive).

19. As to claim 35, as depicted in figure 6, the first lead and second lead are positioned apart from one another at a distance larger than the thickness of the second portion.

20. As to claim 36, the electrodes or sensors positioned in the housing are associated with leads (tubular wiring). The tubular wiring is retained in the channels formed in the surround shroud. The examiner considers the channels that retain the lead to be the "pockets".

21. As to claims 37-38, as seen in figure 6, for example, the exterior surface of the enclosure comprises an exterior surface of the first portion that disposes the lead underneath the exterior surface.

Claim Rejections - 35 USC § 103

22. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

23. This application currently names joint inventors. In considering patentability of the claims under pre-AIA 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of pre-AIA 35 U.S.C. 103(c) and potential pre-AIA 35 U.S.C. 102(e), (f) or (g) prior art under pre-AIA 35 U.S.C. 103(a).

24. Claims 39 and 41-42 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Ceballos et al. (US 6,522,915 B1). Ceballos et al. discloses a display (depicted as 64 in figure 2) but does not explicitly disclose the display is located on the

electronic device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the location of the screen or electronic components in order to provide the predictable results to modify treatment to meet specific patient needs and requirements, especially ensuring sufficient communication to the patient and/or clinician.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alyssa M. Alter whose telephone number is (571)272-4939. The examiner can normally be reached on M-F 7am to 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Niketa Patel can be reached on (571) 272-4156. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alyssa M Alter/
Primary Examiner
Art Unit 3762

Notice of References Cited	Application/Control No. 14/136,658	Applicant(s)/Patent Under Reexamination LIN ET AL.	
	Examiner Alyssa M. Alter	Art Unit 3762	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,522,915	02-2003	Ceballos et al.	600/509
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.181

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Gloria Lin
Art Unit	
Examiner Name	
Attorney Docket Number	P7276USC1

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/A.A./	1	4635646		1987-01-13	Gilles et al.	
/A.A./	2	6522915		2003-02-18	Ceballos et al.	
/A.A./	3	7689833		2010-03-30	Lange	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/A.A./	1	20060026521		2006-02-02	Hotelling et al.	
/A.A./	2	20060026535		2006-02-02	Hotelling et al.	
/A.A./	3	20080076972		2008-03-27	Dorogusker et al.	

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.182

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Gloria Lin
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P7276USC1

/A.A./	4	20080113650		2008-05-15	Engstrom	
/A.A./	5	20090070266		2009-03-12	Shah et al.	
/A.A./	6	20100011388		2010-01-14	Bullet al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
/A.A./	1	2008073461	JP		2008-04-03	Seiko Instruments Inc.		☐
/A.A./	2	2008073462	JP		2008-04-03	Seiko Instruments Inc.		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/Alyssa Alter/	Date Considered	06/15/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.183

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Gloria Lin
	Art Unit	
	Examiner Name	
	Attorney Docket Number	P7276USC1

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.184

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1789	(A61B5/02438).cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/06/15 12:54
L2	1073	(A61B5/0245).cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/06/15 12:54
L3	0	(A61B5/404).cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/06/15 12:54
S1	1	("20100113950").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 17:00
S5	463	(340/5.82).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 17:04
S11	156	cellular same cardiac same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:14
S14	8	(cellular adj phone) same cardiac same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:16
S15	384	(cellular adj phone) same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:17
S16	8	(cellular adj phone) same heart same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:19
S20	87	alter.xa.	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:21
S21	95	(phone) same (cardiac or heart) same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:31
S22	1	("2005/0239493").URPN.	USPAT	AND	OFF	2011/08/31 17:37
S23	2	("2007/0270909").URPN.	USPAT	AND	OFF	2011/08/31 17:39
S24	21	("4337377" | "4535783" | "5172698" | "5317269" | "5462051" | "5544661" | "6219408").PN. OR ("6485416").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 17:40
S25	10	("4751726" | "5485163" | "5544661" | "5862803" | "5941829" | "6083248").PN. OR	US-PGPUB;	AND	OFF	2011/08/31 17:43

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.185

		("6546232").URPN.	USPAT; USOCR			
S26	1	("20040034645").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 17:48
S27	633	(607/36).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 17:49
S28	13	S27 and handheld	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:49
S29	467	S27 and external	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:50
S30	74	("4231098" | "4288841" | "4604677" | "4614194" | "4616655").PN. OR ("5470345").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 17:57
S31	56	("4374817" | "4379459" | "4384585" | "4476868" | "4548209" | "4556063" | "4577633" | "4587970" | "4693253" | "4726380" | "4821723" | "4830006" | "4880005" | "4949719" | "4949730" | "5127404" | "5131388" | "5144949" | "5158078" | "5199428" | "5207218" | "5312453" | "5314430" | "5330507" | "5331966" | "5354316" | "5370669" | "5447519" | "5470345" | "5545186").PN. OR ("6498951").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 17:59
S32	115	("20020035376" | "20020035377" | "20020035378" | "20020035379" | "20020042629" | "20020042630" | "20020042634" | "20020049475" | "20020049476" | "20020052636" | "20020068958" | "20020107545" | "20020107549" | "3842842" | "3911925" | "4157720" | "4223678" | "4248237" | "4256115" | "4291707" | "4314095" | "4402322" | "4407288" | "4424818" | "4450527" | "4567900" | "4602637" | "4603705" | "4693253" | "4765341" | "4800883" | "4821724" | "4830005" | "4944300" | "5105810" | "5107836" | "5109842" | "5129392" | "5133353" | "5184616" | "5203348" | "5215081" | "5230337" | "5243977" | "5261400" | "5292338" | "5300106" | "5331966" | "5342407" | "5366496" | "5376103" | "5385574" | "5391200" | "5405363" | "5411539" | "5423326" | "5470345" | "5476503" | "5507781" | "5509923" | "5531765" | "5531766" | "5534019" | "5534022" | "5597956" | "5601607" | "5603732" | "5618287" | "5620477" | "5643328" | "5645586" | "5658317" | "5658321" | "5690648" | "5697953" | "5713926" | "5766226" | "5776169" | "5843132" | "5871506" | "5895414" | "5919211" | "5925069" | "5935154" | "6058328" | "6093173" | "6095987" |	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 18:02

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.186

		"6144879" | "6241751" | "6266567" | "6280462" | "6409675" | "6445956" | "6866044").PN. OR ("7065407").URPN.				
S33	56	("4374817" | "4379459" | "4384585" | "4476868" | "4548209" | "4556063" | "4577633" | "4587970" | "4693253" | "4726380" | "4821723" | "4830006" | "4880005" | "4949719" | "4949730" | "5127404" | "5131388" | "5144949" | "5158078" | "5199428" | "5207218" | "5312453" | "5314430" | "5330507" | "5331966" | "5354316" | "5370669" | "5447519" | "5470345" | "5545186").PN. OR ("6498951").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 18:08
S34	1	("20060167502").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 18:11
S35	2	"20060167502"	US-PGPUB; USPAT	AND	OFF	2011/08/31 18:13
S36	4	("2006/0167502").URPN.	USPAT	AND	OFF	2011/08/31 18:13
S37	238	("20010034487" | "20020035377" | "20020035378" | "20020035379" | "20020035381" | "20020052636" | "20020082658" | "20020095184" | "20020107544" | "20020107545" | "20020107549" | "20030023175" | "20030212436" | "20030216789" | "20040230230" | "20040230243" | "20050042589" | "20050288600" | "20060069322" | "20070161873" | "4091818" | "4414982" | "4562841" | "4813427" | "4830008" | "4836219" | "4856524" | "4953551" | "5024222" | "5036849" | "5133353" | "5170784" | "5179945" | "5203348" | "5209229" | "5211173" | "5215082" | "5230337" | "5245995" | "5261400" | "5280791" | "5284136" | "5292338" | "5299118" | "5300106" | "5301677" | "5313953" | "5314430" | "5314459" | "5318597" | "5331966" | "5334222" | "5360442" | "5366496" | "5372606" | "5376103" | "5376106" | "5388578" | "5391200" | "5397342" | "5411031" | "5411525" | "5411539" | "5439482" | "5441518" | "5466245" | "5468254" | "5476485" | "5483969" | "5520176" | "5520191" | "5522862" | "5531779" | "5545186" | "5545202" | "5601607" | "5603732" | "5620466" | "5634938" | "5641326" | "5645570" | "5662688" | "5697953" | "5704365" | "5713355" | "5713933" | "5724984" | "5792188" | "5802188" | "5827326" | "5844680" | "5855593" | "5891023" | "5895414" | "5902250" | "5911218" | "5916243" | "5957956" | "5970975" | "5981011" | "5987352" | "5997526" | "6026320" | "6044298" | "6055454" | "6059725" | "6091986" | "6099479" |	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 18:13

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.187

		"6115628" | "6141581" | "6141590" | "6148230" | "6148233" | "6200265" | "6205357" | "6221011" | "6227072" | "6240316").PN. OR ("6259947" | "6269269" | "6270457" | "6273856" | "6275727" | "6277072" | "6280380" | "6280462" | "6285907" | "6312378" | "6327499" | "6336903" | "6351670" | "6351673" | "6358203" | "6360127" | "6361494" | "6368284" | "6371922" | "6398728" | "6405085" | "6409675" | "6411848" | "6415174" | "6424865" | "6438407" | "6438410" | "6440066" | "6449503" | "6459929" | "6463325" | "6480733" | "6487443" | "6490485" | "6491639" | "6496715" | "6497658" | "6505067" | "6512940" | "6522915" | "6542775" | "6564106" | "6584351" | "6595927" | "6597951" | "6607509" | "6615083" | "6622046" | "6641542" | "6699200" | "6731984" | "6752765" | "6752766" | "6754528" | "6760615" | "6766190" | "6773404" | "6778860" | "6786866" | "6788974" | "6810287" | "6823214" | "6834204" | "6839593" | "6856835" | "6865417" | "6866044" | "6884218" | "6904320" | "6912419" | "6927721" | "6928324" | "6944579" | "6950705" | "6952608" | "6952610" | "6954670" | "6959214" | "6961619" | "6983264" | "6988003" | "6988498" | "6993389" | "6999817" | "7016730" | "7025730" | "7027861" | "7027871" | "7039459" | "7039465" | "7043299" | "7050851" | "7065407" | "7069080" | "7076296" | "7090682" | "7092754" | "7092755" | "7117036" | "7120495" | "7123960" | "7127290" | "7146212" | "7149575" | "7181285" | "7194302" | "7194309" | "7206635" | "7212862" | "7215890" | "7245962" | "7252640" | "7260432" | "7263399" | "7308311" | "7396333" | "7428468" | "7499750" | "7720541" | "7766842").PN. OR ("7996072").URPN.				
S38	88	("3983867" | "4023565" | "4082086" | "4121576" | "4170227" | "4263919" | "4310000" | "4313443" | "4476868" | "4593702" | "4674508" | "4729376" | "5052388" | "5331966" | "5345362" | "5456698" | "5535097").PN. OR ("6522915").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 18:15
S39	14	(US-20100113950-$ or US-20060100533-$ or US-20070270909-$ or US-20050239493-$ or US-20040034645-$ or US-20020042634-$ or US-20020091418-$ or US-20060167502-$).did. or (US-6485416-$ or US-6546232-$ or US-7433718-$ or US-7065407-$ or US-5871515-$ or US-6522915-$).did.	US-PGPUB; USPAT	AND	OFF	2011/08/31 18:18
S40	0	("2010/0113950").URPN.	USPAT	AND	ON	2012/07/05 16:48
S41	5	("20060100533" | "3916877" | "20100113950" | "6546232" | "20050239493").PN.	US-PGPUB; USPAT;	AND	ON	2012/07/05 16:52

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.188

			USOCR			
S42	9	(palm) same cardiac same electrodes	US-PGPUB; USPAT	AND	OFF	2012/07/05 17:03
S45	118	(hand or fingers or finger) with cardiac with electrodes	US-PGPUB; USPAT	AND	OFF	2012/07/05 17:06
S48	56	(hand or fingers or finger) with cardiac with (electrodes or electrode) with (lead or leads)	US-PGPUB; USPAT	AND	OFF	2012/07/05 17:07
S49	16	(US-20100113950-$ or US-20060100533-$ or US-20070270909-$ or US-20050239493-$ or US-20040034645-$ or US-20020042634-$ or US-20020091418-$ or US-20060167502-$ or US-20020143576-$ or US-20080221930-$).did. or (US-6485416-$ or US-6546232-$ or US-7433718-$ or US-7065407-$ or US-5871515-$ or US-6522915-$).did.	US-PGPUB; USPAT	AND	ON	2012/07/05 17:12
S50	1	("4592372").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/11/08 18:04
S51	47	("3568660" | "3664347" | "3769984" | "3825015" | "3942536" | "3995623" | "4280511" | "4412531" | "4437474" | "4458695").PN. OR ("4592372").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2012/11/08 18:05
S52	2604	(600/509).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/11/08 18:36
S53	576	S52 and lead and housing and external	US-PGPUB; USPAT; USOCR	AND	ON	2012/11/08 18:36
S54	42	("4108166" | "4120294" | "4635646" | "4791933" | "4809705" | "4825874" | "4889134" | "5003984" | "5300093" | "5304209" | "5336245" | "5343869" | "5383912" | "5417222" | "5577510" | "5620472" | "5623926" | "5682902" | "5738104").PN. OR ("6149602").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2012/11/08 18:39
S55	14	("3989038" | "4130022" | "4606352" | "5022410").PN. OR ("5623926").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2012/11/08 18:56
S56	4	("20060026521" | "20060026535" | "20080076972" | "20100011388").PN.	US-PGPUB; USPAT; USOCR	AND	ON	2013/01/14 18:34
S57	774	(607/36).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/08/09 15:16
S58	2840	(600/509).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/08/09 15:17
S59	643	(340/5.82).CCLS.	US-PGPUB;	OR	OFF	2013/08/09 15:17

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.189

			USPAT; USOCR			
S63	2	(12/358905).APP.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/06/15 10:56

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S60	0	(607/36).CCLS.	UPAD	OR	OFF	2013/08/09 15:16
S61	5	(600/509).CCLS.	UPAD	OR	OFF	2013/08/09 15:17
S62	3	(340/5.82).CCLS.	UPAD	OR	OFF	2013/08/09 15:17

6/15/2015 1:00:24 PM
C:\Users\aalter\Documents\EAST\Workspaces\14136658.wsp

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.190

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	Art Unit
	ALYSSA M ALTER	3762

CPC- SEARCHED		
Symbol	Date	Examiner
A 61 B 5/02438	6/15/2015	ama
A 61 B 5/0245	6/15/2015	ama
A 61 B 5/404	6/15/2015	ama

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
607	36	6/15/2015	ama
600	509	6/15/2015	ama

SEARCH NOTES		
Search Notes	Date	Examiner
Please see EAST search history	6/15/2015	ama
Conducted an inventor search	6/15/2015	ama
Referenced the search performed in the parent application 12/358,905	6/15/2015	ama

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/ALYSSA M ALTER/ Primary Examiner.Art Unit 3762

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.191

PATENTS
P7276USC1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658 Confirmation No.: 2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschauser

New York, New York 10013
November 17, 2015

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

TERMINAL DISCLAIMER
UNDER 37 C.F.R. § 1.321(b,c)

Sir:

Apple Inc., a corporation having a mailing address at 1 Infinite Loop, Cupertino, CA 95014, represents that it possesses the entire right, title and interest, by assignment, of the following United States patent and patent application:

1. U.S. Patent No. 8,615,290 for "SEAMLESSLY EMBEDDED HEART RATE MONITOR," issued December 24, 2013. Gloria Lin, Taido Nakajima, Pareet Rahul, and Andrew Hodge are the inventors of U.S. Patent No. 8,615,290, and the inventors have assigned their interests in the patent to Apple Inc., as recorded at reel 022149, frame 0581.

2. U.S. Patent Application No. 14/136,658 for "SEAMLESSLY EMBEDDED HEART RATE MONITOR," filed December 20, 2013 as a

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.192

continuation of U.S. Patent Application No. 12/358,905 from which U.S. Patent No. 8,615,290 issued. Gloria Lin, Taido L. Nakajima, Pareet Rahul, and Andrew B. Hodge are the inventors of U.S. Patent Application No. 14/136,658, and the previous assignment of U.S. Patent No. 8,615,290, recorded at reel 022149, frame 0581, applies to U.S. Patent Application No. 14/136,658 as a continuation.

The undersigned, on behalf of Apple Inc., hereby disclaims the terminal portion of the term of any patent to be issued on the present application, U.S. Patent Application No. 14/136,658, which would extend beyond the expiration date of the full statutory term of U.S. Patent No. 8,615,290.

The undersigned, on behalf of Apple Inc., agrees that any patent to be issued on the present U.S. Patent Application No. 14/136,658 shall be enforceable only for and during such period that such patent and U.S. Patent No. 8,615,290 are commonly owned, this agreement to run with any patent to be issued on U.S. Patent Application No. 14/136,658 and to be binding upon the grantee of such patent and its successors and assigns.

The undersigned, on behalf of Apple Inc., does not disclaim any terminal part of the term of any patent, to be issued on the above-identified U.S. Patent Application No. 14/136,658, that would extend to the expiration date of the full statutory term of U.S. Patent No. 8,615,290, in the event that U.S. Patent No. 8,615,290: (a) expires for failure to pay a maintenance fee, (b) is held unenforceable, (c) is found invalid, (d) is statutorily disclaimed in whole or terminally disclaimed under 37 C.F.R. § 1.321 (a, b), (e) has all claims cancelled by a reexamination certificate, or (f) is otherwise terminated prior to expiration of its statutory term, except for the separation of common ownership stated above.

The undersigned hereby states and certifies that:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.193

1. He is an agent of record in the above-identified patent application and is authorized to act on behalf of inventors in connection with said application; and

2. The relevant evidentiary documents have been reviewed and, to the best of the undersigned's and inventors' knowledge and belief, title to the above-identified U.S. Patent Application No. 14/136,658 is in assignee.

Respectfully submitted,

Date: November 17, 2015

/Jeffrey C. Aldridge/
Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
154 Grand Street
New York, New York 10013
Tel.: (347) 470-6620

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.194

Electronic Patent Application Fee Transmittal

Application Number:	14136658
Filing Date:	20-Dec-2013
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Filer:	Andrew Michael Van Court/Daniel Harris
Attorney Docket Number:	P7276USC1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.195

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 2 months with $0 paid	1252	1	600	600
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	1	160	160
		Total in USD ($)		**760**

Electronic Acknowledgement Receipt

EFS ID:	24112982
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Andrew Michael Van Court/Daniel Harris
Filer Authorized By:	Andrew Michael Van Court
Attorney Docket Number:	P7276USC1
Receipt Date:	17-NOV-2015
Filing Date:	20-DEC-2013
Time Stamp:	18:29:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$760
RAM confirmation Number	5407
Deposit Account	506007
Authorized User	ALDRIDGE, JEFFREY

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.197

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2015-11-17_P7276USC1-Resp-OA-TD-docs.pdf	3667168 896846e01973e7a2979d379b3ca39b10d727fe18	yes	18

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Claims	2	7
Applicant Arguments/Remarks Made in an Amendment	8	15
Terminal Disclaimer Filed	16	18

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	32456 bd8744a0871ddd056871b5c4c6ae1a5e769f9a8a	no	2

Warnings:

Information:

Total Files Size (in bytes):	3699624

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.198

PATENTS
P7276USC1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658 Confirmation No.: 2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschauser

New York, New York 10013
November 17, 2015

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

REPLY TO NON-FINAL OFFICE ACTION

Sir:

This is in response to the Non-Final Office Action mailed June 19, 2015 (hereinafter "the Office Action"). Applicants hereby respond as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper; and

Remarks begin on page 8 of this paper.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.199

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. - 23. (Cancelled)

24. (Withdrawn) An electronic device comprising:

a bezel, wherein an outer surface of at least a portion of the bezel comprises a first visual characteristic; and

a heart sensor coupled to the at least a portion of the bezel and operative to detect a user's cardiac signal, wherein an outer surface of the heart sensor comprises a second visual characteristic that matches the first visual characteristic.

25. (Withdrawn) The electronic device of claim 24, wherein each of the outer surface of the at least a portion of the bezel and the outer surface of the heart sensor comprises a portion of an outer surface of the electronic device.

26. (Withdrawn) The electronic device of claim 24, wherein:

the outer surface of the at least a portion of the bezel comprises a first finish; and

the outer surface of the heart sensor comprises a second finish that matches the first finish.

27. (Withdrawn) The electronic device of claim 24, wherein the outer surface of the heart sensor comprises a conductive coating that provides the second visual characteristic.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.200

28. (Withdrawn) The electronic device of claim 24, wherein each of the first visual characteristic and the second visual characteristic comprises at least one of:

a particular color;

a particular tone; and

a particular reflectivity.

29. (Currently Amended) An electronic device for detecting a user's cardiac signal, comprising:

an enclosure;

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first lead is positioned underneath the exterior surface of the first portion, and wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with ~~at least one of the first lead and~~ the exterior surface of the first portion of the enclosure; and

a second lead embedded in a second portion of the enclosure, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the enclosure; and

a processor coupled to the heart sensor and configured to receive and process the detected cardiac signal.

30. (Previously Presented) The electronic device of claim 29, wherein the first portion and the second portion are located on opposite sides of the electronic device.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.201

31. (Previously Presented) The electronic device of claim 29, wherein the first portion is electrically isolated from the second portion.

32. (Previously Presented) The electronic device of claim 29, wherein:

the first portion is separated from the second portion by a third portion of the enclosure;

at least the third portion is constructed from a material having a first conductivity; and

the first conductivity is insufficient to transmit the first electrical signal from the first lead to the second lead via the third portion.

33. (Previously Presented) The electronic device of claim 32, wherein:

the material having the first conductivity comprises one of aluminum and steel; and

the second lead is constructed from a silver based compound.

34. (Currently Amended) The electronic device of claim 32, wherein:

the exterior surface of the enclosure further comprises an exterior surface of the second portion;

the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with [[an]] the exterior surface of the second portion;

the second lead is positioned from the exterior surface of the second portion by a thickness of the second portion;

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.202

at least the thickness of the second portion is constructed from [[a]] material having a second conductivity; and

the second conductivity is defined such that the second electrical signal is not able to be transmitted through material having the second conductivity over a distance larger than the thickness of the second portion.

35. (Currently Amended) The electronic device of claim 34, wherein the first lead and the second lead are positioned apart from one another at a distance larger than the thickness of the second portion by material having the second conductivity.

36. (Currently Amended) The electronic device of claim 29, wherein:

the enclosure further comprises at least one pocket underneath ~~an outer~~ the exterior surface of the enclosure; and

at least one of the first lead and the second lead is placed within the at least one pocket.

37. (Cancelled)

38. (Cancelled)

39. (Currently Amended) The electronic device of claim 29, further comprising:

a display, wherein the enclosure supports the display, and wherein at least a portion of the exterior surface of the enclosure forms at least a portion of an exterior surface of the electronic device behind the display; and

a third lead embedded with the display, wherein the third lead is configured to detect a third electrical signal of the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.203

user's cardiac signal via the user's contact with at least one of the third lead and the display.

40. (Currently Amended) An electronic device for detecting a user's cardiac signal, comprising:

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the electronic device; and

a second lead embedded in a second portion of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the electronic device; and

a processor coupled to the heart sensor and configured to process the first and second electrical signals of the user's cardiac signal, wherein:

the first portion of the electronic device comprises an enclosure of the electronic device; and

the second portion of the electronic device comprises a display screen exposed to the user through an opening in the enclosure of the electronic device.

41. (Cancelled)

42. (Currently Amended) The electronic device of claim [[41]] 40, wherein:

the first portion of the electronic device comprises a

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.204

bezel of the enclosure;

the electronic device further comprises a non-conductive component positioned between the bezel and the display screen for electrically isolating the first portion of the electronic device from the second portion of the electronic device.

43. (Cancelled)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.205

REMARKS

Introduction

Claims 1-23, 37, 38, 41, and 43 have been cancelled without prejudice. Applicants hereby reserve the right to pursue the subject matter of one or more of cancelled claims in one or more continuation applications. Claims 24-28 have been withdrawn without prejudice. Claims 29, 34-36, 39, 40, and 42 have been amended. Claims 30-33 are also currently pending in the above-identified patent application. No new subject matter has been introduced and all amendments are fully supported by the application as originally filed.

Claims 29-36 and 39-43 have been rejected on the ground of nonstatutory double patenting.

Claims 34 and 35 have been rejected under 35 U.S.C. § 112 as allegedly being indefinite.

Claims 29-36, and 40 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ceballos et al. U.S. Patent No. 6,522,915 (hereinafter "Ceballos").

Claims 39 and 42 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ceballos.

A two-month extension of time in which to respond to the Non-Final Office Action mailed June 19, 2015 is respectfully requested. A Terminal Disclaimer is being filed concurrently herewith. The required fees are being paid by credit card, but the Director is authorized to charge any underpayment or to credit any overpayment to Deposit Account No. 50-6007.

Reconsideration and allowance of this application in light of the following remarks is hereby respectfully requested.

The Double Patenting Rejections

Claims 29-36, 39, 40, and 42 have been rejected on the ground of nonstatutory double patenting as allegedly being

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.206

unpatentable over claims 1-20 of U.S. Patent No. 8,615,290 (hereinafter the "'290 patent").

Solely in order to expedite prosecution and without conceding the patentability of the present claims in view of the '290 patent, applicants submit herewith a Terminal Disclaimer in view of the '290 patent. Accordingly, applicants respectfully submit that the double patenting rejections of claims 29-36, 39, 40, and 42 should be withdrawn and that claims 29-36, 39, 40, and 42, and any claims dependent therefrom, are allowable.

The Rejections Under 35 U.S.C. § 112

Claims 34 and 35 have been rejected under 35 U.S.C. § 112 as allegedly being indefinite. Applicants have amended claims 34 and 35 to obviate these rejections (see, e.g., applicants' specification, paragraphs [0011], [0044], and/or [0047]). Therefore, applicants respectfully request that the rejections of claims 34 and 35 under 35 U.S.C. § 112 be withdrawn.

The Rejections Under 35 U.S.C. § 102(b)

Claims 29-36

Claims 29-36 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ceballos. These rejections are respectfully traversed.

Applicants' amended independent claim 29 defines an electronic device for detecting a user's cardiac signal, including an enclosure, a heart sensor configured to detect the user's cardiac signal, and a processor coupled to the heart sensor. The heart sensor includes a first lead embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure includes an exterior surface of the first portion, wherein the first lead is positioned underneath the exterior surface of the first portion, and

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.207

wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with the exterior surface of the first portion of the enclosure. The heart sensor also includes a second lead embedded in a second portion of the enclosure, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the enclosure. The processor is configured to receive and process the detected cardiac signal.

For example, "[h]eart sensor 112 can include one or more leads connected to the exterior of the electronic device such that the user may contact one or more of the leads to provide an electrical signal associated with the user's heart to heart sensor 112," and "[t]he cardiac signals detected by the heart sensor leads can be coupled to a processor incorporated in heart sensor 112, or instead provided to processor 102," where "[t]he processor may then analyze the received signals and generate, from the received signals, one or more characteristic quantities of the user's heartbeat or heart rate for authentication" (applicants' specification, paragraph [0033]). The "size and location of the leads can be selected to ensure that sufficient contact is made between the user (e.g., the user's hand or finger) and the leads for cardiac signals to be detected," where "each lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing" or "an entire portion of the electronic device enclosure (e.g., a portion of a bezel or housing) can serve as a lead for the heart sensor," and the "pad or extended area can then be coupled to a wire or other connector for providing cardiac signals to a processor for processing" (applicants' specification, paragraph [0034]). As a specific example, with respect to applicants' FIG. 4B, an enclosure of electronic device 450

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.208

may include a bezel 460, where, "[i]f the electrical conductivity and size of bezel 460, and the strength or characteristics of the cardiac signal provided by the user and detected by the heart sensor are adapted such that the signal can be transmitted along short distances in bezel 460, lead 472 of the heart sensor can be positioned against the back surface of bezel 460," or "lead 472 can be placed within the thickness of bezel 460 (e.g., in a pocket within the bezel wall), but underneath the outer surface of the bezel," where a "short thickness of bezel 460 can allow electrical signals to propagate from the user to the outer surface of bezel 460, through bezel 460, and into lead 472, which may in turn transmit the signals to a processor using connector 474" (applicants' specification, paragraph [0047]).

Nowhere does Ceballos show or suggest an electronic device with an enclosure and a heart sensor with a first lead embedded in a first portion of the enclosure and a second lead embedded in a second portion of the enclosure, where "an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first lead is positioned underneath the exterior surface of the first portion, and wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with the exterior surface of the first portion of the enclosure," as required by applicants' amended independent claim 29. Instead, Ceballos only describes coil electrodes 61 (and not wiring 53) for detecting electrical signals of a user, and Ceballos only shows each electrode 61 positioned within an opening 50 formed in shroud 48 through an exterior surface of shroud 48. Nowhere does Ceballos show or suggest that electrode 61 is positioned underneath the exterior surface of shroud 48 such that electrode 61 detects an electrical signal of a user's cardiac signal via the user's contact with the exterior surface of shroud 48 underneath which electrode 61 is positioned. Instead, quite to the contrary, opening 50 is provided

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.209

through the exterior surface of shroud 48 for holding and exposing electrode 61. Indeed, shroud 48 is insulative and would be unable to enable passage of an electrical signal therethrough for detection by a heart sensor lead.

For at least these reasons, applicants respectfully submit that applicants' amended independent claim 29 and all claims dependent therefrom, including claims 30-36 and 39, are allowable over Ceballos. Therefore, applicants respectfully request that the rejections of claims 29-36 under 35 U.S.C. § 102(b) with respect to Ceballos be withdrawn.

Claim 40

Claim 40 has been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ceballos. This rejection is respectfully traversed.

Applicants' amended independent claim 40 defines an electronic device for detecting a user's cardiac signal, including a heart sensor configured to detect the user's cardiac signal and a processor coupled to the heart sensor. The heart sensor includes a first lead embedded in a first portion of the electronic device, wherein the first portion of the electronic device comprises an enclosure of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the electronic device. The heart sensor also includes a second lead embedded in a second portion of the electronic device, wherein the second portion of the electronic device comprises a display screen exposed to the user through an opening in the enclosure of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.210

and the second portion of the electronic device. The processor is configured to process the first and second electrical signals of the user's cardiac signal.

For example, as shown in applicants' FIG. 3, "electronic device 300 can include additional lead 326 embedded in or behind display 302," where "[l]ead 326 can be operative to detect a user's heart activity as the user moves a finger across display 302," and, "[u]sing lead 326, the electronic device can detect an electrical signal from a different portion of the user's body (e.g., leads 322 and 324 detect signals through a first hand, and lead 326 detects signals through the second hand), which can provide the processor with additional information for determining characteristics of the user's cardiac activity" (applicants' specification, paragraph [0043]).

Nowhere does Ceballos show or suggest an electronic device with a heart sensor that includes "a second lead embedded in a second portion of the electronic device, wherein the second portion of the electronic device comprises a display screen exposed to the user through an opening in [an] enclosure of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the electronic device," as required by applicants' amended independent claim 40. Instead, Ceballos only describes coil electrodes 61 (and not wiring 53) for detecting electrical signals of a user, and Ceballos only shows each electrode 61 positioned within an opening 50 formed in shroud 48 through an exterior surface of shroud 48. Nowhere does Ceballos show or suggest any display screen exposed through an opening in shroud 48. Indeed, shroud 48 is only useful when positioned within a patient's body, thereby teaching away from any need to provide a display screen on shroud 48.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.211

For at least these reasons, applicants respectfully submit that applicants' amended independent claim 40 and all claims dependent therefrom, including claim 42, are allowable over Ceballos. Therefore, applicants respectfully request that the rejection of claim 40 under 35 U.S.C. § 102(b) with respect to Ceballos be withdrawn.

The Rejections Under 35 U.S.C. § 103(a)

Claim 39

Claim 39 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ceballos. Applicants respectfully submit that claim 39, which depends from applicants' amended independent claim 29, is allowable over Ceballos for at least some of the same reasons as applicants' amended independent claim 39 is allowable over Ceballos. Therefore, applicants respectfully request that the rejection of claim 39 under 35 U.S.C. § 103(a) with respect to Ceballos be withdrawn be withdrawn.

Claim 41

Claim 41 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ceballos. Applicants respectfully submit that claim 41, which depends from applicants' amended independent claim 40, is allowable over Ceballos for at least some of the same reasons as applicants' amended independent claim 40 is allowable over Ceballos. Therefore, applicants respectfully request that the rejection of claim 41 under 35 U.S.C. § 103(a) with respect to Ceballos be withdrawn be withdrawn.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.212

Conclusion

In view of the foregoing, applicants respectfully submit that claims 29-36 and 39, 40, and 42 are allowable. This application is therefore in condition for allowance. Reconsideration and prompt allowance of this application are respectfully requested.

Respectfully submitted,

Date: November 17, 2015

/Jeffrey C. Aldridge/
Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
154 Grand Street
New York, New York 10013
Tel.: (347) 470-6620

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.213

Application Number	Application/Control No.	Applicant(s)/Patent Under Reexamination
14136658	14/136,658	APPLE, INC.

Document Code - DISQ	Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed: 11/17/15	**This patent is subject to a Terminal Disclaimer**	

Approved/Disapproved by:

2/12/16

Patricia Martin
Paralegal Specialist
Central Reexamination Unit

U.S. Patent and Trademark Office

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

111349 7590 03/02/2016

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER
ALTER MORSCHAUSER, ALYSSA MARGO

ART UNIT	PAPER NUMBER
3762	

NOTIFICATION DATE	DELIVERY MODE
03/02/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@vcaiplaw.com
jaldridge@vcaiplaw.com
avancourt@vcaiplaw.com

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.215

Office Action Summary	Application No. 14/136,658	Applicant(s) LIN ET AL.	
	Examiner Alyssa M. Alter	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *24-36,39,40 and 42* is/are pending in the application.

5a) Of the above claim(s) *24-28* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *29-36,39,40 and 42* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on *20 December 2013* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.216

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

Response to Arguments

2. Applicant's arguments with respect to the amended claims has been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Claim Rejections - 35 USC § 102

3. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

4. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 29-32 and 36 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Gilles et al. (US 4,635,646). Gilles et al. discloses an electronic device for detecting the users cardiac signal with an enclosure and heart sensor (depicted in figure 8) wherein the heart sensor comprising a first lead (lead connecting electrode 13, as

depicted in figure 8) embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first lead is positioned underneath the exterior surface of the first portion (e.g., since the lead is connected to the circuitry located within the heart sensor housing, the lead is embedded underneath an exterior surface of the first portion of the housing), and wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with the exterior surface of the first portion of the enclosure (see figure 8); and a second lead (e.g., lead connecting electrode 14, as depicted in figure 8) embedded in a second portion of the enclosure, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the enclosure; and a processor coupled to the heart sensor and configured to receive and process the detected cardiac signal (see figures 6-7).

6. As to claim 30, as depicted in figure 8, the first portion (the side where the lead connects to electrode 13) is opposite side of the second portion (the side where the lead connects to electrode 14).

7. As to claims 31-32, the first and the second portions are not electrically conductive. Therefore, they are "electrically isolated" from each other. Furthermore, the first and second portions are separated by a third portion. As such, since the first and second portions are electrically isolated from each other, the third portion disposed between the first and second portion (depicted in figure 8), would necessarily be made

of a material insufficient to transmit electrical signals (in order to maintain electrical isolation between the first and second portion).

8. As to claim 36, the examiner considers the internal cavity where the electronics and circuitry are disposed to be a "pocket" within the electronic device. Furthermore since the leads engage with the electronics and circuitry, the leads are placed within the at least one pocket.

Claim Rejections - 35 USC § 103

9. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under pre-AIA 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of pre-AIA 35 U.S.C. 103(c) and potential pre-AIA 35 U.S.C. 102(e), (f) or (g) prior art under pre-AIA 35 U.S.C. 103(a).

11. Claims 33-35 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Gilles et al. (US 4,635,646). Gilles et al. discloses the claimed invention except for the materials and/or the second conductivity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the materials employed in the electronic device, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the

intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416* (See MPEP 2144.07). Furthermore, such a modification would provide the predictable results of modifying the electronic device to meet specific patient therapeutic needs and requirements.

12. As to claims 39, 40 and 42, Gilles et al. discloses a display but does not explicitly disclose where the display is located on the exterior surface or where it is located in the relation to a third lead. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the location of the display, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse, 86 USPQ 70* (see MPEP 2144.04) Furthermore, such a modification would provide the predictable results of modifying the device to meet specific patient needs and requirements (i.e. ease of utilizing or observing the display while the device is being worn).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alyssa M. Alter whose telephone number is (571)272-4939. The examiner can normally be reached on M-F 7am to 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Niketa Patel can be reached on (571) 272-4156. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alyssa M Alter/
Primary Examiner
Art Unit 3762

Notice of References Cited	Application/Control No. 14/136,658	Applicant(s)/Patent Under Reexamination LIN ET AL.	
	Examiner Alyssa M. Alter	Art Unit 3762	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-4,635,646 A	01-1987	Gilles; Ascher	A61B5/02438	600/509
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.222

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	Art Unit
	ALYSSA M ALTER	3762

CPC- SEARCHED		
Symbol	Date	Examiner
A 61 B 5/02438	6/15/2015	ama
A 61 B 5/0245	6/15/2015	ama
A 61 B 5/404	6/15/2015	ama

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
607	36	6/15/2015	ama
600	509	6/15/2015	ama

SEARCH NOTES		
Search Notes	Date	Examiner
Please see EAST search history	6/15/2015	ama
Conducted an inventor search	6/15/2015	ama
Referenced the search performed in the parent application 12/358,905	6/15/2015	ama
Conducted an updated search	2/25/2016	ama

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/ALYSSA M ALTER/ Primary Examiner.Art Unit 3762

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.223

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	("20100113950").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 17:00
S5	463	(340/5.82).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 17:04
S11	156	cellular same cardiac same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:14
S14	8	(cellular adj phone) same cardiac same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:16
S15	384	(cellular adj phone) same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:17
S16	8	(cellular adj phone) same heart same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:19
S20	87	alter.xa.	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:21
S21	95	(phone) same (cardiac or heart) same electrodes	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:31
S22	1	("2005/0239493").URPN.	USPAT	AND	OFF	2011/08/31 17:37
S23	2	("2007/0270909").URPN.	USPAT	AND	OFF	2011/08/31 17:39
S24	21	("4337377" | "4535783" | "5172698" | "5317269" | "5462051" | "5544661" | "6219408").PN. OR ("6485416").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 17:40
S25	10	("4751726" | "5485163" | "5544661" | "5862803" | "5941829" | "6083248").PN. OR ("6546232").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 17:43
S26	1	("20040034645").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 17:48
S27	633	(607/36).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 17:49
S28	13	S27 and handheld	US-PGPUB;	AND	OFF	2011/08/31 17:49

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.224

			USPAT			
S29	467	S27 and external	US-PGPUB; USPAT	AND	OFF	2011/08/31 17:50
S30	74	("4231098" | "4288841" | "4604677" | "4614194" | "4616655").PN. OR ("5470345").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 17:57
S31	56	("4374817" | "4379459" | "4384585" | "4476868" | "4548209" | "4556063" | "4577633" | "4587970" | "4693253" | "4726380" | "4821723" | "4830006" | "4880005" | "4949719" | "4949730" | "5127404" | "5131388" | "5144949" | "5158078" | "5199428" | "5207218" | "5312453" | "5314430" | "5330507" | "5331966" | "5354316" | "5370669" | "5447519" | "5470345" | "5545186").PN. OR ("6498951").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 17:59
S32	115	("20020035376" | "20020035377" | "20020035378" | "20020035379" | "20020042629" | "20020042630" | "20020042634" | "20020049475" | "20020049476" | "20020052636" | "20020068958" | "20020107545" | "20020107549" | "3842842" | "3911925" | "4157720" | "4223678" | "4248237" | "4256115" | "4291707" | "4314095" | "4402322" | "4407288" | "4424818" | "4450527" | "4567900" | "4602637" | "4603705" | "4693253" | "4765341" | "4800883" | "4821724" | "4830005" | "4944300" | "5105810" | "5107836" | "5109842" | "5129392" | "5133353" | "5184616" | "5203348" | "5215081" | "5230337" | "5243977" | "5261400" | "5292338" | "5300106" | "5331966" | "5342407" | "5366496" | "5376103" | "5385574" | "5391200" | "5405363" | "5411539" | "5423326" | "5470345" | "5476503" | "5507781" | "5509923" | "5531765" | "5531766" | "5534019" | "5534022" | "5597956" | "5601607" | "5603732" | "5618287" | "5620477" | "5643328" | "5645586" | "5658317" | "5658321" | "5690648" | "5697953" | "5713926" | "5766226" | "5776169" | "5843132" | "5871506" | "5895414" | "5919211" | "5925069" | "5935154" | "6058328" | "6093173" | "6095987" | "6144879" | "6241751" | "6266567" | "6280462" | "6409675" | "6445956" | "6866044").PN. OR ("7065407").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 18:02
S33	56	("4374817" | "4379459" | "4384585" | "4476868" | "4548209" | "4556063" | "4577633" | "4587970" | "4693253" | "4726380" | "4821723" | "4830006" | "4880005" | "4949719" | "4949730" | "5127404" | "5131388" | "5144949" | "5158078" | "5199428" | "5207218" | "5312453" | "5314430" | "5330507" | "5331966" | "5354316" | "5370669" |	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 18:08

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.225

		"5447519" | "5470345" | "5545186").PN. OR ("6498951").URPN.				
S34	1	("20060167502").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/08/31 18:11
S35	2	"20060167502"	US-PGPUB; USPAT	AND	OFF	2011/08/31 18:13
S36	4	("2006/0167502").URPN.	USPAT	AND	OFF	2011/08/31 18:13
S37	238	("20010034487" | "20020035377" | "20020035378" | "20020035379" | "20020035381" | "20020052636" | "20020082658" | "20020095184" | "20020107544" | "20020107545" | "20020107549" | "20030023175" | "20030212436" | "20030216789" | "20040230230" | "20040230243" | "20050042589" | "20050288600" | "20060069322" | "20070161873" | "4091818" | "4414982" | "4562841" | "4813427" | "4830008" | "4836219" | "4856524" | "4953551" | "5024222" | "5036849" | "5133353" | "5170784" | "5179945" | "5203348" | "5209229" | "5211173" | "5215082" | "5230337" | "5245995" | "5261400" | "5280791" | "5284136" | "5292338" | "5299118" | "5300106" | "5301677" | "5313953" | "5314430" | "5314459" | "5318597" | "5331966" | "5334222" | "5360442" | "5366496" | "5372606" | "5376103" | "5376106" | "5388578" | "5391200" | "5397342" | "5411031" | "5411525" | "5411539" | "5439482" | "5441518" | "5466245" | "5468254" | "5476485" | "5483969" | "5520176" | "5520191" | "5522862" | "5531779" | "5545186" | "5545202" | "5601607" | "5603732" | "5620466" | "5634938" | "5641326" | "5645570" | "5662688" | "5697953" | "5704365" | "5713355" | "5713933" | "5724984" | "5792188" | "5802188" | "5827326" | "5844680" | "5855593" | "5891023" | "5895414" | "5902250" | "5911218" | "5916243" | "5957956" | "5970975" | "5981011" | "5987352" | "5997526" | "6026320" | "6044298" | "6055454" | "6059725" | "6091986" | "6099479" | "6115628" | "6141581" | "6141590" | "6148230" | "6148233" | "6200265" | "6205357" | "6221011" | "6227072" | "6240316").PN. OR ("6259947" | "6269269" | "6270457" | "6273856" | "6275727" | "6277072" | "6280380" | "6280462" | "6285907" | "6312378" | "6327499" | "6336903" | "6351670" | "6351673" | "6358203" | "6360127" | "6361494" | "6368284" | "6371922" | "6398728" | "6405085" | "6409675" | "6411848" | "6415174" | "6424865" | "6438407" | "6438410" | "6440066" | "6449503" |	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 18:13

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.226

		"6459929" | "6463325" | "6480733" | "6487443" | "6490485" | "6491639" | "6496715" | "6497658" | "6505067" | "6512940" | "6522915" | "6542775" | "6564106" | "6584351" | "6595927" | "6597951" | "6607509" | "6615083" | "6622046" | "6641542" | "6699200" | "6731984" | "6752765" | "6752766" | "6754528" | "6760615" | "6766190" | "6773404" | "6778860" | "6786866" | "6788974" | "6810287" | "6823214" | "6834204" | "6839593" | "6856835" | "6865417" | "6866044" | "6884218" | "6904320" | "6912419" | "6927721" | "6928324" | "6944579" | "6950705" | "6952608" | "6952610" | "6954670" | "6959214" | "6961619" | "6983264" | "6988003" | "6988498" | "6993389" | "6999817" | "7016730" | "7025730" | "7027861" | "7027871" | "7039459" | "7039465" | "7043299" | "7050851" | "7065407" | "7069080" | "7076296" | "7090682" | "7092754" | "7092755" | "7117036" | "7120495" | "7123960" | "7127290" | "7146212" | "7149575" | "7181285" | "7194302" | "7194309" | "7206635" | "7212862" | "7215890" | "7245962" | "7252640" | "7260432" | "7263399" | "7308311" | "7396333" | "7428468" | "7499750" | "7720541" | "7766842").PN. OR ("7996072").URPN.				
S38	88	("3983867" | "4023565" | "4082086" | "4121576" | "4170227" | "4263919" | "4310000" | "4313443" | "4476868" | "4593702" | "4674508" | "4729376" | "5052388" | "5331966" | "5345362" | "5456698" | "5535097").PN. OR ("6522915").URPN.	US-PGPUB; USPAT; USOCR	AND	OFF	2011/08/31 18:15
S39	14	(US-20100113950-$ or US-20060100533-$ or US-20070270909-$ or US-20050239493-$ or US-20040034645-$ or US-20020042634-$ or US-20020091418-$ or US-20060167502-$).did. or (US-6485416-$ or US-6546232-$ or US-7433718-$ or US-7065407-$ or US-5871515-$ or US-6522915-$).did.	US-PGPUB; USPAT	AND	OFF	2011/08/31 18:18
S40	0	("2010/0113950").URPN.	USPAT	AND	ON	2012/07/05 16:48
S41	5	("20060100533" | "3916877" | "20100113950" | "6546232" | "20050239493").PN.	US-PGPUB; USPAT; USOCR	AND	ON	2012/07/05 16:52
S42	9	(palm) same cardiac same electrodes	US-PGPUB; USPAT	AND	OFF	2012/07/05 17:03
S45	118	(hand or fingers or finger) with cardiac with electrodes	US-PGPUB; USPAT	AND	OFF	2012/07/05 17:06
S48	56	(hand or fingers or finger) with cardiac with (electrodes or electrode) with (lead or leads)	US-PGPUB; USPAT	AND	OFF	2012/07/05 17:07
S49	16	(US-20100113950-$ or US-20060100533-$ or	US-	AND	ON	2012/07/05

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.227

		US-20070270909-$ or US-20050239493-$ or US-20040034645-$ or US-20020042634-$ or US-20020091418-$ or US-20060167502-$ or US-20020143576-$ or US-20080221930-$).did. or (US-6485416-$ or US-6546232-$ or US-7433718-$ or US-7065407-$ or US-5871515-$ or US-6522915-$).did.	PGPUB; USPAT			17:12
S50	1	("4592372").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/11/08 18:04
S51	47	("3568660" | "3664347" | "3769984" | "3825015" | "3942536" | "3995623" | "4280511" | "4412531" | "4437474" | "4458695").PN. OR ("4592372").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2012/11/08 18:05
S52	2604	(600/509).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/11/08 18:36
S53	576	S52 and lead and housing and external	US-PGPUB; USPAT; USOCR	AND	ON	2012/11/08 18:36
S54	42	("4108166" | "4120294" | "4635646" | "4791933" | "4809705" | "4825874" | "4889134" | "5003984" | "5300093" | "5304209" | "5336245" | "5343869" | "5383912" | "5417222" | "5577510" | "5620472" | "5623926" | "5682902" | "5738104").PN. OR ("6149602").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2012/11/08 18:39
S55	14	("3989038" | "4130022" | "4606352" | "5022410").PN. OR ("5623926").URPN.	US-PGPUB; USPAT; USOCR	AND	ON	2012/11/08 18:56
S56	4	("20060026521" | "20060026535" | "20080076972" | "20100011388").PN.	US-PGPUB; USPAT; USOCR	AND	ON	2013/01/14 18:34
S57	774	(607/36).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/08/09 15:16
S58	2840	(600/509).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/08/09 15:17
S59	643	(340/5.82).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/08/09 15:17
S63	2	(12/358905).APP.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/06/15 10:56
S64	1789	(A61B5/02438).cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/06/15 12:54
S65	1073	(A61B5/0245).cpc.	US-	OR	OFF	2015/06/15

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.228

			PGPUB; USPAT; USOCR			12:54
S66	0	(A61B5/404).cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/06/15 12:54

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S60	0	(607/36).CCLS.		OR	OFF	2013/08/09 15:16
S61	5	(600/509).CCLS.		OR	OFF	2013/08/09 15:17
S62	3	(340/5.82).CCLS.		OR	OFF	2013/08/09 15:17

2/26/2016 12:58:10 PM
C:\Users\aalter\Documents\EAST\Workspaces\14136658.wsp

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.229

PATENTS
P7276USC1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658 Confirmation No.: 2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschauser

New York, New York 10013
June 30, 2016

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

REPLY TO FINAL OFFICE ACTION

Sir:

This is in response to the Final Office Action mailed March 2, 2016 (hereinafter "the Office Action"). Applicants hereby respond as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper; and

Remarks begin on page 9 of this paper.

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. - 23. (Cancelled)

24. (Withdrawn) An electronic device comprising:

a bezel, wherein an outer surface of at least a portion of the bezel comprises a first visual characteristic; and

a heart sensor coupled to the at least a portion of the bezel and operative to detect a user's cardiac signal, wherein an outer surface of the heart sensor comprises a second visual characteristic that matches the first visual characteristic.

25. (Withdrawn) The electronic device of claim 24, wherein each of the outer surface of the at least a portion of the bezel and the outer surface of the heart sensor comprises a portion of an outer surface of the electronic device.

26. (Withdrawn) The electronic device of claim 24, wherein:

the outer surface of the at least a portion of the bezel comprises a first finish; and

the outer surface of the heart sensor comprises a second finish that matches the first finish.

27. (Withdrawn) The electronic device of claim 24, wherein the outer surface of the heart sensor comprises a conductive coating that provides the second visual characteristic.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.231

28. (Withdrawn) The electronic device of claim 24, wherein each of the first visual characteristic and the second visual characteristic comprises at least one of:

a particular color;

a particular tone; and

a particular reflectivity.

29. (Previously Presented) An electronic device for detecting a user's cardiac signal, comprising:

an enclosure;

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first lead is positioned underneath the exterior surface of the first portion, and wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with the exterior surface of the first portion of the enclosure; and

a second lead embedded in a second portion of the enclosure, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the enclosure; and

a processor coupled to the heart sensor and configured to receive and process the detected cardiac signal.

30. (Previously Presented) The electronic device of claim 29, wherein the first portion and the second portion are located on opposite sides of the electronic device.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.232

31. (Previously Presented) The electronic device of claim 29, wherein the first portion is electrically isolated from the second portion.

32. (Previously Presented) The electronic device of claim 29, wherein:

the first portion is separated from the second portion by a third portion of the enclosure;

at least the third portion is constructed from a material having a first conductivity; and

the first conductivity is insufficient to transmit the first electrical signal from the first lead to the second lead via the third portion.

33. (Previously Presented) The electronic device of claim 32, wherein:

the material having the first conductivity comprises one of aluminum and steel; and

the second lead is constructed from a silver based compound.

34. (Previously Presented) The electronic device of claim 32, wherein:

the exterior surface of the enclosure further comprises an exterior surface of the second portion;

the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the exterior surface of the second portion;

the second lead is positioned from the exterior surface of the second portion by a thickness of the second portion;

at least the thickness of the second portion is

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.233

constructed from material having a second conductivity; and

the second conductivity is defined such that the second electrical signal is not able to be transmitted through material having the second conductivity over a distance larger than the thickness of the second portion.

35. (Previously Presented) The electronic device of claim 34, wherein the first lead and the second lead are positioned apart from one another at a distance larger than the thickness of the second portion by material having the second conductivity.

36. (Previously Presented) The electronic device of claim 29, wherein:

the enclosure further comprises at least one pocket underneath the exterior surface of the enclosure; and

at least one of the first lead and the second lead is placed within the at least one pocket.

37. (Cancelled)

38. (Cancelled)

39. (Previously Presented) The electronic device of claim 29, further comprising:

a display, wherein the enclosure supports the display, and wherein at least a portion of the exterior surface of the enclosure forms at least a portion of an exterior surface of the electronic device behind the display; and

a third lead embedded with the display, wherein the third lead is configured to detect a third electrical signal of the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.234

user's cardiac signal via the user's contact with at least one of the third lead and the display.

40. (Previously Presented) An electronic device for detecting a user's cardiac signal, comprising:

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the electronic device; and

a second lead embedded in a second portion of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the electronic device; and

a processor coupled to the heart sensor and configured to process the first and second electrical signals of the user's cardiac signal, wherein:

the first portion of the electronic device comprises an enclosure of the electronic device; and

the second portion of the electronic device comprises a display screen exposed to the user through an opening in the enclosure of the electronic device.

41. (Cancelled)

42. (Previously Presented) The electronic device of claim 40, wherein:

the first portion of the electronic device comprises a

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.235

bezel of the enclosure;

the electronic device further comprises a non-conductive component positioned between the bezel and the display screen for electrically isolating the first portion of the electronic device from the second portion of the electronic device.

43. (Cancelled)

44. (New) The electronic device of claim 29, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second portion of the enclosure.

45. (New) The electronic device of claim 29, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

46. (New) The electronic device of claim 40, wherein the first lead is configured to detect the first electrical signal of the user's cardiac signal via the user's contact with the first lead.

47. (New) The electronic device of claim 46, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

48. (New) The electronic device of claim 46, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second portion of the electronic device.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.236

49. (New) The electronic device of claim 40, wherein the first lead is configured to detect the first electrical signal of the user's cardiac signal via the user's contact with the first portion of the electronic device.

50. (New) The electronic device of claim 49, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

51. (New) The electronic device of claim 49, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second portion of the electronic device.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.237

REMARKS

Introduction

Claims 1-23, 37, 38, 41, and 43 have been cancelled without prejudice. Applicants hereby reserve the right to pursue the subject matter of one or more of cancelled claims in one or more continuation applications. Claims 24-28 have been withdrawn without prejudice. Claims 44-51 have been added. Claims 29-36, 39, 40, and 42 are also currently pending in the above-identified patent application. No new subject matter has been introduced and all amendments are fully supported by the application as originally filed.

Claims 29-32 and 36 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Gilles et al. U.S. Patent No. 4,635,646 (hereinafter "Gilles").

Claims 33-35, 39, 40, and 42 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Gilles.

A one-month extension of time in which to respond to the Final Office Action mailed March 2, 2016 is respectfully requested. The required fees are being paid by credit card, but the Director is authorized to charge any underpayment or to credit any overpayment to Deposit Account No. 50-6007.

Reconsideration and allowance of this application in light of the following remarks is hereby respectfully requested.

The Rejections Under 35 U.S.C. § 102(b)

Claims 29-32 and 36 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Gilles. These rejections are respectfully traversed.

Applicants' independent claim 29 defines an electronic device for detecting a user's cardiac signal, including an enclosure, a heart sensor configured to detect the user's cardiac signal, and a processor coupled to the heart sensor. The heart sensor includes a

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.238

first lead embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure includes an exterior surface of the first portion, wherein the first lead is positioned underneath the exterior surface of the first portion, and wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with the exterior surface of the first portion of the enclosure. The heart sensor also includes a second lead embedded in a second portion of the enclosure, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the enclosure. The processor is configured to receive and process the detected cardiac signal.

For example, "[h]eart sensor 112 can include one or more leads connected to the exterior of the electronic device such that the user may contact one or more of the leads to provide an electrical signal associated with the user's heart to heart sensor 112," and "[t]he cardiac signals detected by the heart sensor leads can be coupled to a processor incorporated in heart sensor 112, or instead provided to processor 102," where "[t]he processor may then analyze the received signals and generate, from the received signals, one or more characteristic quantities of the user's heartbeat or heart rate for authentication" (applicants' specification, paragraph [0033]). The "size and location of the leads can be selected to ensure that sufficient contact is made between the user (e.g., the user's hand or finger) and the leads for cardiac signals to be detected," where "each lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing" or "an entire portion of the electronic device enclosure (e.g., a portion of a bezel or housing) can serve as a lead for the heart sensor," and the "pad or extended area can then be coupled to a wire or other connector for providing

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.239

cardiac signals to a processor for processing" (applicants' specification, paragraph [0034]), such as leads 322 and 324 of FIG. 3. As a specific example, with respect to applicants' FIG. 4B, an enclosure of electronic device 450 may include a bezel 460, where, "[i]f the electrical conductivity and size of bezel 460, and the strength or characteristics of the cardiac signal provided by the user and detected by the heart sensor are adapted such that the signal can be transmitted along short distances in bezel 460, lead 472 of the heart sensor can be positioned against the back surface of bezel 460," or "lead 472 can be placed within the thickness of bezel 460 (e.g., in a pocket within the bezel wall), but underneath the outer surface of the bezel," where a "short thickness of bezel 460 can allow electrical signals to propagate from the user to the outer surface of bezel 460, through bezel 460, and into lead 472, which may in turn transmit the signals to a processor using connector 474" (applicants' specification, paragraph [0047]).

Gilles is directed towards heart monitoring apparatus. Gilles' FIG. 5 shows apparatus including an auxiliary device 9 with a male coupling 11 on one face for coupling to a case 3, and a female coupling 12 on another face for coupling to auxiliary electrode 7. Auxiliary device 9 is connected to several other auxiliary electrodes 13, 14, and 15 which adhere to the patient's bust in pre-determined positions via wires, as shown in Gilles' FIG. 8.

Nowhere does Gilles show or suggest an electronic device with an enclosure and a heart sensor with a first lead embedded in a first portion of the enclosure and a second lead embedded in a second portion of the enclosure, where "an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first lead is positioned underneath the exterior surface of the first portion, and wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.240

with the exterior surface of the first portion of the enclosure," as required by applicants' independent claim 29. That is, nowhere does Gilles show or suggest any electrode embedded in any portion of case 3 / auxiliary device 9, let alone show or suggest a first electrode embedded in a first portion of case 3 / auxiliary device 9 and a second electrode embedded in a second portion of case 3 / auxiliary device 9. Instead, each one of auxiliary electrodes 13, 14, and 15 of Gilles is distinct and independent from case 3 / auxiliary device 9 and is remotely coupled to case 3 / auxiliary device 9 via one or more wires of Gilles' FIG. 8.

On pages 2 and 3 of the Office Action, the Examiner attempts to equate the wire connecting electrode 13 to case 3 / auxiliary device 9 with the first lead of applicants' independent claim 29 and to equate the wire connecting electrode 14 to case 3 / auxiliary device 9 with the second lead of applicants' independent claim 29. However, applicants' independent claim 29 requires its first lead to be configured to "detect a first electrical signal of [a] user's cardiac signal via the user's contact with [an] exterior surface of [a] first portion of [an] enclosure [in which the first lead is embedded]," and nowhere does Gilles show or suggest that the wire connecting electrode 13 to case 3 / auxiliary device 9 is configured to detect an electrical signal of a user's cardiac signal via the user's contact with an exterior surface of case 3 / auxiliary device 9. Instead, electrode 13 is only configured to detect an electrical signal of a user's cardiac signal via the user's contact with electrode 13, which is clearly distinct from and not embedded in case 3 / auxiliary device 9.

For at least these reasons, applicants respectfully submit that applicants' independent claim 29 and all claims dependent therefrom, including claims 30-36, 39, 44, and 45, are allowable over Gilles. Therefore, applicants respectfully request that the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.241

rejections of claims 29-32 and 36 under 35 U.S.C. § 102(b) with respect to Gilles be withdrawn.

The Rejections Under 35 U.S.C. § 103(a)

Claims 33-35 and 39

Claims 33-35 and 39 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Gilles. Applicants respectfully submit that each one of claims 33-35 and 39, which depends from applicants' independent claim 29, is allowable over Gilles for at least some of the same reasons as applicants' independent claim 39 is allowable over Gilles. Therefore, applicants respectfully request that the rejections of claims 33-35 and 39 under 35 U.S.C. § 103(a) with respect to Gilles be withdrawn be withdrawn.

Claims 40 and 42

Claims 40 and 42 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Gilles. These rejections are respectfully traversed.

Applicants' independent claim 40 defines an electronic device for detecting a user's cardiac signal, including a heart sensor configured to detect the user's cardiac signal and a processor coupled to the heart sensor. The heart sensor includes a first lead embedded in a first portion of the electronic device, wherein the first portion of the electronic device comprises an enclosure of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the electronic device. The heart sensor also includes a second lead embedded in a second portion of the electronic device, wherein the second portion of the electronic device comprises a display screen exposed to the user through an opening in the enclosure of the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.242

electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the electronic device. The processor is configured to process the first and second electrical signals of the user's cardiac signal.

For example, as shown in applicants' FIG. 3, "electronic device 300 can include additional lead 326 embedded in or behind display 302," where "[l]ead 326 can be operative to detect a user's heart activity as the user moves a finger across display 302," and, "[u]sing lead 326, the electronic device can detect an electrical signal from a different portion of the user's body (e.g., leads 322 and 324 detect signals through a first hand, and lead 326 detects signals through the second hand), which can provide the processor with additional information for determining characteristics of the user's cardiac activity" (applicants' specification, paragraph [0043]).

Gilles is directed towards heart monitoring apparatus. Gilles' FIG. 5 shows apparatus including an auxiliary device 9 with a male coupling 11 on one face for coupling to a case 3, and a female coupling 12 on another face for coupling to auxiliary electrode 7. Auxiliary device 9 is connected to several other auxiliary electrodes 13, 14, and 15 which adhere to the patient's bust in pre-determined positions via wires, as shown in Gilles' FIG. 8.

Nowhere does Gilles show or suggest an electronic device with a heart sensor that includes "a first lead embedded in a first portion of the electronic device, wherein the first portion of the electronic device comprises an enclosure of the electronic device" as well as "a second lead embedded in a second portion of the electronic device, wherein the second portion of the electronic device comprises a display screen exposed to the user through an opening in [an] enclosure of the electronic device, wherein the second lead is

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.243

configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the second portion of the electronic device," as required by applicants' independent claim 40. That is, nowhere does Gilles show or suggest any electrode embedded in any enclosure portion of case 3 / auxiliary device 9, let alone show or suggest a first electrode embedded in an enclosure of case 3 / auxiliary device 9 and a second electrode embedded in a display screen exposed to a user through an opening in such an enclosure of case 3 / auxiliary device 9. Instead, each one of auxiliary electrodes 13, 14, and 15 of Gilles is distinct and independent from case 3 / auxiliary device 9 and is remotely coupled to case 3 / auxiliary device 9 via one or more wires of Gilles' FIG. 8. Assuming, *arguendo*, that Gilles' auxiliary electrode 7 as coupled to case 3 / auxiliary device 9 may be equated with a first lead embedded in an enclosure of an electronic device, which applicants do not accept, nowhere does Gilles show or suggest any other electrode that may be embedded in case 3 / auxiliary device 9, let alone embedded in display 24 as enclosed within case 3. In fact, each one of all other electrodes 13, 14, and 15 of Gilles' FIG. 8 is disclosed as being positioned at different positions along the user's body distanced via wires from the position at which case 3 / auxiliary device 9 / auxiliary electrode 7 is positioned.

For at least these reasons, applicants respectfully submit that applicants' independent claim 40 and all claims dependent therefrom, including claims 42 and 46-51, are allowable over Gilles. Therefore, applicants respectfully request that the rejection of claims 40 and 42 under 35 U.S.C. § 103(a) with respect to Gilles be withdrawn.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.244

Conclusion

In view of the foregoing, applicants respectfully submit that claims 29-36, 39, 40, 42, and 44-51 are allowable. This application is therefore in condition for allowance. Reconsideration and prompt allowance of this application are respectfully requested.

Respectfully submitted,

Date: June 30, 2016

/Jeffrey C. Aldridge/
Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
154 Grand Street
New York, New York 10013
Tel.: (347) 470-6620

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.245

Electronic Patent Application Fee Transmittal

Application Number:	14136658
Filing Date:	20-Dec-2013
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Attorney Docket Number:	P7276USC1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.246

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	1251	1	200	200
Miscellaneous:				
			Total in USD ($)	**200**

Electronic Acknowledgement Receipt

EFS ID:	26225268
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Filer Authorized By:	Jeffrey Charles Aldridge
Attorney Docket Number:	P7276USC1
Receipt Date:	30-JUN-2016
Filing Date:	20-DEC-2013
Time Stamp:	14:02:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$200
RAM confirmation Number	14879
Deposit Account	506007
Authorized User	ALDRIDGE, JEFFREY

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.248

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2016-06-30_P7276USC1-Resp-Final.pdf	96728 0144f4c87c232850fffe749b2e94307910b84a70	yes	16

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	8
	Applicant Arguments/Remarks Made in an Amendment	9	16

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30800 a4554b153ef567ed6cb9b6276e2b77f95869eaa4	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	127528		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Patent Application Fee Transmittal

Application Number:	14136658
Filing Date:	20-Dec-2013
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Attorney Docket Number:	P7276USC1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in Excess of 20	1202	4	80	320
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.251

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**320**

Electronic Acknowledgement Receipt

EFS ID:	26225359
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Filer Authorized By:	Jeffrey Charles Aldridge
Attorney Docket Number:	P7276USC1
Receipt Date:	30-JUN-2016
Filing Date:	20-DEC-2013
Time Stamp:	14:05:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$320
RAM confirmation Number	14933
Deposit Account	506007
Authorized User	ALDRIDGE, JEFFREY

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.253

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	30420 daf8bfb904610a70c9b46d6579d61606e59e72d9	no	2

Warnings:

Information:

Total Files Size (in bytes):	30420

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/136,658	Filing Date 12/20/2013	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)		
	06/30/2016	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 24	Minus	** 20	= 4	X $80 =	320
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	320

		(Column 1)		(Column 2)	(Column 3)		
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DEBORAH POLLARD/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

111349 7590 08/10/2016

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER
ALTER MORSCHAUSER, ALYSSA MARGO

ART UNIT	PAPER NUMBER
3762	

NOTIFICATION DATE	DELIVERY MODE
08/10/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@vcaiplaw.com
jaldridge@vcaiplaw.com
avancourt@vcaiplaw.com

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.256

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 14/136,658	**Applicant(s)** LIN ET AL.	
	Examiner Alyssa M. Alter	**Art Unit** 3762	**AIA (First Inventor to File) Status** No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 30 June 2016 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance;

(2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☒ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☐ For purposes of appeal, the proposed amendment(s): (a) ☐ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.

13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____

14. ☐ Other: _____.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: .
Claim(s) objected to: .
Claim(s) rejected: 29-36,39,40 and 42.
Claim(s) withdrawn from consideration: .

/Alyssa M Alter/
Primary Examiner

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.257

Continuation of 3. NOTE: Claims 44-51 were added without cancelling a corresponding number of finally rejection of claims .

Continuation of 12. does NOT place the application in condition for allowance because: The propsed amendments will not be entered since they present additional claims (claims 44-51) without canceling a corresponding number of finally rejected claims. Additionally, the Applicant's arguments that Gilles fails to disclose a first and second lead is unpersusaive. The lead(s) of Gilles communicate Asensed signals and thus are "configured to detect" electrical signals. As such, for these reasons, as well as the ones previously made of record, the claims remain rejected.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.258

PATENTS
P7276USC1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658 Confirmation No.: 2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschauser

New York, New York 10013
June 30, 2016

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

REPLY TO FINAL OFFICE ACTION

Sir:

This is in response to the Final Office Action mailed March 2, 2016 (hereinafter "the Office Action"). Applicants hereby respond as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper; and

Remarks begin on page 9 of this paper.

DO NOT ENTER: /A.M.A/

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	14/136,658	Filing Date	2013-12-20	Docket Number (if applicable)	P7276USC1	Art Unit	3762
First Named Inventor	Gloria Lin			Examiner Name	Alyssa Margo Alter Morschauser		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on .....
- ☐ Other .....

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other .....

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months ..... (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other .....

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 506007

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
☐ Applicant Signature

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.260

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Jeffrey C. Aldridge/	Date (YYYY-MM-DD)	2016-09-02
Name	Jeffrey C. Aldridge	Registration Number	51390

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.261

PATENTS
P7276USC1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658 Confirmation No.: 2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschauser

New York, New York 10013
September 2, 2016

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

REPLY TO FINAL OFFICE ACTION

Sir:

This is in response to the Final Office Action mailed March 2, 2016 (hereinafter "the Office Action"). Applicants hereby respond as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper; and

Remarks begin on page 10 of this paper.

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. - 23. (Cancelled)

24. (Withdrawn) An electronic device comprising:

a bezel, wherein an outer surface of at least a portion of the bezel comprises a first visual characteristic; and

a heart sensor coupled to the at least a portion of the bezel and operative to detect a user's cardiac signal, wherein an outer surface of the heart sensor comprises a second visual characteristic that matches the first visual characteristic.

25. (Withdrawn) The electronic device of claim 24, wherein each of the outer surface of the at least a portion of the bezel and the outer surface of the heart sensor comprises a portion of an outer surface of the electronic device.

26. (Withdrawn) The electronic device of claim 24, wherein:

the outer surface of the at least a portion of the bezel comprises a first finish; and

the outer surface of the heart sensor comprises a second finish that matches the first finish.

27. (Withdrawn) The electronic device of claim 24, wherein the outer surface of the heart sensor comprises a conductive coating that provides the second visual characteristic.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.263

28. (Withdrawn) The electronic device of claim 24, wherein each of the first visual characteristic and the second visual characteristic comprises at least one of:

a particular color;

a particular tone; and

a particular reflectivity.

29. (Currently Amended) An electronic device for detecting a user's cardiac signal, comprising:

an enclosure;

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead comprising a first pad that is embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first ~~lead~~ pad is positioned underneath the exterior surface of the first portion, and wherein the first ~~lead~~ pad is configured to detect a first electrical signal of the user's cardiac signal via the user's skin's contact with the exterior surface of the first portion of the enclosure; and

a second lead comprising a second pad that is embedded in a second portion of the enclosure, wherein the second ~~lead~~ pad is configured to detect a second electrical signal of the user's cardiac signal via the user's skin's contact with at least one of the second ~~lead~~ pad and the second portion of the enclosure; and

a processor coupled to the heart sensor and configured to receive and process the detected cardiac signal, wherein the first lead further comprises a first connector coupled to the first pad and configured to provide the first electrical signal detected by the first pad to the processor, and wherein the second lead further comprises a second connector coupled to the second pad and configured

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.264

to provide the second electrical signal detected by the second pad to the processor.

30. (Previously Presented) The electronic device of claim 29, wherein the first portion and the second portion are located on opposite sides of the electronic device.

31. (Previously Presented) The electronic device of claim 29, wherein the first portion is electrically isolated from the second portion.

32. (Currently Amended) The electronic device of claim 29, wherein:

the first portion is separated from the second portion by a third portion of the enclosure;

at least the third portion is constructed from a material having a first conductivity; and

the first conductivity is insufficient to transmit the first electrical signal from the first ~~lead~~ pad to the second ~~lead~~ pad via the third portion.

33. (Currently Amended) The electronic device of claim 32, wherein:

the material having the first conductivity comprises one of aluminum and steel; and

the second ~~lead~~ pad is constructed from a silver based compound.

34. (Currently Amended) The electronic device of claim 32, wherein:

the exterior surface of the enclosure further

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.265

comprises an exterior surface of the second portion;

the second ~~lead~~ pad is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the exterior surface of the second portion;

the second ~~lead~~ pad is positioned from the exterior surface of the second portion by a thickness of the second portion;

at least the thickness of the second portion is constructed from material having a second conductivity; and

the second conductivity is defined such that the second electrical signal is not able to be transmitted through material having the second conductivity over a distance larger than the thickness of the second portion.

35. (Currently Amended) The electronic device of claim 34, wherein the first ~~lead~~ pad and the second ~~lead~~ pad are positioned apart from one another at a distance larger than the thickness of the second portion by material having the second conductivity.

36. (Currently Amended) The electronic device of claim 29, wherein:

the enclosure further comprises at least one pocket underneath the exterior surface of the enclosure; and

at least one of the first ~~lead~~ pad and the second ~~lead~~ pad is placed within the at least one pocket.

37. (Cancelled)

38. (Cancelled)

39. (Previously Presented) The electronic device of claim 29, further comprising:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.266

a display, wherein the enclosure supports the display, and wherein at least a portion of the exterior surface of the enclosure forms at least a portion of an exterior surface of the electronic device behind the display; and

a third lead embedded with the display, wherein the third lead is configured to detect a third electrical signal of the user's cardiac signal via the user's contact with at least one of the third lead and the display.

40. (Currently Amended) An electronic device for detecting a user's cardiac signal, comprising:

an enclosure;

a display screen exposed to the user through an opening in the enclosure;

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the enclosure of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the enclosure of the electronic device; and

a second lead embedded in ~~a second portion~~ the display screen of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the ~~second portion~~ display screen of the electronic device; and

a processor coupled to the heart sensor and configured to process the first and second electrical signals of the user's cardiac signal~~, wherein:~~

~~the first portion of the electronic device comprises an enclosure of the electronic device; and~~

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.267

~~the second portion of the electronic device comprises a display screen exposed to the user through an opening in the enclosure of the electronic device~~.

41. (Cancelled)

42. (Currently Amended) The electronic device of claim 40, wherein:

the first portion of the electronic device comprises a bezel of the enclosure;

the electronic device further comprises a non-conductive component positioned between the bezel and the display screen for electrically isolating the first ~~portion of the electronic device~~ lead from the second ~~portion of the electronic device~~ lead.

43. (Cancelled)

44. (New) The electronic device of claim 29, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second portion of the enclosure.

45. (New) The electronic device of claim 29, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

46. (New) The electronic device of claim 40, wherein the first lead is configured to detect the first electrical signal of the user's cardiac signal via the user's contact with the first lead.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.268

47. (New) The electronic device of claim 46, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

48. (New) The electronic device of claim 46, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the display screen.

49. (New) The electronic device of claim 40, wherein the first lead is configured to detect the first electrical signal of the user's cardiac signal via the user's contact with the first portion of the enclosure.

50. (New) The electronic device of claim 49, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

51. (New) The electronic device of claim 49, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the display screen.

52. (New) The electronic device of claim 29, wherein the first portion of the enclosure is a bezel.

53. (New) The electronic device of claim 29, wherein the second portion of the enclosure is a bezel.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.269

54. (New) The electronic device of claim 29, wherein an interior surface of the enclosure comprises an interior surface of the first portion, wherein the first pad is positioned on the interior surface of the first portion.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.270

REMARKS

Introduction

Claims 1-23, 37, 38, 41, and 43 have been cancelled without prejudice. Applicants hereby reserve the right to pursue the subject matter of one or more of cancelled claims in one or more continuation applications. Claims 24-28 have been withdrawn without prejudice. Claims 44-54 have been added. Claims 29, 32-36, 40, and 42 have been amended. Claims 30, 31, and 39 are also currently pending in the above-identified patent application. No new subject matter has been introduced and all amendments are fully supported by the application as originally filed.

Claims 29-32 and 36 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Gilles et al. U.S. Patent No. 4,635,646 (hereinafter "Gilles").

Claims 33-35, 39, 40, and 42 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Gilles.

A three-month extension of time in which to respond to the Final Office Action mailed March 2, 2016 is respectfully requested. It is noted that a one-month extension was previously requested and paid for with the Reply filed June 30, 2016. The required fees are being paid by credit card, but the Director is authorized to charge any underpayment or to credit any overpayment to Deposit Account No. 50-6007.

Reconsideration and allowance of this application in light of the following remarks is hereby respectfully requested.

Summary of Examiner Interview

Applicants would like to thank the Examiner for the many courtesies extended during the interview of August 18, 2016 with the undersigned and the interview of August 23, 2016 with the undersigned (herein after "the Examiner Interviews"). During the interviews, the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.271

currently amended claims were discussed in light of the cited references.

The Rejections Under 35 U.S.C. § 102(b)

Claims 29-32 and 36 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Gilles. These rejections are respectfully traversed.

Applicants' amended independent claim 29 defines an electronic device for detecting a user's cardiac signal, including an enclosure, a heart sensor configured to detect the user's cardiac signal, and a processor coupled to the heart sensor. The heart sensor includes a first lead including a first pad that is embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure includes an exterior surface of the first portion, wherein the first pad is positioned underneath the exterior surface of the first portion, and wherein the first pad is configured to detect a first electrical signal of the user's cardiac signal via the user's skin's contact with the exterior surface of the first portion of the enclosure. The heart sensor also includes a second lead including a second pad that is embedded in a second portion of the enclosure, wherein the second pad is configured to detect a second electrical signal of the user's cardiac signal via the user's skin's contact with at least one of the second pad and the second portion of the enclosure. The processor is configured to receive and process the detected cardiac signal, wherein the first lead further includes a first connector coupled to the first pad and configured to provide the first electrical signal detected by the first pad to the processor, and wherein the second lead further includes a second connector coupled to the second pad and configured to provide the second electrical signal detected by the second pad to the processor.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.272

For example, "[h]eart sensor 112 can include one or more leads connected to the exterior of the electronic device such that the user may contact one or more of the leads to provide an electrical signal associated with the user's heart to heart sensor 112," and "[t]he cardiac signals detected by the heart sensor leads can be coupled to a processor incorporated in heart sensor 112, or instead provided to processor 102," where "[t]he processor may then analyze the received signals and generate, from the received signals, one or more characteristic quantities of the user's heartbeat or heart rate for authentication" (applicants' specification, paragraph [0033]). The "size and location of the leads can be selected to ensure that sufficient contact is made between the user (e.g., the user's hand or finger) and the leads for cardiac signals to be detected," where "each lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing" or "an entire portion of the electronic device enclosure (e.g., a portion of a bezel or housing) can serve as a lead for the heart sensor," and the "pad or extended area can then be coupled to a wire or other connector for providing cardiac signals to a processor for processing" (applicants' specification, paragraph [0034]), such as leads 322 and 324 of FIG. 3. As a specific example, with respect to applicants' FIG. 4B, an enclosure of electronic device 450 may include a bezel 460, where, "[i]f the electrical conductivity and size of bezel 460, and the strength or characteristics of the cardiac signal provided by the user and detected by the heart sensor are adapted such that the signal can be transmitted along short distances in bezel 460, lead 472 of the heart sensor can be positioned against the back surface of bezel 460," or "lead 472 can be placed within the thickness of bezel 460 (e.g., in a pocket within the bezel wall), but underneath the outer surface of the bezel," where a "short thickness

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.273

of bezel 460 can allow electrical signals to propagate from the user to the outer surface of bezel 460, through bezel 460, and into lead 472, which may in turn transmit the signals to a processor using connector 474" (applicants' specification, paragraph [0047]).

Gilles is directed towards heart monitoring apparatus. Gilles' FIG. 5 shows apparatus including an auxiliary device 9 with a male coupling 11 on one face for coupling to a case 3, and a female coupling 12 on another face for coupling to auxiliary electrode 7. Auxiliary device 9 is connected to several other auxiliary electrodes 13, 14, and 15 which adhere to the patient's bust in pre-determined positions via wires, as shown in Gilles' FIG. 8.

Nowhere does Gilles show or suggest an electronic device with an enclosure and a heart sensor with a first pad embedded in a first portion of the enclosure and a second pad embedded in a second portion of the enclosure, where "an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first pad is positioned underneath the exterior surface of the first portion, and wherein the first pad is configured to detect a first electrical signal of the user's cardiac signal via the user's skin's contact with the exterior surface of the first portion of the enclosure," as required by applicants' amended independent claim 29. That is, nowhere does Gilles show or suggest any electrode embedded in any portion of case 3 / auxiliary device 9, let alone show or suggest a first electrode embedded in a first portion of case 3 / auxiliary device 9 and a second electrode embedded in a second portion of case 3 / auxiliary device 9. Instead, each one of auxiliary electrodes 13, 14, and 15 of Gilles is distinct and independent from case 3 / auxiliary device 9 and is remotely coupled to case 3 / auxiliary device 9 via one or more wires of Gilles' FIG. 8.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.274

On pages 2 and 3 of the Office Action, the Examiner attempts to equate the wire connecting electrode 13 to case 3 / auxiliary device 9 with the first lead of applicants' independent claim 29 and to equate the wire connecting electrode 14 to case 3 / auxiliary device 9 with the second lead of applicants' independent claim 29. However, applicants' amended independent claim 29 requires its first lead to include a first pad configured to "detect a first electrical signal of [a] user's cardiac signal via the user's skin's contact with [an] exterior surface of [a] first portion of [an] enclosure [in which the first pad is embedded]," and nowhere does Gilles show or suggest that the wire connecting electrode 13 to case 3 / auxiliary device 9 is configured to detect an electrical signal of a user's cardiac signal via the user's skin's contact with an exterior surface of case 3 / auxiliary device 9. Instead, Gilles' electrode 13 is only configured to detect an electrical signal of a user's cardiac signal via the user's contact with electrode 13, which is clearly distinct from and not embedded in case 3 / auxiliary device 9.

For at least these reasons, applicants respectfully submit that applicants' amended independent claim 29 and all claims dependent therefrom, including claims 30-36, 39, 44, 45, and 52-54, are allowable over Gilles. Therefore, applicants respectfully request that the rejections of claims 29-32 and 36 under 35 U.S.C. § 102(b) with respect to Gilles be withdrawn.

The Rejections Under 35 U.S.C. § 103(a)

Claims 33-35 and 39

Claims 33-35 and 39 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Gilles. Applicants respectfully submit that each one of claims 33-35 and 39, which depends from applicants' amended independent claim 29, is allowable

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.275

over Gilles for at least some of the same reasons as applicants' amended independent claim 29 is allowable over Gilles. Therefore, applicants respectfully request that the rejections of claims 33-35 and 39 under 35 U.S.C. § 103(a) with respect to Gilles be withdrawn be withdrawn.

Claims 40 and 42

Claims 40 and 42 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Gilles. These rejections are respectfully traversed.

Applicants' amended independent claim 40 defines an electronic device for detecting a user's cardiac signal, including an enclosure, a display screen exposed to the user through an opening in the enclosure, a heart sensor configured to detect the user's cardiac signal, and a processor coupled to the heart sensor. The heart sensor includes a first lead embedded in a first portion of the enclosure of the electronic device, wherein the first portion of the electronic device comprises an enclosure of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the enclosure of the electronic device. The heart sensor also includes a second lead embedded in the display screen of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the display screen of the electronic device. The processor is configured to process the first and second electrical signals of the user's cardiac signal.

For example, as shown in applicants' FIG. 3, "electronic device 300 can include additional lead 326 embedded in or behind display 302," where "[l]ead 326 can be operative to detect a user's

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.276

heart activity as the user moves a finger across display 302," and, "[u]sing lead 326, the electronic device can detect an electrical signal from a different portion of the user's body (e.g., leads 322 and 324 detect signals through a first hand, and lead 326 detects signals through the second hand), which can provide the processor with additional information for determining characteristics of the user's cardiac activity" (applicants' specification, paragraph [0043]).

Gilles is directed towards heart monitoring apparatus. Gilles' FIG. 5 shows apparatus including an auxiliary device 9 with a male coupling 11 on one face for coupling to a case 3, and a female coupling 12 on another face for coupling to auxiliary electrode 7. Auxiliary device 9 is connected to several other auxiliary electrodes 13, 14, and 15 which adhere to the patient's bust in pre-determined positions via wires, as shown in Gilles' FIG. 8.

Nowhere does Gilles show or suggest an electronic device with a heart sensor that includes "a first lead embedded in a first portion of [an] enclosure of the electronic device," as well as "a second lead embedded in [a] display screen [exposed to the user through an opening in the enclosure] of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the display screen of the electronic device," as required by applicants' amended independent claim 40. That is, nowhere does Gilles show or suggest any electrode embedded in any enclosure portion of case 3 / auxiliary device 9, let alone show or suggest a first electrode embedded in an enclosure of case 3 / auxiliary device 9 and a second electrode embedded in a display screen exposed to a user through an opening in such an enclosure of case 3 / auxiliary device 9. Instead, each one of auxiliary electrodes 13, 14, and 15 of Gilles is distinct and independent from

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.277

case 3 / auxiliary device 9 and is remotely coupled to case 3 / auxiliary device 9 via one or more wires of Gilles' FIG. 8. Assuming, *arguendo*, that Gilles' auxiliary electrode 7 as coupled to case 3 / auxiliary device 9 may be equated with a first lead embedded in an enclosure of an electronic device, which applicants do not accept, nowhere does Gilles show or suggest any other electrode that may be embedded in case 3 / auxiliary device 9, let alone embedded in Gilles' display 24 as enclosed within case 3. In fact, each one of all other electrodes 13, 14, and 15 of Gilles' FIG. 8 is disclosed as being positioned at different positions along the user's body distanced via wires from the position at which case 3 / auxiliary device 9 / auxiliary electrode 7 / display 24 is positioned.

For at least these reasons, applicants respectfully submit that applicants' amended independent claim 40 and all claims dependent therefrom, including claims 42 and 46-51, are allowable over Gilles. Therefore, applicants respectfully request that the rejection of claims 40 and 42 under 35 U.S.C. § 103(a) with respect to Gilles be withdrawn.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.278

Conclusion

In view of the foregoing, applicants respectfully submit that claims 29-36, 39, 40, 42, and 44-54 are allowable. This application is therefore in condition for allowance. Reconsideration and prompt allowance of this application are respectfully requested.

Respectfully submitted,

Date: September 2, 2016

/Jeffrey C. Aldridge/

Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
Van Court & Aldridge LLP
Customer No. 111349
154 Grand Street
New York, New York 10013
Tel.: (347) 470-6620

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.279

Doc Code: PET.OP
Document Description: Petition for Review by the Office of Petitions

PTO/SB/64 (12-13)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)

Docket Number (Optional)
P7276USC1

First named inventor: Gloria Lin

Application No.: 14/136,658 Art Unit: 3762

Filed: December 20, 2013 Examiner: Alyssa Margo Alter Morschauser

Title: SEAMLESSLY EMBEDDED HEART RATE MONITOR

Attention: Office of Petitions
Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.

The above-identified application became abandoned for failure to file a timely and proper reply to a notice or action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration date of the period set for reply in the Office notice or action plus any extensions of time actually obtained.

APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION.

NOTE: A grantable petition requires the following items:

(1) Petition fee;
(2) Reply and/or issue fee;
(3) Terminal disclaimer with disclaimer fee – required for all utility and plant applications filed before June 8, 1995, and for all design applications; and
(4) Statement that the entire delay was unintentional.

1. **Petition fee**

☐ Small entity fee $ _____ (37 CFR 1.17(m)). Applicant asserts small entity status. See 37 CFR 1.27.

☑ Undiscounted fee $ 1,700 (37.CFR.1.17(m)).

2. **Reply and/or fee**

A The reply and/or fee to the above-noted Office notice or action in the form of

Request for Continued Examination; Reply to Final Office Action (identify the type of reply):

☐ has been filed previously on _____.

☑ is enclosed herewith.

B The issue fee and publication fee (if applicable) of $ _____

☐ has been paid previously on _____.

☐ is enclosed herewith.

This collection of information is required by 37 CFR 1.137(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 1 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PET.OP
Document Description: Petition for Review by the Office of Petitions

PTO/SB/64 (12-13)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)

3. **Terminal disclaimer with disclaimer fee**

☐ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.

☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of $ _____) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. **STATEMENT:** The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(a) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(a) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

/Jeffrey C. Aldridge/
Signature

September 4, 2016
Date

Jeffrey C. Aldridge
Typed or Printed Name

51,390
Registration Number, if applicable

154 Grand Street
Address

(347) 470-6620
Telephone Number

New York, New York 10013
Address

Enclosures:

☑ Fee Payment
☑ Reply
☐ Terminal Disclaimer Form
☐ Additional sheet(s) containing statements establishing unintentional delay
☑ Other: Request for Continued Examination

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

☐ Deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

☑ Transmitted by EFS-Web or facsimile on the date shown below to the United States Patent and Trademark Office at (571) 273-8300.

September 4, 2016
Date

/Jeffrey C. Aldridge/
Signature

Jeffrey C. Aldridge
Typed or printed name of person signing certificate

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	14136658
Filing Date:	20-Dec-2013
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Filer:	Andrew Michael Van Court/Daniel Harris
Attorney Docket Number:	P7276USC1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in Excess of 20	1202	3	80	240
Miscellaneous-Filing:				
Petition:				
Pet. Revive Abandon App, Delay Pymt-Resp	1453	1	1700	1700
Patent-Appeals-and-Interference:				

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.283

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with $200 paid	1253	1	1200	1200
Miscellaneous:				
RCE- 1st Request	1801	1	1200	1200
		Total in USD ($)		**4340**

Electronic Acknowledgement Receipt

EFS ID:	26833279
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Andrew Michael Van Court/Daniel Harris
Filer Authorized By:	Andrew Michael Van Court
Attorney Docket Number:	P7276USC1
Receipt Date:	04-SEP-2016
Filing Date:	20-DEC-2013
Time Stamp:	21:16:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$4340
RAM confirmation Number	090616INTEFSW21202500
Deposit Account	4115
Authorized User	Rachael Jung

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.285

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2016-09-04_P7276USC1-RCE-Resp-Final-docs.pdf	4295631 39e8a8909169a16975e0990ae92f2754098add56	yes	20
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Request for Continued Examination (RCE)		1	2	
	Response After Final Action		3	3	
	Claims		4	11	
	Applicant Arguments/Remarks Made in an Amendment		12	20	
Warnings:					
Information:					
2	Petition for review by the Office of Petitions	2016-09-04_P7276USC1_Petition-Revival.pdf	275390 ec57a86c0e4e7700d895b3912743551b70e6ad1f	no	3
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	35848 95ceb6876d77035c798543f8d98906d827f3fee9	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	4606869		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt

EFS ID:	26833279
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Andrew Michael Van Court/Daniel Harris
Filer Authorized By:	Andrew Michael Van Court
Attorney Docket Number:	P7276USC1
Receipt Date:	04-SEP-2016
Filing Date:	20-DEC-2013
Time Stamp:	21:16:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$4340
RAM confirmation Number	090616INTEFSW21202500
Deposit Account	506007
Authorized User	Rachael Jung

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.288

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2016-09-04_P7276USC1-RCE-Resp-Final-docs.pdf	4295631 39e8a8909169a16975e0990ae92f2754098add56	yes	20

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Request for Continued Examination (RCE)	1	2
	Response After Final Action	3	3
	Claims	4	11
	Applicant Arguments/Remarks Made in an Amendment	12	20

Warnings:					
Information:					
2	Petition for review by the Office of Petitions	2016-09-04_P7276USC1_Petition-Revival.pdf	275390 ec57a86c0e4e7700d895b3912743551b70e6ad1f	no	3
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	35848 95ceb6876d77035c798543f8d98906d827f3fee9	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	4606869		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/136,658	Filing Date 12/20/2013	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **09/04/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 27	Minus	** 24	= 3	X $80 =	240
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	**240**

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SLIE
KIMBERLY WHITE

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.291

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

111349 7590 04/07/2017

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER
ALTER MORSCHAUSER, ALYSSA MARGO

ART UNIT	PAPER NUMBER
3762	

NOTIFICATION DATE	DELIVERY MODE
04/07/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@vcaiplaw.com
jaldridge@vcaiplaw.com
avancourt@vcaiplaw.com

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.292

Notice of Abandonment	Application No.	Applicant(s)
	14/136,658	LIN ET AL.
	Examiner	Art Unit
	Alyssa M. Alter	3762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on *02 March 2016*.
   (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
   (b) ☒ A proposed reply was received on *30 June 2016*, but it does not constitute a proper reply under 37 CFR 1.113 to the final rejection.
   (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) if this is utility or plant application, a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. Note that RCEs are not permitted in design applications.)
   (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
   (d) ☐ No reply has been received.

2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
   (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
   (b) ☐ The submitted fee of $_____ is insufficient. A balance of $_____ is due.
   The issue fee required by 37 CFR 1.18 is $_____. The publication fee, if required by 37 CFR 1.18(d), is $_____.
   (c) ☐ The issue fee and publication fee, if applicable, has not been received.

3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
   (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
   (b) ☐ No corrected drawings have been received.

4. ☐ The letter of express abandonment which is signed by the attorney or agent of record or other party authorized under 37 CFR 1.33(b). See 37 CFR 1.138(b).

5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34) upon the filing of a continuing application.

6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.

7. ☒ The reason(s) below:

A timely proper reply to the Final Rejection dated March 2, 2016 was not received prior to the 6 month date of September 2, 2016. As a result, the application was considered to be abandoned. It is noted that a Petition for Revival was filed on September 4, 2016.

	/Alyssa M Alter/ Primary Examiner Art Unit: 3762

Petitions to revive under 37 CFR 1.137, or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.293

Office of Petitions: Routing Sheet

4700

Application No. 14136658

This application is being forwarded to your office for further processing. A decision has been rendered on a petition filed in this application, as indicated below. For details of this decision, please see the document PET.OP.DEC filed on the same date as this document.

- [X] **GRANTED**
- [ ] **DISMISSED**
- [ ] **DENIED**

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.294

Office of Petitions: Decision Count Sheet

Mailing Month: 5

Application No.: 14136658



For US serial numbers: enter number only, no slashes or commas. Ex: 10123456
For PCT: enter "51+single digit of year of filing+last 5 numbers", Ex. for PCT/US05/12345, enter 51512345

Deciding Official: DIANE GOODWYN

Count (1) - Palm Credit 14136658

Decision: GRANT

FINANCE WORK NEEDED
☐ Select Check Box for YES



Decision Type: 502 - 37 CFR 1.137(b) - REVIVAL BASED ON UNINTENTI



Notes:

Count (2)

Decision: n/a

FINANCE WORK NEEDED
☐ Select Check Box for YES

Decision Type: NONE

Notes:

Count (3)

Decision: n/a

FINANCE WORK NEEDED
☐ Select Check Box for YES

Decision Type: NONE

Notes:

Initials of Approving Official (if required)

If more than 3 decisions, attach 2nd count sheet & mark this box ☐

Printed on: 5/7/2017

Office of Petitions Internal Document - Ver. 5.0

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.295

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

111349 7590 05/10/2017

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER
ALTER MORSCHAUSER, ALYSSA MARGO

ART UNIT	PAPER NUMBER
3762	

NOTIFICATION DATE	DELIVERY MODE
05/10/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@vcaiplaw.com
jaldridge@vcaiplaw.com
avancourt@vcaiplaw.com

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.296

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

: DECISION ON PETITION

In re Application of :
LIN, et al :
Application No. 14/136,658
Filed: December 20, 2013
Attorney Docket No. P7276USC1

This is a decision in response to the petition to revive an abandoned application unintentionally under the provisions of 37 CFR 1.137(a), filed September 4, 2016, for the above-identified application.

The petition is **GRANTED**.

The application became abandoned for failure to timely file a reply within the meaning of 37 CFR 1.113 to the final Office action of March 2, 2016. The proposed reply required for consideration of a petition to revive must be a Notice of Appeal (and appeal fee required by 37 CFR 41.20(b)(2), an amendment that *prima facie* places the application in condition for allowance, a Request for Continued Examination and submission (37 CFR 1.114), or the filing of a continuing application under 37 CFR 1.53(b). See MPEP 711.03(c)(III)(A)(2). An extension of time under the provisions of 37 CFR 1.136(a) for one (1) month was obtained. Accordingly, the application became abandoned on July 6, 2016. A Notice of Abandonment was mailed April 7, 2017.

The petition satisfies the requirements of 37 CFR 1.137(a) in that petitioner has supplied (1) the reply in the form of a Request for Continued Examination (RCE) and fee of $1200, and the submission required by 37 CFR 1.114; (2) the petition fee of $1700; and (3) a proper statement of unintentional delay.

Telephone inquiries concerning this decision should be directed to the undersigned at (571) 272- 6735. All other inquiries should be directed to the Technology Center at (571) 272-3700.

This application is being referred to Technology Center AU 3762 for processing of the RCE and for appropriate action by the Examiner in the normal course of business on the amendment submitted in accordance with 37 CFR 1.114.

/Diane C. Goodwyn/
Diane C. Goodwyn
Petitions Paralegal Specialist
Office of Petitions

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.297

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

111349 7590 09/14/2017

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER
ALTER MORSCHAUSER, ALYSSA MARGO

ART UNIT	PAPER NUMBER
3762	

NOTIFICATION DATE	DELIVERY MODE
09/14/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@vcaiplaw.com
jaldridge@vcaiplaw.com
avancourt@vcaiplaw.com

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.298

Office Action Summary	Application No. 14/136,658	Applicant(s) LIN ET AL.	
	Examiner Alyssa M. Alter	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4 September 2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☐ Claim(s) _____ is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☐ Claim(s) _____ is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.299

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 102

1. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

2. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 29 and 40 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Weiss (US 5,623,926).

4. As to claims 29 and 40, Weiss discloses a handheld electrocardiogram monitor enclosure with a swing arm assembly which allows for variable positioning of the sensing electrodes relative to the display, resulting in a configuration more beneficial to the desired function of the device. Furthermore, the shape of the swing arm assembly accommodates the human anatomy by allowing the sensing electrodes to contact the skin surface around curved surfaces. More specifically, the swing arm rotates with respect to the main case so that the user of the device can manipulate the viewing

angle for ease in reading the LCD display. The swing arm is held fixed in its rotational position to some degree by means of a friction clutch (col. 1, lines 24-40).

5. Additionally, Weiss discloses “the electrodes are connected to internal circuitry within the ECG monitor by means of three conductors 50, i.e., one for each electrode, which are preferably miniature coaxial cable. Slots 52 are provided in the side walls of the swing arm chassis for the coaxial cables and for input resistors 54 connected on the electrode end of each coaxial cable. The cables are routed from the resistors through the slots provided in the swing arm and then through the centers of the standoff/pivot screw assemblies, which are made hollow for this purpose. The coaxial cables are terminated in connectors 56 on a circuit board (not shown) within the ECG monitor. The coaxial cables are hidden with cover plates 58 which are preferably solvent bonded to the outside on both sides of the chassis” (col. 3, lines 14-28).

6. As to claims 30-32 and 34-36, see figures of Weiss.

7. As to claim 33, Weiss discloses aluminum material (e.g., col. 2, lines 16-19).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alyssa M. Alter whose telephone number is (571)272-4939. The examiner can normally be reached on M-F 7am to 3:30pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Niketa Patel can be reached on (571) 272-4156. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alyssa M Alter/
Primary Examiner
Art Unit 3762

8.

Notice of References Cited	Application/Control No. 14/136,658	Applicant(s)/Patent Under Reexamination LIN ET AL.	
	Examiner Alyssa M. Alter	Art Unit 3762	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
	A	US-				
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.303

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	Art Unit
	ALYSSA M ALTER	3762

CPC- SEARCHED		
Symbol	Date	Examiner
A 61 B 5/02438	6/15/2015	ama
A 61 B 5/0245	6/15/2015	ama
A 61 B 5/404	6/15/2015	ama

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
607	36	6/15/2015	ama
600	509	6/15/2015	ama

SEARCH NOTES		
Search Notes	Date	Examiner
Please see EAST search history	6/15/2015	ama
Conducted an inventor search	6/15/2015	ama
Referenced the search performed in the parent application 12/358,905	6/15/2015	ama
Conducted an updated search	2/25/2016	ama

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.304

PATENTS
P7276USC1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors	:	Gloria Lin et al.
Application No.	:	14/136,658 Confirmation No.: 2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschauser

New York, New York 10013
January 15, 2018

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

REPLY TO NON-FINAL OFFICE ACTION

Sir:

This is in response to the Non-Final Office Action mailed September 14, 2017 (hereinafter "the Office Action"). Applicant hereby responds as follows:

A Listing of Claims begins on page 2 of this paper; and

Remarks begin on page 9 of this paper.

Listing of Claims:

1. - 23. (Cancelled)

24. (Withdrawn) An electronic device comprising:

a bezel, wherein an outer surface of at least a portion of the bezel comprises a first visual characteristic; and

a heart sensor coupled to the at least a portion of the bezel and operative to detect a user's cardiac signal, wherein an outer surface of the heart sensor comprises a second visual characteristic that matches the first visual characteristic.

25. (Withdrawn) The electronic device of claim 24, wherein each of the outer surface of the at least a portion of the bezel and the outer surface of the heart sensor comprises a portion of an outer surface of the electronic device.

26. (Withdrawn) The electronic device of claim 24, wherein:

the outer surface of the at least a portion of the bezel comprises a first finish; and

the outer surface of the heart sensor comprises a second finish that matches the first finish.

27. (Withdrawn) The electronic device of claim 24, wherein the outer surface of the heart sensor comprises a conductive coating that provides the second visual characteristic.

28. (Withdrawn) The electronic device of claim 24, wherein each of the first visual characteristic and the second visual characteristic comprises at least one of:

a particular color;

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.306

a particular tone; and

a particular reflectivity.

29. (Previously Presented) An electronic device for detecting a user's cardiac signal, comprising:

an enclosure;

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead comprising a first pad that is embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first pad is positioned underneath the exterior surface of the first portion, and wherein the first pad is configured to detect a first electrical signal of the user's cardiac signal via the user's skin's contact with the exterior surface of the first portion of the enclosure; and

a second lead comprising a second pad that is embedded in a second portion of the enclosure, wherein the second pad is configured to detect a second electrical signal of the user's cardiac signal via the user's skin's contact with at least one of the second pad and the second portion of the enclosure; and

a processor coupled to the heart sensor and configured to receive and process the detected cardiac signal, wherein the first lead further comprises a first connector coupled to the first pad and configured to provide the first electrical signal detected by the first pad to the processor, and wherein the second lead further comprises a second connector coupled to the second pad and configured to provide the second electrical signal detected by the second pad to the processor.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.307

30. (Previously Presented) The electronic device of claim 29, wherein the first portion and the second portion are located on opposite sides of the electronic device.

31. (Previously Presented) The electronic device of claim 29, wherein the first portion is electrically isolated from the second portion.

32. (Previously Presented) The electronic device of claim 29, wherein:

the first portion is separated from the second portion by a third portion of the enclosure;

at least the third portion is constructed from a material having a first conductivity; and

the first conductivity is insufficient to transmit the first electrical signal from the first pad to the second pad via the third portion.

33. (Previously Presented) The electronic device of claim 32, wherein:

the material having the first conductivity comprises one of aluminum and steel; and

the second pad is constructed from a silver based compound.

34. (Previously Presented) The electronic device of claim 32, wherein:

the exterior surface of the enclosure further comprises an exterior surface of the second portion;

the second pad is configured to detect the second electrical signal of the user's cardiac signal via the user's contact

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.308

with the exterior surface of the second portion;

the second pad is positioned from the exterior surface of the second portion by a thickness of the second portion;

at least the thickness of the second portion is constructed from material having a second conductivity; and

the second conductivity is defined such that the second electrical signal is not able to be transmitted through material having the second conductivity over a distance larger than the thickness of the second portion.

35. (Previously Presented) The electronic device of claim 34, wherein the first pad and the second pad are positioned apart from one another at a distance larger than the thickness of the second portion by material having the second conductivity.

36. (Previously Presented) The electronic device of claim 29, wherein:

the enclosure further comprises at least one pocket underneath the exterior surface of the enclosure; and

at least one of the first pad and the second pad is placed within the at least one pocket.

37. (Cancelled)

38. (Cancelled)

39. (Previously Presented) The electronic device of claim 29, further comprising:

a display, wherein the enclosure supports the display, and wherein at least a portion of the exterior surface of the enclosure forms at least a portion of an exterior surface of the

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.309

electronic device behind the display; and

a third lead embedded with the display, wherein the third lead is configured to detect a third electrical signal of the user's cardiac signal via the user's contact with at least one of the third lead and the display.

40. (Previously Presented) An electronic device for detecting a user's cardiac signal, comprising:

an enclosure;

a display screen exposed to the user through an opening in the enclosure;

a heart sensor configured to detect the user's cardiac signal, the heart sensor comprising:

a first lead embedded in a first portion of the enclosure of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the enclosure of the electronic device; and

a second lead embedded in the display screen of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the display screen of the electronic device; and

a processor coupled to the heart sensor and configured to process the first and second electrical signals of the user's cardiac signal.

41. (Cancelled)

42. (Previously Presented) The electronic device of claim 40, wherein:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.310

the first portion of the electronic device comprises a bezel of the enclosure;

the electronic device further comprises a non-conductive component positioned between the bezel and the display screen for electrically isolating the first lead from the second lead.

43. (Cancelled)

44. (Previously Presented) The electronic device of claim 29, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second portion of the enclosure.

45. (Previously Presented) The electronic device of claim 29, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

46. (Previously Presented) The electronic device of claim 40, wherein the first lead is configured to detect the first electrical signal of the user's cardiac signal via the user's contact with the first lead.

47. (Previously Presented) The electronic device of claim 46, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

48. (Previously Presented) The electronic device of claim 46, wherein the second lead is configured to detect the second

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.311

electrical signal of the user's cardiac signal via the user's contact with the display screen.

49. (Previously Presented) The electronic device of claim 40, wherein the first lead is configured to detect the first electrical signal of the user's cardiac signal via the user's contact with the first portion of the enclosure.

50. (Previously Presented) The electronic device of claim 49, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the second lead.

51. (Previously Presented) The electronic device of claim 49, wherein the second lead is configured to detect the second electrical signal of the user's cardiac signal via the user's contact with the display screen.

52. (Previously Presented) The electronic device of claim 29, wherein the first portion of the enclosure is a bezel.

53. (Previously Presented) The electronic device of claim 29, wherein the second portion of the enclosure is a bezel.

54. (Previously Presented) The electronic device of claim 29, wherein an interior surface of the enclosure comprises an interior surface of the first portion, wherein the first pad is positioned on the interior surface of the first portion.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.312

REMARKS

Introduction

Claims 1-23, 37, 38, 41, and 43 have been cancelled without prejudice. Applicant hereby reserves the right to pursue the subject matter of any cancelled claims in one or more continuation applications. Claims 24-28 have been withdrawn without prejudice. Claims 29-36, 39, 40, 42, and 44-54 are also currently pending in the above-identified patent application. No new subject matter has been introduced and all amendments are fully supported by the application as originally filed.

Claims 29-36 and 40[1] have been rejected under 35 U.S.C. § 102 as allegedly being anticipated by Weiss U.S. Patent No. 5,623,926 (hereinafter "Weiss").

A one-month extension of time in which to respond to the Non-Final Office Action mailed September 14, 2017 is respectfully requested. The required fee is being paid by credit card, but the Director is authorized to charge any underpayment or to credit any overpayment to Deposit Account No. 50-6007.

Reconsideration and allowance of this application in light of the following remarks is hereby respectfully requested.

The Rejections Under 35 U.S.C. § 102

Claims 29-36

Claims 29-36 have been rejected under 35 U.S.C. § 102 as allegedly being anticipated by Weiss. These rejections are respectfully traversed.

---

[1] Applicant respectfully notes that none of applicant's claims 39, 42, and 44-54 are referenced in the Office Action. Therefore, applicant assumes that each one of applicant's claims 39, 42, and 44-54 are dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Confirmation by the Examiner of this assumption is respectfully requested.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.313

Applicant's independent claim 29 defines an electronic device for detecting a user's cardiac signal, including an enclosure, a heart sensor configured to detect the user's cardiac signal, and a processor coupled to the heart sensor. The heart sensor includes a first lead including a first pad that is embedded in a first portion of the enclosure, wherein an exterior surface of the enclosure includes an exterior surface of the first portion, wherein the first pad is positioned underneath the exterior surface of the first portion, and wherein the first pad is configured to detect a first electrical signal of the user's cardiac signal via the user's skin's contact with the exterior surface of the first portion of the enclosure. The heart sensor also includes a second lead including a second pad that is embedded in a second portion of the enclosure, wherein the second pad is configured to detect a second electrical signal of the user's cardiac signal via the user's skin's contact with at least one of the second pad and the second portion of the enclosure. The processor is configured to receive and process the detected cardiac signal, wherein the first lead further includes a first connector coupled to the first pad and configured to provide the first electrical signal detected by the first pad to the processor, and wherein the second lead further includes a second connector coupled to the second pad and configured to provide the second electrical signal detected by the second pad to the processor.

For example, "[h]eart sensor 112 can include one or more leads connected to the exterior of the electronic device such that the user may contact one or more of the leads to provide an electrical signal associated with the user's heart to heart sensor 112," and "[t]he cardiac signals detected by the heart sensor leads can be coupled to a processor incorporated in heart sensor 112, or instead provided to processor 102," where "[t]he processor may then analyze the received signals and generate, from the received

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.314

signals, one or more characteristic quantities of the user's heartbeat or heart rate for authentication" (applicant's specification, paragraph [0033]). The "size and location of the leads can be selected to ensure that sufficient contact is made between the user (e.g., the user's hand or finger) and the leads for cardiac signals to be detected," where "each lead can include a pad or extended area placed on the outer or inner surface of an electronic device bezel or housing" or "an entire portion of the electronic device enclosure (e.g., a portion of a bezel or housing) can serve as a lead for the heart sensor," and the "pad or extended area can then be coupled to a wire or other connector for providing cardiac signals to a processor for processing" (applicant's specification, paragraph [0034]), such as leads 322 and 324 of FIG. 3. As a specific example, with respect to applicant's FIG. 4B, an enclosure of electronic device 450 may include a bezel 460, where, "[i]f the electrical conductivity and size of bezel 460, and the strength or characteristics of the cardiac signal provided by the user and detected by the heart sensor are adapted such that the signal can be transmitted along short distances in bezel 460, lead 472 of the heart sensor can be positioned against the back surface of bezel 460," or "lead 472 can be placed within the thickness of bezel 460 (e.g., in a pocket within the bezel wall), but underneath the outer surface of the bezel," where a "short thickness of bezel 460 can allow electrical signals to propagate from the user to the outer surface of bezel 460, through bezel 460, and into lead 472, which may in turn transmit the signals to a processor using connector 474" (applicant's specification, paragraph [0047]).

Weiss is directed towards an ECG monitor 16 that includes a bottom case 14 of a housing, where an LCD display is provided at an opposite case (i.e., a top case) of the housing. Weiss' ECG monitor 16 also includes a swing arm assembly 10 rotatably mounted on

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.315

the bottom case 14, where sensing electrodes 12 are mounted on the swing arm assembly 10 to allow for variable positioning of the sensing electrodes 12 relative to the display when the swing arm assembly 10 rotates with respect to the bottom case 14.

Nowhere does Weiss show or suggest an electronic device with an enclosure and a heart sensor with "a first pad [that is] embedded in a first portion of the enclosure" and a "second pad [that is] embedded in a second portion of the enclosure," where "an exterior surface of the enclosure comprises an exterior surface of the first portion, wherein the first pad is positioned underneath the exterior surface of the first portion, and wherein the first pad is configured to detect a first electrical signal of the user's cardiac signal via the user's skin's contact with the exterior surface of the first portion of the enclosure," as required by applicant's independent claim 29. That is, nowhere does Weiss show or suggest that any electrode 12 is embedded in any portion of case 14 of the housing of ECG monitor 16 or in any portion of swing arm assembly 10 of ECG monitor 16, let alone show or suggest that any electrode 12 is "positioned underneath [an] exterior surface of" a portion of case 14 or swing arm assembly 10 such that the electrode 12 is "configured to detect a first electrical signal of [a] user's cardiac signal via the user's skin's contact with [such an] exterior surface" of case 14 or swing arm assembly 10. Instead, each one of Weiss' electrodes 12 is "mounted on" swing arm assembly 10 (Weiss, column 1, line 54), where an outermost piece 46 of each one of Weiss' electrodes 12 "contacts the skin" of the user (Weiss, column 3, line 7).

For at least these reasons, applicant respectfully submits that applicant's independent claim 29 and all claims dependent therefrom, including claims 30-36, 39, 44, 45, and 52-54, are allowable over Weiss. Therefore, applicant respectfully requests

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.316

that the rejections of claims 29-36 under 35 U.S.C. § 102 be withdrawn.

Claim 40

Claim 40 has been rejected under 35 U.S.C. § 102 as allegedly being anticipated by Weiss. This rejection is respectfully traversed.

Applicant's independent claim 40 defines an electronic device for detecting a user's cardiac signal, including an enclosure, a display screen exposed to the user through an opening in the enclosure, a heart sensor configured to detect the user's cardiac signal, and a processor coupled to the heart sensor. The heart sensor includes a first lead embedded in a first portion of the enclosure of the electronic device, wherein the first portion of the electronic device comprises an enclosure of the electronic device, wherein the first lead is configured to detect a first electrical signal of the user's cardiac signal via the user's contact with at least one of the first lead and the first portion of the enclosure of the electronic device. The heart sensor also includes a second lead embedded in the display screen of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the display screen of the electronic device. The processor is configured to process the first and second electrical signals of the user's cardiac signal.

For example, as shown in applicant's FIG. 3, "electronic device 300 can include additional lead 326 embedded in or behind display 302," where "[l]ead 326 can be operative to detect a user's heart activity as the user moves a finger across display 302," and, "[u]sing lead 326, the electronic device can detect an electrical signal from a different portion of the user's body (e.g., leads 322

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.317

and 324 detect signals through a first hand, and lead 326 detects signals through the second hand), which can provide the processor with additional information for determining characteristics of the user's cardiac activity" (applicant's specification, paragraph [0043]).

Weiss is directed towards an ECG monitor 16 that includes a bottom case 14 of a housing, where an LCD display is provided at an opposite case (i.e., a top case) of the housing. Weiss' ECG monitor 16 also includes a swing arm assembly 10 rotatably mounted on the bottom case 14, where sensing electrodes 12 are mounted on the swing arm assembly 10 to allow for variable positioning of the sensing electrodes 12 relative to the display when the swing arm assembly 10 rotates with respect to the bottom case 14.

Nowhere does Weiss show or suggest an electronic device with a heart sensor that includes "a first lead embedded in a first portion of [an] enclosure of the electronic device," as well as "a second lead embedded in [a] display screen [exposed to the user through an opening in the enclosure] of the electronic device, wherein the second lead is configured to detect a second electrical signal of the user's cardiac signal via the user's contact with at least one of the second lead and the display screen of the electronic device," as required by applicant's independent claim 40. That is, nowhere does Weiss show or suggest that a first one of electrodes 12 is embedded in case 14 or swing arm assembly 10 and that a second one of electrodes 12 is embedded in a display screen exposed to a user through an opening in case 14 or swing arm assembly 10. In fact, nowhere does Weiss show or suggest that any electrode 12 is "embedded in the display screen" of ECG monitor 16, let alone show or suggest that such an electrode 12 is configured to "detect a second electrical signal of the user's cardiac signal" via the user's contact with at least one of such an electrode 12 and the display

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.318

screen. In fact, Weiss teaches away from such an electronic device of applicant's independent claim 40, as Weiss provides each sensing electrode 12 on swing assembly 10 that "allows for variable positioning of the sensing electrodes relative to the display" of ECG monitor 16 (Weiss, column 1, lines 25-27).

For at least these reasons, applicant respectfully submits that applicant's independent claim 40 and all claims dependent therefrom, including claims 42 and 46-51, are allowable. Therefore, applicant respectfully requests that the rejection of claim 40 under 35 U.S.C. § 102 be withdrawn.

Conclusion

In view of the foregoing, applicant respectfully submits that claims 29-36, 39, 40, 42, and 44-54 are allowable. This application is therefore in condition for allowance. Reconsideration and prompt allowance of this application are respectfully requested.

Respectfully submitted,

Date: January 15, 2018

/Jeffrey C. Aldridge/
Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicant
Van Court & Aldridge LLP
Customer No. 111349
154 Grand Street
New York, New York 10013
Tel.: (347) 470-6620

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.319

Electronic Patent Application Fee Transmittal

Application Number:	14136658
Filing Date:	20-Dec-2013
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Attorney Docket Number:	P7276USC1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.320

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	1251	1	200	200
Miscellaneous:				
			Total in USD ($)	**200**

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.321

Electronic Acknowledgement Receipt

EFS ID:	31501964
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Filer Authorized By:	Jeffrey Charles Aldridge
Attorney Docket Number:	P7276USC1
Receipt Date:	15-JAN-2018
Filing Date:	20-DEC-2013
Time Stamp:	15:42:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$200
RAM confirmation Number	011618INTEFSW15431800
Deposit Account	506007
Authorized User	Rachael Jung

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.322

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2018-01-15_P7276USC1-Resp-OA.pdf	73766 e6fa748b8e0dc6577fdf9ce55f319de01218e531	yes	15
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	8	
	Applicant Arguments/Remarks Made in an Amendment		9	15	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30801 976822cb8257181efd63374a6cf0ed5ae915ccec	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	104567		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.324

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

111349 7590 05/22/2018

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER
ALTER MORSCHAUSE, ALYSSA MARGO

ART UNIT	PAPER NUMBER
3762	

DATE MAILED: 05/22/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

TITLE OF INVENTION: SEAMLESSLY EMBEDDED HEART RATE MONITOR

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0	$0	$1000	08/22/2018

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.325

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

111349 7590 05/22/2018
Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

TITLE OF INVENTION: SEAMLESSLY EMBEDDED HEART RATE MONITOR

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0	$0	$1000	08/22/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
ALTER MORSCHAUSE, ALYSSA MARGO	3762	600-509000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.326

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

111349 7590 05/22/2018

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

EXAMINER	
ALTER MORSCHAUSE, ALYSSA MARGO	
ART UNIT	PAPER NUMBER
3762	

DATE MAILED: 05/22/2018

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.327

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.328

Notice of Allowability	Application No. 14/136,658	Applicant(s) LIN ET AL.	
	Examiner Alyssa M. Alter	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *15 January 2018*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *29-36,39,40,42 and 44-54*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/Alyssa M Alter/
Primary Examiner, Art Unit 3762

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.329

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

2. This application is in condition for allowance except for the presence of claims 24-28 are directed to an invention non-elected without traverse. Accordingly, claims 24-28 have been cancelled.

Allowable Subject Matter

3. Claims 29-36, 39-40, 42 and 44-54 are allowed.

EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

5. The application has been amended as follows: Claims 24-28 are cancelled.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alyssa M. Alter whose telephone number is (571)272-4939. The examiner can normally be reached on M-F 7am to 3:30pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Niketa Patel can be reached on (571) 272-4156. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alyssa M Alter/
Primary Examiner
Art Unit 3762

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	Art Unit
	ALYSSA M ALTER	3762

CPC- SEARCHED		
Symbol	Date	Examiner
A 61 B 5/02438	6/15/2015	ama
A 61 B 5/0245	6/15/2015	ama
A 61 B 5/404	6/15/2015	ama

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
607	36	6/15/2015	ama
600	509	6/15/2015	ama

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
Please see EAST search history	6/15/2015	ama
Conducted an inventor search	6/15/2015	ama
Referenced the search performed in the parent application 12/358,905	6/15/2015	ama
Conducted an updated search	2/25/2016	ama

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.332

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	**Art Unit**
	ALYSSA M ALTER	3762

CPC						
Symbol					**Type**	**Version**
A61B		5	/	04012	F	2013-01-01
A61B		5	/	02438	I	2013-01-01
A61B		5	/	0245	I	2013-01-01
A61B		5	/	0404	I	2013-01-01
A61B		2560	/	0468	A	2013-01-01
A61B		5	/	04085	I	2013-01-01
A61B		5	/	044	I	2013-01-01
A61B		5	/	6898	I	2013-01-01
			/			
			/			
			/			
			/			
			/			
			/			
			/			

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/ALYSSA M ALTER/ Primary Examiner.Art Unit 3762	4/30/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

AliveCor, Inc. Exhibit 1002

IPR2023-00950

Ex. 1002.333

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	**Art Unit**
	ALYSSA M ALTER	3762

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
		A	6	1	B	5 / 117 (2016.01.01)						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/ALYSSA M ALTER/ Primary Examiner.Art Unit 3762	4/30/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

AliveCor, Inc. Exhibit 1002

IPR2023-00950

Ex. 1002.334

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	**Art Unit**
	ALYSSA M ALTER	3762

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	29	21	49												
2	30	22	50												
3	31	23	51												
4	32	13	52												
5	33	14	53												
6	34	15	54												
7	35														
8	36														
10	39														
19	40														
20	42														
11	44														
12	45														
16	46														
17	47														
18	48														

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 23	
/ALYSSA M ALTER/ Primary Examiner.Art Unit 3762 (Primary Examiner)	4/30/2018 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

AliveCor, Inc. Exhibit 1002

IPR2023-00950

Ex. 1002.335

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	**Art Unit**
	ALYSSA M ALTER	3762

CPC						
Symbol					**Type**	**Version**
A61B		5	/	04012	F	2013-01-01
A61B		5	/	02438	I	2013-01-01
A61B		5	/	0245	I	2013-01-01
A61B		5	/	0404	I	2013-01-01
A61B		2560	/	0468	A	2013-01-01
A61B		5	/	04085	I	2013-01-01
A61B		5	/	044	I	2013-01-01
A61B		5	/	6898	I	2013-01-01
			/			
			/			
			/			
			/			
			/			
			/			
			/			

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	22	
/ALYSSA M ALTER/ Primary Examiner.Art Unit 3762	4/30/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

AliveCor, Inc. Exhibit 1002

IPR2023-00950

Ex. 1002.336

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	**Art Unit**
	ALYSSA M ALTER	3762

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
		A	6	1	B	5 / 117 (2016.01.01)						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	22	
/ALYSSA M ALTER/ Primary Examiner.Art Unit 3762	4/30/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

AliveCor, Inc. Exhibit 1002

IPR2023-00950

Ex. 1002.337

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14136658	LIN ET AL.
	Examiner	**Art Unit**
	ALYSSA M ALTER	3762

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	29	20	49												
2	30	21	50												
3	31	22	51												
4	32	12	52												
5	33	13	53												
6	34	14	54												
7	35														
8	36														
9	39														
15	40														
19	42														
10	44														
11	45														
16	46														
17	47														
18	48														

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 22	
/ALYSSA M ALTER/ Primary Examiner.Art Unit 3762 (Primary Examiner)	4/30/2018 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

AliveCor, Inc. Exhibit 1002

IPR2023-00950

Ex. 1002.338

PTO/SB/47 (03-09)
Approved for use through 05/31/2015. OMB 0651-0016
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

"FEE ADDRESS" INDICATION FORM

Address to:
Mail Stop M Correspondence
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

- OR -

Fax to:
571-273-6500

INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. **When to check the first box below**: If you have a Customer Number to represent the fee address. **When to check the second box below**: If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☑ Customer Number: 00197

OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (if known)	APPLICATION NUMBER
	14/136,658

Completed by (check one):

☐ Applicant/Inventor — /Jeffrey C. Aldridge/ (Signature)

☑ Attorney or Agent of record 51,390 (Reg. No.) — Jeffrey C. Aldridge (Typed or printed name)

☐ Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96) — (347) 470-6620 (Requester's telephone number)

☐ Assignee recorded at Reel _____ Frame _____ — August 21, 2018 (Date)

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more that one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.363. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.
SEND TO: Mail Stop M Correspondence, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

111349 7590 05/22/2018
Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	12/20/2013	Gloria Lin	P7276USC1	2657

TITLE OF INVENTION: SEAMLESSLY EMBEDDED HEART RATE MONITOR

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0	$0	$1000	08/22/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
ALTER MORSCHAUSE, ALYSSA MARGO	3762	600-509000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 VAN COURT & ALDRIDGE LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: APPLE INC.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): CUPERTINO, CALIFORNIA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☑ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☑ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies .....

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☑ Payment by credit card. ~~Form PTO-2038 is attached~~
- ☑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-6007 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Jeffrey C. Aldridge/ Date August 21, 2018
Typed or printed name Jeffrey C. Aldridge Registration No. 51,390

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.340

Electronic Patent Application Fee Transmittal

Application Number:	14136658
Filing Date:	20-Dec-2013
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Attorney Docket Number:	P7276USC1

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	1000	1000

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.341

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1000**

Electronic Acknowledgement Receipt

EFS ID:	33490390
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Jeffrey Charles Aldridge/Daniel Harris
Filer Authorized By:	Jeffrey Charles Aldridge
Attorney Docket Number:	P7276USC1
Receipt Date:	21-AUG-2018
Filing Date:	20-DEC-2013
Time Stamp:	15:40:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1000
RAM confirmation Number	082218INTEFSW15405900
Deposit Account	506007
Authorized User	Rachael Jung

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.343

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2018-08-21_P7276USC1-Issue-Fee-Comments-docs.pdf	2190352 bf6882f36ac83b724b352fe82b258dac11262946	yes	4

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Miscellaneous Incoming Letter	3	4
	Maintenance Fee Address Change	2	2
	Issue Fee Payment (PTO-85B)	1	1

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30154 a6fc9082eb1a0e2a88e635a6deb6dce1147f799a	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2220506		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Gloria Lin et al.
Application No.	:	14/136,658
Conf. No.	:	2657
Filed	:	December 20, 2013
For	:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	:	3762
Examiner	:	Alyssa Margo Alter Morschause

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

New York, New York 10013
August 21, 2018

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Sir:

Reasons for allowance are only warranted in instances in which "the record of the prosecution as a whole does not make clear the Examiner's reasons for allowing a claim or claims." 37 C.F.R. § 1.104(e). In the present case, applicants believe the record as a whole makes clear the reasons for allowance and therefore no statement by the Examiner is necessary or warranted. Therefore, the record should reflect that applicants do not necessarily agree with the Statement of Reasons for Allowance (if any).

Applicants' claims should be limited only by the terms utilized therein. Thus, applicants hereby submit these Comments in an effort to ensure that the claims are properly construed based only upon limitations that are actually present therein and/or to ensure that the claims are not interpreted so as to include any additional claim limitations that are not found in the respective claims.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned. If necessary, the Director is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 50-6007 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

Date: August 21, 2018

/Jeffrey C. Aldridge/

Jeffrey C. Aldridge
Registration No. 51,390
Attorney for Applicants
VAN COURT & ALDRIDGE LLP
Customer No. 111349
154 Grand St.
New York, NY 10013
t: (347) 470-6620

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.347

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/136,658	09/18/2018	10076257	P7276USC1	2657

111349 7590 08/29/2018

Van Court & Aldridge LLP
Apple Inc.
154 Grand St.
New York, NY 10013

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 88 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Apple Inc., Cupertino, CA;
Gloria Lin, San Ramon, CA;
Taido L. Nakajima, Cupertino, CA;
Pareet Rahul, Markham, CANADA;
Andrew B. Hodge, Palo Alto, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.348

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82A (07-12)

Approved for use through 11/30/2014. OMB 0651-0035

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B or equivalent) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5. If the Power of Attorney by Applicant form is not accompanied by this transmittal form or an equivalent, the Power of Attorney will not be recognized in the application.

Application Number	14/136,658
Filing Date	December 20, 2013
First Named Inventor	Gloria Lin
Title	SEAMLESSLY EMBEDDED HEART RATE MONITOR
Art Unit	3762
Examiner Name	Alter Morschauser, Alyssa Margo
Attorney Docket Number	2888-26102

SIGNATURE of Applicant or Patent Practitioner

Signature	/Robert C. Kowert/	Date	2021-01-04
Name	Robert C. Kowert	Telephone	512-853-8800
Registration Number	39,255		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/82B(07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in the attached transmittal letter.

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

81310

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

Name	Registration Number	Name	Registration Number

Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:

☒ The address associated with the above-mentioned Customer Number.

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant:

☐ Inventor or Joint Inventor

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor

☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (*e.g.*, a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document)

SIGNATURE of Applicant for Patent

Signature		Date	9/27/12
Name	BJ Watrous	Telephone	408 974-0015
Title and Company	Vice President and Chief IP Counsel, Apple Inc.		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms for more than one signature, see below *.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Apple Inc.

Application No./Patent No.: 10,076,257 Filed/Issue Date: September 18, 2018

Titled: SEAMLESSLY EMBEDDED HEART RATE MONITOR

Apple Inc., a Corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 022149, Frame 0581, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.351

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Robert C. Kowert/	January 4, 2021
Signature	Date
Robert C. Kowert	39255
Printed or Typed Name	Title or Registration Number

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.352

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	41549293
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	111349
Filer:	Robert C. Kowert/Michelle Moffitt
Filer Authorized By:	Robert C. Kowert
Attorney Docket Number:	P7276USC1
Receipt Date:	04-JAN-2021
Filing Date:	20-DEC-2013
Time Stamp:	18:24:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	TRANS_AND_POA.pdf	357208 f7b6e70ab3ac92571f69b4903a9f1511db57cd78	no	2

Warnings:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.354

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	3_73c.pdf	118247 8a45289a8066aab29f6a9abfb331f0b61a24d056	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	475455	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/136,658	12/20/2013	Gloria Lin	P7276USC1

CONFIRMATION NO. 2657

POWER OF ATTORNEY NOTICE

111349
Van Court & Aldridge LLP
Apple Inc.
36 Sonas Place
Hayward, CA 94542

OC000000122530555

Date Mailed: 01/11/2021

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/04/2021.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/snguyen/

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.356

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/136,658	12/20/2013	Gloria Lin	2888-26102

CONFIRMATION NO. 2657

POA ACCEPTANCE LETTER

81310
Kowert Hood Munyon Rankin & Goetzel (Apple)
1120 S. Capital of Texas Hwy
Building 2, Suite 300
Austin, TX 78746

OC000000122530568

Date Mailed: 01/11/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/04/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/snguyen/

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.357

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	14/136,658
Filing Date	December 20, 2013
First Named Inventor	Gloria Lin
Title	Seamlessly Embedded Heart Rate Monitor
Art Unit	3762
Examiner Name	Alter Morschause, Alyssa Margo
Attorney Docket Number	P7276USC1

SIGNATURE of Applicant or Patent Practitioner

Signature	/S. Craig Hemenway/	Date (Optional)	April 29, 2021
Name	S. Craig Hemenway	Registration Number	44,759
Title (if Applicant is a juristic entity)	Attorney for Applicant		
Applicant Name (if Applicant is a juristic entity)	Apple Inc.		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Alivecor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.358

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 62579

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Apple Inc.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	April 20, 2021
Name	Jeffrey L. Myers, Assistant Secretary and Chief IP Counsel of Apple Inc.		
Title	Assistant Secretary and Chief IP Counsel		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.359

Electronic Acknowledgement Receipt

EFS ID:	42594349
Application Number:	14136658
International Application Number:	
Confirmation Number:	2657
Title of Invention:	SEAMLESSLY EMBEDDED HEART RATE MONITOR
First Named Inventor/Applicant Name:	Gloria Lin
Customer Number:	81310
Filer:	Stephen C. Hemenway/Valerie Brown
Filer Authorized By:	Stephen C. Hemenway
Attorney Docket Number:	2888-26102
Receipt Date:	29-APR-2021
Filing Date:	20-DEC-2013
Time Stamp:	16:15:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	P7276USC1-TransmittalOfPower.pdf	92769 95a2eafa972e0dbdf8ec155d8989c3f27fdd1d99	no	1

Warnings:

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.360

Information:					
2	Power of Attorney	ApplePowerOfAttorney2021.pdf	64848 e5c8129e19cc2e54d2a1676d66030a21753af6a0	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	157617	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/136,658	12/20/2013	Gloria Lin	2888-26102

CONFIRMATION NO. 2657

POWER OF ATTORNEY NOTICE

81310
Kowert Hood Munyon Rankin & Goetzel (Apple)
1120 S. Capital of Texas Hwy
Building 2, Suite 300
Austin, TX 78746

OC000000125330735

Date Mailed: 05/06/2021

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/29/2021.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/dgela/

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.362

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/136,658	12/20/2013	Gloria Lin	P7276USC1

CONFIRMATION NO. 2657

POA ACCEPTANCE LETTER

62579
APPLE INC./BROWNSTEIN
c/o Brownstein Hyatt Farber Schreck, LLP
410 Seventeenth Street
Suite 2200
Denver, CO 80202

OC00000125330739

Date Mailed: 05/06/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/29/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/dgela/

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.363

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 **Director of the U.S. Patent and Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	10/20/2022	District of Delaware

PLAINTIFF	DEFENDANT
Apple Inc.	Masimo Corporation Sound United, LLC

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	see attachment		
2			
3			
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AliveCor, Inc. Exhibit 1002
IPR2023-00950
Ex. 1002.364

Patent or Trademark No.	Date of Patent or Trademark	Holder of Patent or Trademark
10,076,257	9/18/2018	Apple Inc.
10,627,783	4/21/2020	Apple Inc.
10,942,491	9/9/2021	Apple Inc.
10,987,054	4/27/2021	Apple Inc.
11,106,352	8/31/2021	Apple Inc.
11,474,483	10/18/2022	Apple Inc.