PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. 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	BRAGI GmbH-P0075USA
	Application Number	
Title of Invention	Method and apparatus for interfacing with wireless earpieces	

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
	Martin		Steiner	

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

City	München	Country of Residence i	DE

Mailing Address of Inventor:

Address 1	Sendlinger Str. 7		
Address 2			
City	München	**State/Province**	
Postal Code	D-80331	**Country** i	DE

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	133690		
Email Address	docketing@goodhue.com	Add Email	Remove Email

Application Information:

Title of the Invention	Method and apparatus for interfacing with wireless earpieces		
Attorney Docket Number	BRAGI GmbH-P0075USA	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)		**Suggested Figure for Publication (if any)**	

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	BRAGI GmbH-P0075USA
	Application Number	
Title of Invention	Method and apparatus for interfacing with wireless earpieces	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

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	133690		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim 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" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Claims benefit of provisional	62255309	2015-11-13

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

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	BRAGI GmbH-P0075USA
	Application Number	
Title of Invention	Method and apparatus for interfacing with wireless earpieces	

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. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(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).

Remove

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

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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	BRAGI GmbH-P0075USA
	Application Number	
Title of Invention	Method and apparatus for interfacing with wireless earpieces	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is 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 State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	BRAGI GmbH-P0075USA
	Application Number	
Title of Invention	Method and apparatus for interfacing with wireless earpieces	

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.

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. ☒

Organization Name	BRAGI GmbH		
Mailing Address Information For Applicant:			
Address 1	Sendlinger Str. 7		
Address 2			
City	München	**State/Province**	
Country	DE	Postal Code	D-80331
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 substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	BRAGI GmbH-P0075USA
	Application Number	
Title of Invention	Method and apparatus for interfacing with wireless earpieces	

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. ☐

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 Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/JOHN D. GOODHUE/			Date (YYYY-MM-DD)	2016-11-12
First Name	John	Last Name	Goodhue	Registration Number	47603

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

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	BRAGI GmbH-P0075USA
	Application Number	
Title of Invention	Method and apparatus for interfacing with wireless earpieces	

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.**

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 CooperationTreaty.

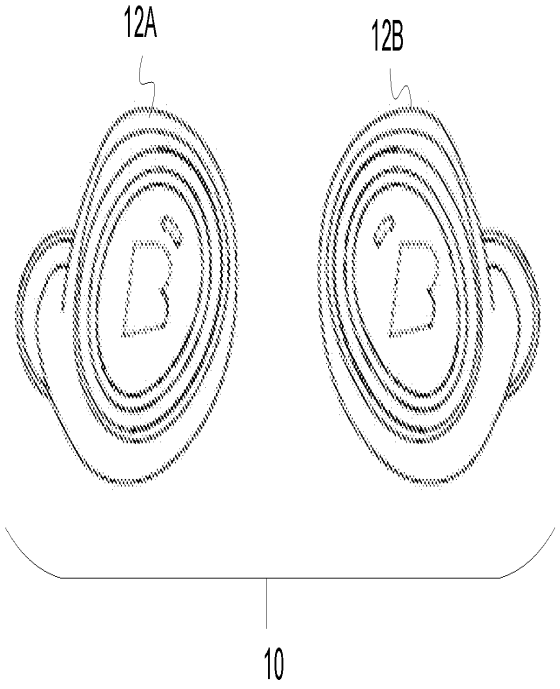
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

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.

DKT #: BRAGI GMBH-P0075USA



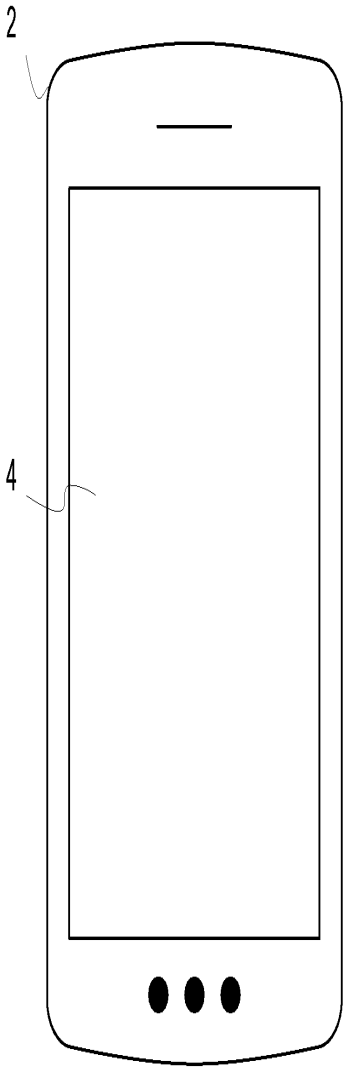


FIG. 1

DKT #: BRAGI GMBH-P0075USA

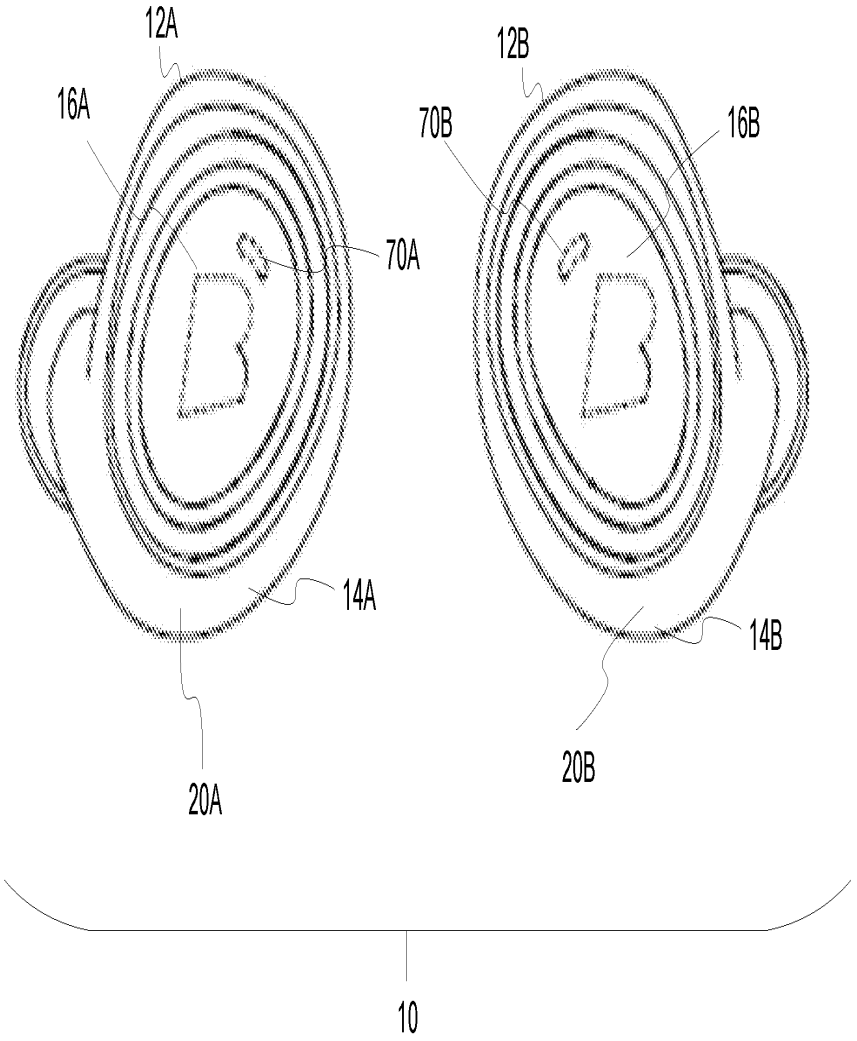


FIG. 2

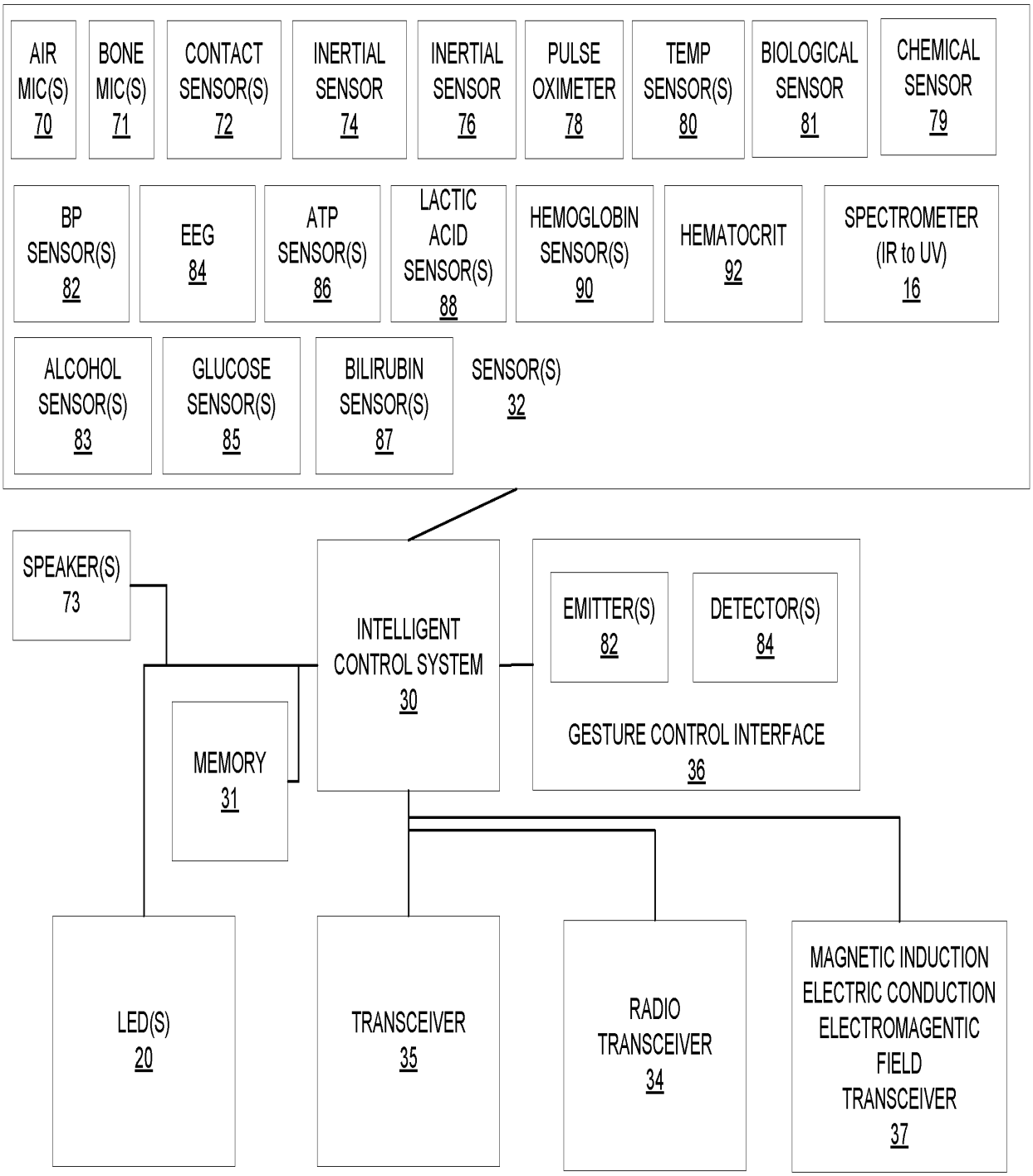

AIR MIC(S) 70
BONE MIC(S) 71
CONTACT SENSOR(S) 72
INERTIAL SENSOR 74
INERTIAL SENSOR 76
PULSE OXIMETER 78
TEMP SENSOR(S) 80
BIOLOGICAL SENSOR 81
CHEMICAL SENSOR 79
BP SENSOR(S) 82
EEG 84
ATP SENSOR(S) 86
LACTIC ACID SENSOR(S) 88
HEMOGLOBIN SENSOR(S) 90
HEMATOCRIT 92
SPECTROMETER (IR to UV) 16
ALCOHOL SENSOR(S) 83
GLUCOSE SENSOR(S) 85
BILIRUBIN SENSOR(S) 87
SENSOR(S) 32
SPEAKER(S) 73
INTELLIGENT CONTROL SYSTEM 30
EMITTER(S) 82
DETECTOR(S) 84
GESTURE CONTROL INTERFACE 36
MEMORY 31
LED(S) 20
TRANSCEIVER 35
RADIO TRANSCEIVER 34
MAGNETIC INDUCTION ELECTRIC CONDUCTION ELECTROMAGENTIC FIELD TRANSCEIVER 37

FIG. 3

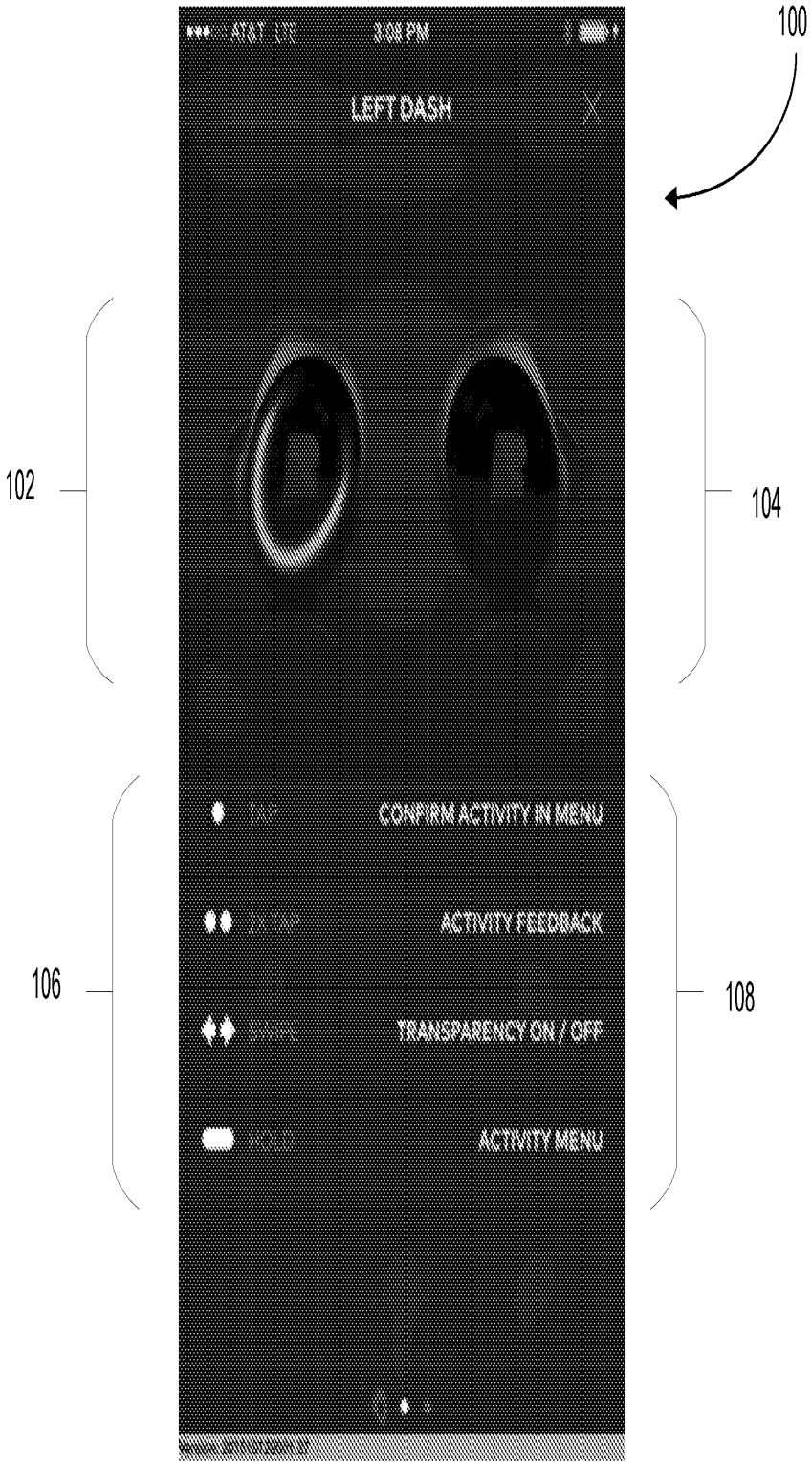

100
LEFT DASH
102
104
CONFIRM ACTIVITY IN MENU
ACTIVITY FEEDBACK
106
108
TRANSPARENCY ON / OFF
ACTIVITY MENU

FIG. 4


AT&T LTE
3:08 PM
RIGHT DASH
PLAY / PAUSE MUSIC
NEXT SONG
VOLUME UP / DOWN
PLAYLIST MENU
PAIRING MODE
102
104
110
112

FIG. 5

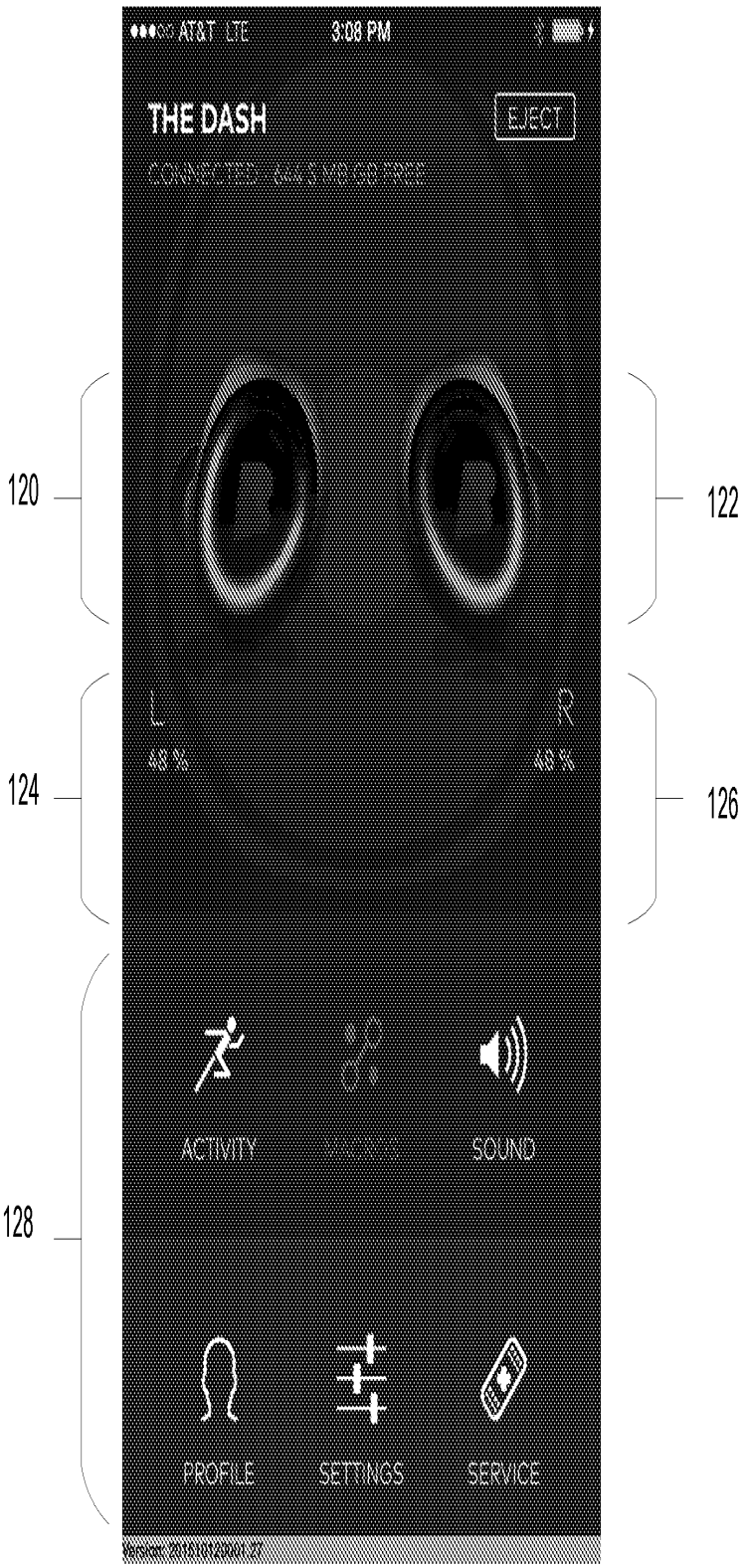

AT&T LTE
3:08 PM
THE DASH
EJECT
L
R
48 %
48 %
ACTIVITY
SOUND
PROFILE
SETTINGS
SERVICE
120
122
124
126
128

FIG. 6

DKT #: BRAGI GMBH-P0075USA

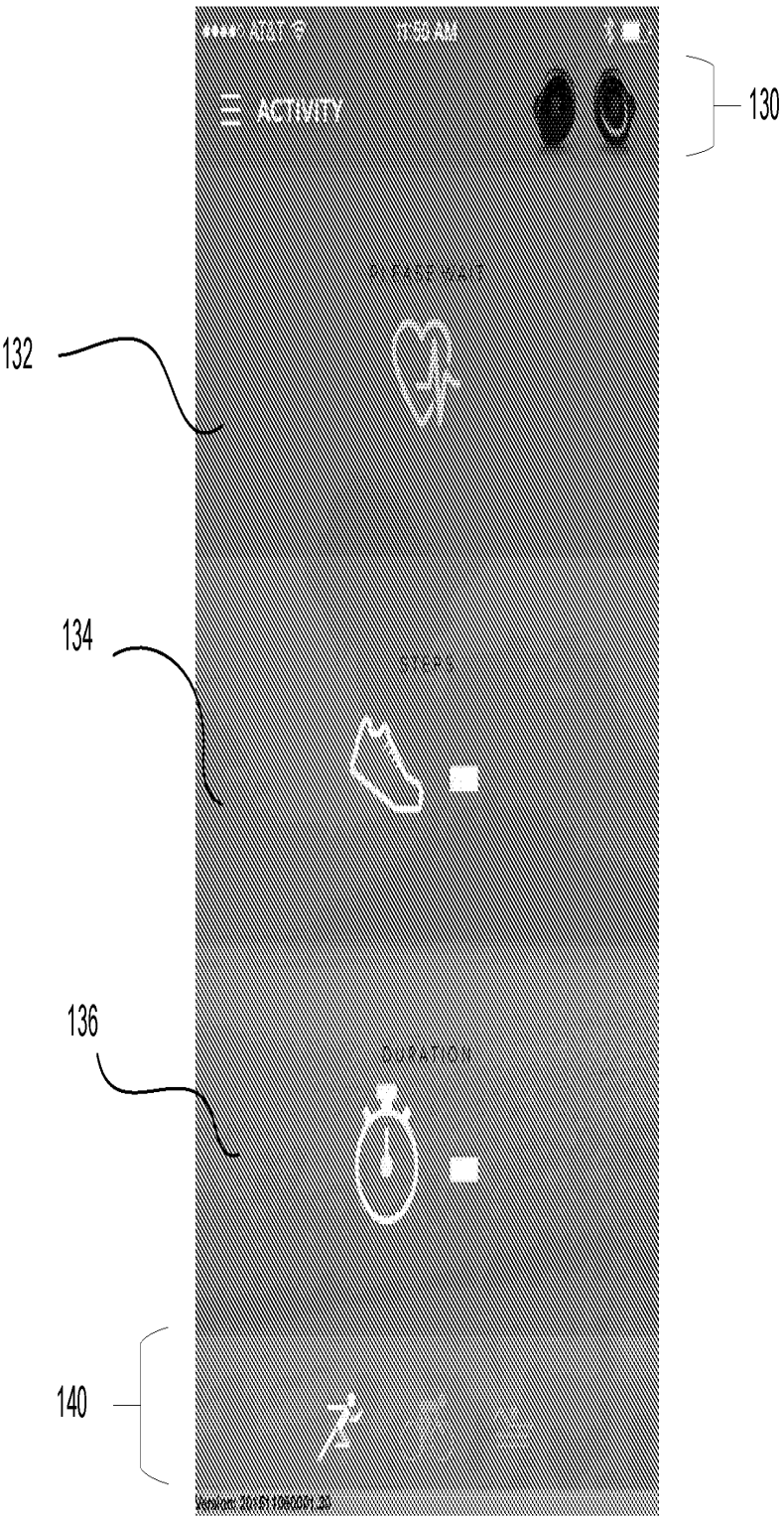


FIG. 7

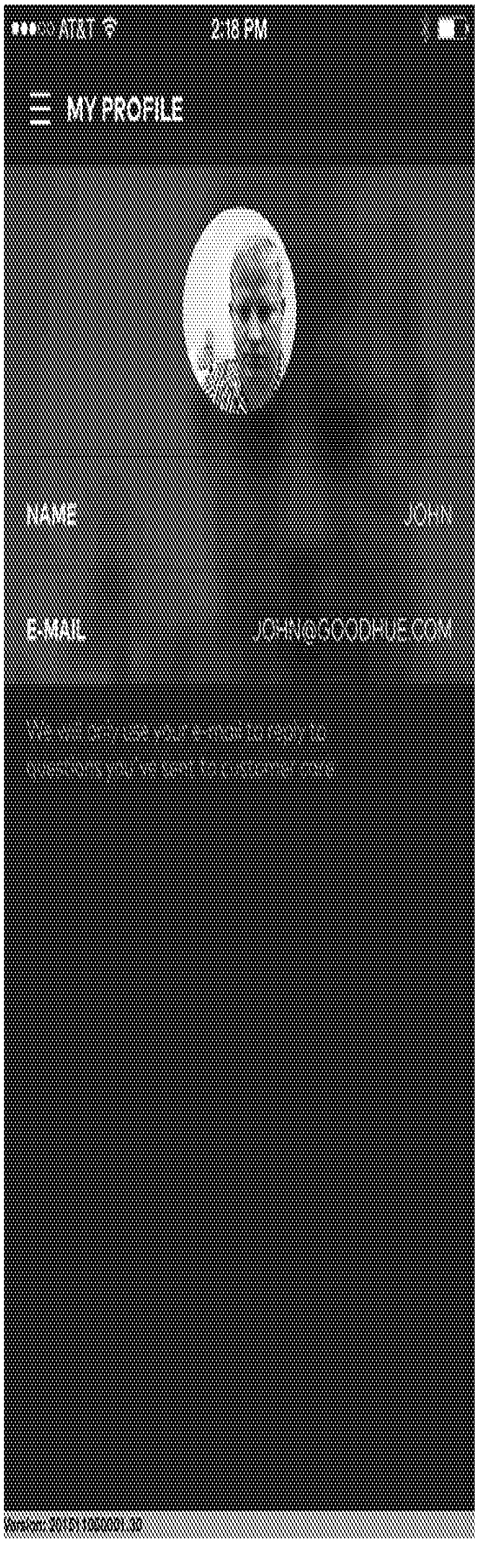


FIG. 8

DKT #: BRAGI GMBH-P0075USA

DKT #: BRAGI GMBH-P0075USA

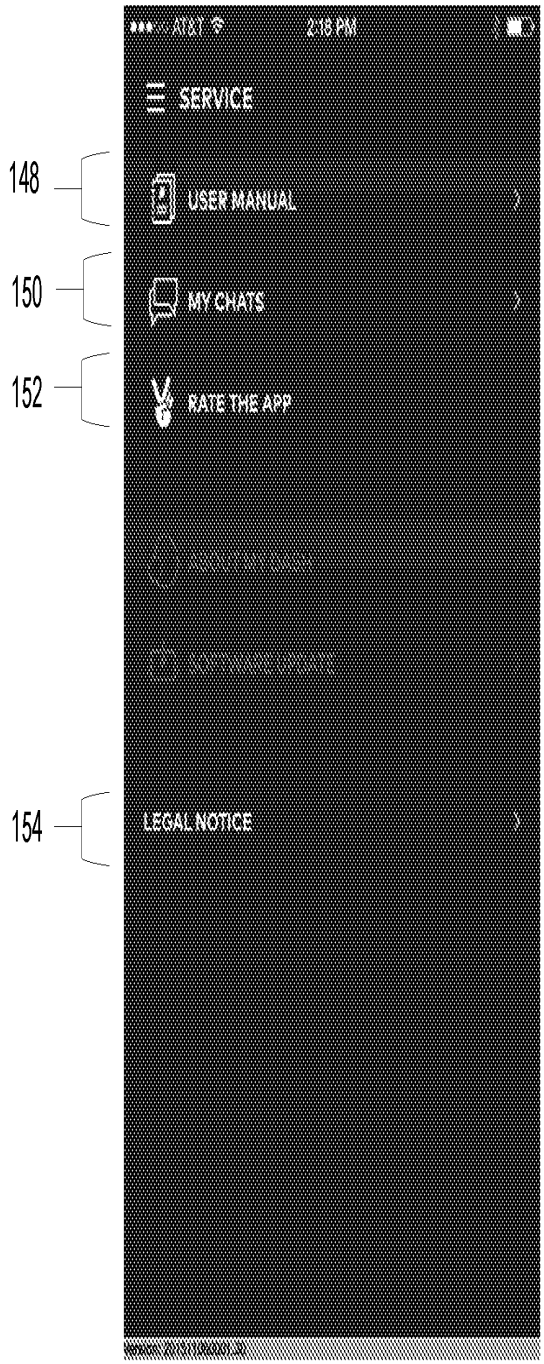


FIG. 9

DKT #: BRAGI GMBH-P0075USA

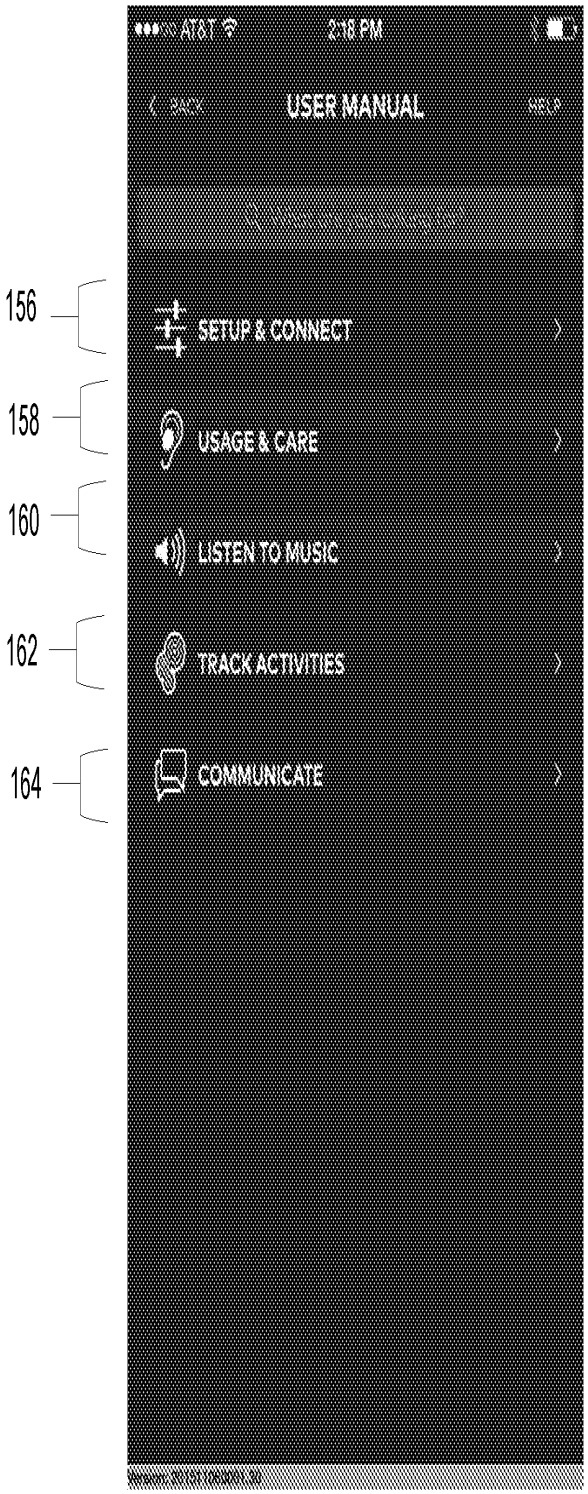


FIG. 10

TITLE: Method and apparatus for interfacing with wireless earpieces

PRIORITY STATEMENT

This application claims priority to U.S. Provisional Patent Application 62/255,309, filed on November 13, 2015, and entitled Method and apparatus for interfacing with wireless earpieces, hereby incorporated by reference in its entirety.

FIELD OF THE INVENTION

The present invention relates to wearable devices. More particularly, but not exclusively, the present invention relates to ear pieces.

BACKGROUND

Wireless ear pieces may include various functionality. What is needed is a software application which may execute on a computing device such as a mobile device to allow a user to interact with the wireless ear pieces to improve functionality and user satisfaction.

SUMMARY

Therefore, it is a primary object, feature, or advantage of the present invention to improve over the state of the art.

It is a further object, feature, or advantage of the present invention to provide a software application for communicating with one or more wireless ear pieces.

It is a still further object, feature, or advantage of the present invention to provide a software application with features which support music playback functionality associated with one or more wireless ear pieces.

Another object, feature, or advantage is to provide a software application with features which support various types of activity monitoring and recording functionality associated with one or more wireless ear pieces.

Yet another object, feature, or advantage is to provide a system with improved functionality.

Another object, feature, or advantage is to improve user satisfaction of one or more wireless ear pieces.

One or more of these and/or other objects, features, or advantages of the present invention will become apparent from the specification and claims that follow. No single embodiment need provide each and every object, feature, or advantage. Different embodiments may have different objects, features, or advantages. Therefore, the present invention is not to be limited to or by an objects, features, or advantages stated herein.

According to one aspect, a system includes at least one wireless ear piece comprising an ear piece housing and a wireless transceiver disposed within the ear piece housing, a software application for executing on a computing device having a display associated therewith, and wherein the software application provides a user interface for use by a user of the at least one wireless ear piece to interact with the at least one ear piece.

According to another aspect, a method for controlling a set of wireless ear pieces includes providing a software application for controlling the set of wireless ear pieces, the software application adapted to execute on a computing device, using the software application on the computing device to display one or more screen displays on a display of the computing device and to receive input from the user into the mobile device, communicating data associated with the input between the software application and at least one of the wireless ear pieces, and performing an action using at least one of the wireless ear pieces in response to receiving the data.

According to another aspect, a method for communicating data from a set of wireless ear pieces includes providing a software application for communicating with the set of wireless ear pieces, the software application adapted to execute on a computing device, using the software application on the computing device to display one or more screen displays on a display of the

computing device, communicating data received from one or more of the wireless ear pieces to the computing device, and updating the screen displays on the display of the computing device using the data.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a system including a set of wearable ear pieces and a mobile device.

FIG. 2 illustrates a set of wearable ear pieces in greater detail.

FIG. 3 is a block diagram illustrating one example of an ear piece.

FIG. 4 illustrates one example of a screen display associated with a left ear piece.

FIG. 5 illustrates one example of a screen display associated with a right ear piece.

FIG. 6 illustrates another example of a screen display showing charge levels of both a left ear piece and a right ear piece and an activity menu with various items.

FIG. 7 illustrates an example of a screen display showing monitoring information associated with a selected activity.

FIG. 8 illustrates an example of a screen display showing profile information for an individual or user.

FIG. 9 illustrates an example of a screen display showing service information.

FIG. 10 illustrates an example of a screen display showing a user manual.

Various of the figures include ornamental appearance for various elements. It is to be understood that the present invention contemplates all permutations and combinations of the various graphical elements set forth in the screen displays and any portions thereof.

DETAILED DESCRIPTION

The present invention relates to wearable devices. More particularly, but not exclusively, the present invention relates to ear pieces. According to some aspects, the present invention relates to sets of wearable devices, that is to say a set or group of more than one devices that

communicate with one another and/or with another device. Thus, for example, where the wearable devices are wireless ear pieces, the set may include a left wireless ear piece and a right ear piece.

FIG. 1 illustrates a set of ear pieces 10 including a left ear piece 12A and a right ear piece 12B. Each of the left ear piece 12A and the right ear piece 12B is in operative communication with a mobile device 4 which includes a screen 6. The screen display 6 may be touch-sensitive screen display or the mobile device 4 may otherwise provide for manual inputs.

FIG. 2 illustrates in greater detail the set of earpiece wearables 10 which includes a left earpiece 12A and a right earpiece 12B. Each of the earpieces wearables 12A, 12B has an earpiece wearable housing 14A, 14B which may be in the form of a protective shell or casing and may be an in-the-ear earpiece housing. A left infrared through ultraviolet spectrometer 16A and right infrared through ultraviolet spectrometer 16B is also shown. Each earpiece 12A, 12B may include one or more microphones 70A, 70B. Note that the air microphones 70A, 70B are outward facing such that the air microphones 70A, 70B may capture ambient environmental sound. It is to be understood that any number of microphones may be present including air conduction microphones, bone conduction microphones, or other audio sensors.

FIG. 3 is a block diagram illustrating the left ear piece or the right ear piece wearable. The ear piece wearable device may include one or more LEDs 20 electrically connected to an intelligent control system 30. The intelligent control system 30 may include one or more processors, microcontrollers, application specific integrated circuits, or other types of integrated circuits. The intelligent control system 30 may also be operatively connected to a memory 31 which may be of any number of various types of memories including a solid state memory. The memory 31 may be used for various purposes including to store audio or programming. For example, users may load audio files such as MP3 files into the memory 31 of the earpiece wearable for playback. Alternatively, software updates may be loaded into the memory 31 for execution by the ear piece wearable. The intelligent control system 30 may also be electrically connected to one or more sensors 32. Where the device is an earpiece, the sensor(s) may include an inertial sensor 74, another inertial sensor 76. Each inertial sensor 74, 76 may include an accelerometer, a gyro sensor or gyrometer, a magnetometer or other type of inertial sensor. The sensor(s) 32 may also include one or more contact sensors 72, one or more bone conduction

microphones 71, one or more air conduction microphones 70, one or more chemical sensors 79, a pulse oximeter 76, a temperature sensor 80, or other physiological or biological sensor(s). Further examples of physiological or biological sensors include an alcohol sensor 83, glucose sensor 85, or bilirubin sensor 87. Other examples of physiological or biological sensors may also be included in the device. These may include a blood pressure sensor 82, an electroencephalogram (EEG) 84, an Adenosine Triphosphate (ATP) sensor, a lactic acid sensor 88, a hemoglobin sensor 90, a hematocrit sensor 92 or other biological or chemical sensor.

A spectrometer 16 is also shown. The spectrometer 16 may be an infrared (IR) through ultraviolet (UV) spectrometer although it is contemplated that any number of wavelengths in the infrared, visible, or ultraviolet spectrums may be detected. The spectrometer 16 is preferably adapted to measure environmental wavelengths for analysis and recommendations and thus preferably is located on or at the external facing side of the device.

A gesture control interface 36 is also operatively connected to or integrated into the intelligent control system 30. The gesture control interface 36 may include one or more emitters 82 and one or more detectors 84 for sensing user gestures. The emitters may be of any number of types including infrared LEDs. The device may include a transceiver 35 which may allow for induction transmissions such as through near field magnetic induction. A short range transceiver 34 using Bluetooth, BLE, UWB, or other means of radio communication may also be present. In operation, the intelligent control system 30 may be configured to convey different information using one or more of the LED(s) 20 based on context or mode of operation of the device. The various sensors 32, the processor 30, and other electronic components may be located on the printed circuit board of the device. One or more speakers 73 may also be operatively connected to the intelligent control system 30.

A magnetic induction, electric conduction, or other type of electromagnetic (E/M) field transceiver 37 or other type of transceiver is also operatively connected to the intelligent control system 30 to link the processor 30 to the electromagnetic field of the user. The use of the transceiver 37 allows the device to link electromagnetically into a personal area network or body area network or other device.

Although a number of different components are shown in FIG. 3, it is to be understood that an ear piece wearable need not include all of the various components and may only include a subset of the components. For example, in one embodiment the ear pieces only serves as a set of

wireless earpieces without microphones, without physiological sensors, and need not include storage. It is to be further understood that where there is a set of ear pieces some of the components may be present only in one of the ear pieces within the set. For example, not all sensors 32 need be present in each ear piece. In a further example, the earpiece need not include any biometric or physiological sensors or environmental sensors and need not include a gestural interface or inertial sensors or even the memory for storage of audio files. It is also to be understood that the earpiece may have various different modes of operations. For example, different types of exercises may have different modes of operations which may be sensed with different combinations of sensors. In addition, different modes of operations include different audio modes of operations. One example of an audio mode of operation is an audio transparency mode. In the audio transparency mode, environmental audio is sensed using one or more microphones positioned to detect ambient or environmental noise. This audio is reproduced after optional processing at a speaker of the ear piece. Thus, audio from the environment may be combined with other audio so that a user wearing the earpieces is still wearing the earpieces which may physically block the ear canal but the user is still able to hear environmental audio.

FIG. 4 illustrates one example of a screen display 100 associated with a software application or mobile app executing on a processor of a mobile device. The screen display 100 illustrates both a left ear piece 102 and a right-ear-piece 104. The screen display 100 includes a caption or label indicating the "left" ear piece. In addition, portions of the left ear piece 102 are illuminated using one or more LEDs. This portion of the ear piece may be called a corona. Thus, a user using the mobile app may quickly and easily make the association between the left ear piece 102 which they are wearing and what is shown on the screen display. Note that a right ear piece 104 is also shown, however the corona of the right ear piece 104 is note lit. Under the representation of the ear pieces 102, 104 which may be a photo or photo-realistic representation of the ear pieces is information relating to the gestures or controls associated with the ear piece. The information presented is for the ear piece which is lit, namely the left earpiece 102. Note that textual descriptions of the commands 108 are shown at the right and a pictorial representation or symbol or icon or graphic associated with the gesture 106 is shown at left. Thus, here, a single dot is shown which is intended to correspond with a single tap or "TAP." The function associated with this user control, in this instance "CONFIRM ACTIVITY IN MENU" is shown. Next, two dots are shown which intended to correspond with a double tap or

"2X TAP.' The function associated with this user control, in this instance, "ACTIVITY FEEDBACK" is shown. Next, a left pointing arrow adjacent a right point arrow is shown. This visual representation is intended to correspond with a swipe or "SWIPE." The function associated with this user input, in this instance, "TRANSPARENCY ON/OFF" is shown. This may be an audio transparency mode as has previously been discussed. Next, an ellipse or oblong shape is shown. This visual representation is intended to correspond with a hold or "HOLD." The function associated with this user input, in this instance "ACTIVITY MENU" is shown. Thus, the screen display of FIG. 4 illustrates that a user may perform various actions through manipulation of the left ear piece using a set of gestures which may include a single tap, a double tap, a swipe, and/or a hold. Of course other types of gestures are contemplated including triple taps, gestures with particular directionality (e.g. left to right, right to left, down, up, diagonal down and to the right, diagonal up and to the right, diagonal down and to the left, diagonal up and to the left, and other variation.

FIG. 5 illustrates another example of a screen display associated with a software application or mobile app executing on a processor of a mobile device. The screen display illustrates both a left ear piece 102 and a right ear piece 104. Note that as shown in FIG. 5, the corona of the right earpiece 104 is let. The screen display includes a caption or label indicating the "right" ear piece. In additions, portions of the right ear piece are illuminated using one or more LEDs. This portion of the ear piece may be called a corona. Thus, a user using the mobile app may quickly and easily make the association between the right ear piece which they are wearing and what is shown on the screen display. Under the representation of the ear pieces 102, 104 which may be a photo or photo-realistic representation of the ear pieces is information relating to the gestures or controls associated with the ear piece. Note that textual descriptions of the commands 110 are shown at the left and a pictorial representation or symbol or icon or graphic associated with the gesture 112 is shown at right. Thus, here a single dot is shown which is intended to correspond with a single tap or "TAP." The function associated with this user control, in this instance "PLAY/PAUSE MUSIC" is shown. Next, two dots are shown which intended to correspond with a double tap or "2X TAP.' The function associated with this user control, in this instance, "NEXT SONG" is shown. Next, a left pointing arrow adjacent a right point arrow is shown. This visual representation is intended to correspond with a swipe or "SWIPE." The function associated with this user input, in this instance, "VOLUME

UP/DOWN" is shown. Next, an ellipse or oblong shape is shown. This visual representation is intended to correspond with a hold or "HOLD." The function associated with this user input, in this instance "PLAYLIST MENU" is shown. Thus, the screen display of FIG. 5 illustrates that a user may perform various actions through manipulation of the right ear piece using a set of gestures which may include a single tap, a double tap, a swipe, and/or a hold.

Note also, that as shown in FIG. 4 and FIG. 5, the same gestures may perform different actions depending upon whether the gesture is performed on the left ear piece or the right ear piece. It is contemplated, however, that different gestures may be used on different ear pieces and the same gestures may perform the same functions on different ear pieces. In addition, instead of using the gesture control of the ear pieces to perform particular actions other types of user input may be used as well. This includes voice control or using the interface associated with the device executing the software application such as a touchscreen or manual inputs.

FIG. 6 illustrates another example of a screen display associated with a software application or mobile app executing on a processor of a mobile device. In this screen display a left earpiece 120 and a right earpiece 122 are shown. Underneath the left ear piece 120 is an "L" indicating that this is the left ear piece. Underneath the "L" is textural information in the form of a numerical representation 124 of remaining battery life for the left ear piece, in this instance, "48 %." Underneath the right ear piece is an "R" indicating that this is the right ear piece. Underneath the "R" is textual information in the form of a numerical representation 126 of remaining battery life for the right ear piece, in this instance, "48 %." Although the battery charge level or remaining battery life is the same for both the left ear piece and the right ear piece in this example, it is to be understood that the left ear piece and the right ear piece may be different and that charge levels may be independently determined for each ear piece.

Below the representations of the ear pieces is a menu 128 which includes various functions associated with the ear pieces. These include an "ACTIVITY" menu item, a "MACROS" menu item, a "SOUND" menu item, a "PROFILE" menu item, a "SETTINGS" menu item, and a "SERVICE" menu item.

FIG. 7 illustrates another example of a screen display, in this instance the screen display is for tracking activity. At the top right of the screen display is a representation of a pair of earpieces 130. The presence of the earpieces may indicate the earpieces are connected. The earpieces 130 shown may be in the form of a pictorial representation of the earpieces being used

and of the same model, color, etc. Various information associated with one or more activities may be displayed. This may include heart rate 132, number of steps 134, duration 136 or different information which may vary based on the type of activity. For example, instead of number of steps 134, distance may be shown. On the bottom of the screen display are three different icons or visual representations of different activities 140. The activities shown are running or jogging (left), biking (middle), and swimming (right). The selected activity as shown in FIG. 7 is running or jogging. Various information associated with this activity is also shown. This may include heart rate 132 as measured by one or more of the ear pieces such as through use of a pulse oximeter, steps 134, as measured by one or more of the ear pieces such as through use of an inertial sensor, and duration 136.

FIG. 8 illustrates another example of a screen display. In this instance the screen display is for displaying a "MY PROFILE" which may be used to include information about a user. For example, the information may include a name 144, email address 146, or other information including a photo 142.

FIG. 9 illustrates another example of a screen display. In this instance, the screen display is for displaying "SERVICE" information. This may include various options including the ability to view a "USER MANUAL" 148, to view "MY CHATS" 150 which may be chats with service or support representatives, to "RATE THE APP" 152 or to view any "LEGAL NOTICE" 154.

FIG. 10 illustrates another example of a screen display. In this instance the screen display is for displaying the "USER'S MANUAL" which may be organized in various ways including a "SETUP & CONNECT" portion 156, a "USAGE & CARE" portion 158, a "LISTEN TO MUSIC" portion 160, a "TRACK ACTIVITIES" portion 162, and a "COMMUNICATE" portion 164.

It is to be understood that an application may be developed for any number of operating systems or platforms and may be distributed in any number of ways. These may include that the app be developed for the iOS operating system for an Apple mobile device such as an iPhone or iPad and distributed through the App Store. The app may be developed for the Android operating system for an Android device and distributed through Google Play or another Android

app marketplace. The app may be developed for Windows or for any number of other operating systems.

Although various examples have been shown and described throughout, it is to be understood that the present invention contemplates numerous options, variations, and alternatives. The present invention is not to be limited to the specific disclosure provided herein.

What is claimed is:

1. A system comprising:

at least one wireless ear piece comprising an ear piece housing and a wireless transceiver disposed within the ear piece housing;

a software application for executing on a computing device having a display associated therewith;

wherein the software application provides a user interface for use by a user of the at least one wireless ear piece to interact with the at least one ear piece.

2. The system of claim 1 wherein at least one wireless earpiece comprises a physiological sensor.

3. The system of claim 2 wherein the software application provides for tracking one or more physical activities using the physiological sensor.

4. The system of claim 3 wherein the physical activities are selected from a set consisting of running, biking, and swimming.

5. The system of claim 1 wherein the user interface is configured to display a visual representation of the at least one wireless ear piece.

6. The system of claim 5 wherein the representation visual representation includes lighting of the at least one wireless ear piece.

7. The system of claim 6 wherein the lighting is associated with a function or property of the at least one wireless ear piece.

8. The system of claim 7 wherein the property is remaining battery life.

9. The system of claim 5 wherein the user interface is further configured to display available gestures associated with controlling the at least one wireless ear piece.

10. The system of claim 1 wherein the at least one wireless ear piece comprises onboard storage for storing audio files.

11. The system of claim 1 wherein the at least one wireless ear piece is configured to store at least one playlist of audio files.

12. The system of claim 1 wherein the software application provides for connecting the at least one wireless ear piece with the computing device.

13. The system of claim 12 wherein the computing device is a mobile device.

14. A method for controlling a set of wireless ear pieces, the method comprising:

providing a software application for controlling the set of wireless ear pieces, the software application adapted to execute on a computing device;

using the software application on the computing device to display one or more screen displays on a display of the computing device and to receive input from the user into the mobile device;

communicating data associated with the input between the software application and at least one of the wireless ear pieces;

performing an action using at least one of the wireless ear pieces in response to receiving the data.

15. A method for communicating data from a set of wireless ear pieces, the method comprising:

providing a software application for communicating with the set of wireless ear pieces, the software application adapted to execute on a computing device;

using the software application on the computing device to display one or more screen displays on a display of the computing device;

communicating data received from one or more of the wireless ear pieces to the computing device; and

updating the screen displays on the display of the computing device using the data.

16. The method of claim 15 wherein the data comprises physiological data.

17. The method of claim 16 wherein the physiological data is heat rate data.

ABSTRACT

A system includes at least one wireless ear piece comprising an ear piece housing and a wireless transceiver disposed within the ear piece housing, a software application for executing on a computing device having a display associated therewith, and wherein the software application provides a user interface for use by a user of the at least one wireless ear piece to interact with the at least one ear piece.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Filer:	John Darrell Goodhue
Attorney Docket Number:	BRAGI GmbH-P0075USA

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	70	70
UTILITY SEARCH FEE	2111	1	300	300
UTILITY EXAMINATION FEE	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	2051	1	70	70
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**800**

Electronic Acknowledgement Receipt

EFS ID:	27492356
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	John Darrell Goodhue
Filer Authorized By:	
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	12-NOV-2016
Filing Date:	
Time Stamp:	12:57:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$800
RAM confirmation Number	111416INTEFSW00015662506801
Deposit Account	506801
Authorized User	John Goodhue

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

37 CFR 1.17 (Patent application and reexamination processing 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	Application Data Sheet	BRAGIGmbH-P0075USA_USPTO_AIA14_20161112_114901.pdf	1874435 50ada56bd0c55aa0e9ce4f072261379ecd163ce1	no	8
Warnings:					
Information:					
2	Drawings-other than black and white line drawings	BRAGI_ID_0075USA_FIGS.pdf	690860 7234f6fa4a2915348c431dcec6255ccc6078c6a	no	10
Warnings:					
Information:					
3		BRAGIGmbH-P0075_SPEC.pdf	147861 722c18885895c849e3c30f38d383c43993ee4f82	yes	14

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	10
Claims	11	13
Abstract	14	14

Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	37039 c301047ca0ad0f68d4beb3b8aee39471c069cbaa	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2750195		

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.

SCORE Placeholder Sheet for IFW Content

Application Number: 15350020 Document Date: 11/12/2016

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Drawing

At the time of document entry (noted above):

- USPTO employees may access SCORE content via eDAN using the Supplemental Content tab, or via the SCORE web page.
- External customers may access SCORE content via PAIR using the Supplemental Content tab.

Form Revision Date: August 26, 2013

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
15/350,020	11/12/2016	3765	800	BRAGI GmbH-P0075USA	17	3

CONFIRMATION NO. 3412

133690
Goodhue, Coleman & Owens, P.C.
650 S. Prairie View Dr.
Suite 125, PMB #209
West Des Moines, IA 50266

FILING RECEIPT

OC000000087345107

Date Mailed: 11/22/2016

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)

Martin Steiner, München, GERMANY;

Applicant(s)

BRAGI GmbH, Munchen, GERMANY;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This appln claims benefit of 62/255,309 11/13/2015

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 Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 11/21/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/350,020**

Projected Publication Date: 05/18/2017

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

Method and apparatus for interfacing with wireless earpieces

Preliminary Class

002

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).

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.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/350,020

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	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	17 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 210 =	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	730		TOTAL	

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	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
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.

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
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA

CONFIRMATION NO. 3412

133690
Goodhue, Coleman & Owens, P.C.
650 S. Prairie View Dr.
Suite 125, PMB #209
West Des Moines, IA 50266

INFORMAL NOTICE

OC000000087345108

Date Mailed: 11/22/2016

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):
  Martin Steiner

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**.

/sibrahim/

PTO/SB/08a (03-15)
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	15350020
Filing Date	2016-11-12
First Named Inventor	Martin Steiner
Art Unit	3765
Examiner Name	
Attorney Docket Number	BRAGI GmbH-P0075USA

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	3934100	A	1976-01-20	Harada	Entire Document
	2	4150262	A	1979-04-17	Ono	Entire Document
	3	4334315	A	1982-06-08	Ono et al.	Entire Document
	4	4375016	A	1983-02-22	Harada	Entire Document
	5	4588867	A	1986-05-13	Konomi	Entire Document
	6	4654883	A	1987-03-31	Iwata	Entire Document
	7	4682180	A	1987-07-21	Gans	Entire Document
	8	4791673	A	1988-12-13	Schreiber	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	9	4865044	A	1989-09-12	Wallace et al.	Entire Document
	10	5191602	A	1993-03-02	Regen et al.	Entire Document
	11	5201007	A	1993-04-06	Ward et al.	Entire Document
	12	5280524	A	1994-01-18	Norris	Entire Document
	13	5295193	A	1994-03-15	Ono; Hiroshi	Entire Document
	14	5298692	A	1994-03-29	Ikeda et al.	Entire Document
	15	5343532	A	1994-08-30	M. Wilbert Shugart	Entire Document
	16	5363444	A	1994-11-08	Norris	Entire Document
	17	5497339	A	1996-03-05	Bernard	Entire Document
	18	5606621	A	1997-02-25	Reiter et al.	Entire Document
	19	5613222	A	1997-03-18	Guenther	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	20	5692059	A	1997-11-25	Kruger	Entire Document
	21	5721783	A	1998-02-24	Anderson	Entire Document
	22	5749072	A	1998-05-05	Mazurkiewicz et al.	Entire Document
	23	5771438	A	1998-06-23	Palermo et al.	Entire Document
	24	5802167	A	1998-09-01	Hong	Entire Document
	25	5929774	A	1999-07-27	Charlton	Entire Document
	26	5933506	A	1999-08-03	Aoki et al.	Entire Document
	27	5949896	A	1999-09-07	Nageno et al.	Entire Document
	28	5987146	A	1999-11-16	Pluvinage et al.	Entire Document
	29	6339754	B1	2002-01-15	Flanagan et al.	Entire Document
	30	6021207	A	2000-02-01	Puthuff et al.	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	31	6054989	A	2000-04-25	Robertson et al.	Entire Document
	32	6081724	A	2000-06-27	Wilson	Entire Document
	33	6094492	A	2000-07-25	Boesen	Entire Document
	34	6111569	A	2000-08-29	Brusky et al.	Entire Document
	35	6112103	A	2000-08-29	Puthuff	Entire Document
	36	6157727	A	2000-12-05	Rueda; Valentin Chapero	Entire Document
	37	6167039	A	2000-12-26	Karlsson et al.	Entire Document
	38	6181801	B1	2001-01-30	Puthuff et al.	Entire Document
	39	6208372	B1	2001-03-27	Barraclough	Entire Document
	40	6230029	B1	2001-05-08	Yegiazaryan et al.	Entire Document
	41	6275789	B1	2001-08-14	Moser et al.	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	42	6408081	B1	2002-06-18	Boesen	Entire Document
	43	6424820	B1	2002-07-23	Burdick et al.	Entire Document
	44	6470893	B1	2002-10-29	Boesen	Entire Document
	45	6542721	B2	2003-04-01	Boesen	Entire Document
	46	6560468	B1	2003-05-06	Boesen	Entire Document
	47	6654721	B2	2003-11-25	Handelman	Entire Document
	48	6664713	B2	2003-12-16	Boesen	Entire Document
	49	6694180	B1	2004-02-17	Boesen	Entire Document
	50	6718043	B1	2004-04-06	Boesen	Entire Document
	51	6738485	B1	2004-05-18	Boesen	Entire Document
	52	6748095	B1	2004-06-08	Goss	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	53	6754358	B1	2004-06-22	Boesen et al.	Entire Document
	54	6784873	B1	2004-08-31	Boesen et al.	Entire Document
	55	6823195	B1	2004-11-23	Boesen	Entire Document
	56	6852084	B1	2005-02-08	Boesen	Entire Document
	57	6879698	B2	2005-04-12	Boesen	Entire Document
	58	6892082	B2	2005-05-10	Boesen	Entire Document
	59	6920229	B2	2005-07-19	Boesen	Entire Document
	60	6952483	B2	2005-10-04	Boesen et al.	Entire Document
	61	6987986	B2	2006-01-17	Boesen	Entire Document
	62	7136282	B1	2006-11-14	Rebeske	Entire Document
	63	7203331	B2	2007-04-10	Boesen	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	64	7209569	B2	2007-04-24	Boesen	Entire Document
	65	7215790	B2	2007-05-08	Boesen et al.	Entire Document
	66	7463902	B2	2008-12-09	Boesen	Entire Document
	67	7508411	B2	2009-03-24	Boesen	Entire Document
	68	7979035	B2	2011-07-12	Griffin et al.	Entire Document
	69	7983628	B2	2011-07-19	Boesen	Entire Document
	70	8095188	B2	2012-01-10	Shi	Entire Document
	71	8140357	B1	2012-03-20	Boesen	Entire Document
	72	8300864	B2	2012-10-30	Müllenborn et al.	Entire Document
	73	8436780	B2	2013-05-07	Schantz et al.	Entire Document
	74	8719877	B2	2014-05-06	VonDoenhoff et al.	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

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	20010005197	A1	2001-06-28	Mishra et al.	Entire Document
	2	20010027121	A1	2001-10-04	Boesen	Entire Document
	3	20010056350	A1	2001-12-27	Calderone et al.	Entire Document
	4	20020002413	A1	2002-01-03	Tokue	Entire Document
	5	20020007510	A1	2002-01-24	Mann	Entire Document
	6	20020010590	A1	2002-01-24	Lee	Entire Document
	7	20020030637	A1	2002-03-14	Mann	Entire Document
	8	20020046035	A1	2002-04-18	Kitahara et al.	Entire Document
	9	20020057810	A1	2002-05-16	Boesen	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	10	20020076073	A1	2002-06-20	Taenzer et al.	Entire Document
	11	20020118852	A1	2002-08-29	Boesen	Entire Document
	12	20030065504	A1	2003-04-03	Kraemer et al.	Entire Document
	13	20030100331	A1	2003-05-29	Dress et al.	Entire Document
	14	20030104806	A1	2003-06-05	Ruef et al.	Entire Document
	15	20030115068	A1	2003-06-19	Boesen	Entire Document
	16	20030125096	A1	2003-07-03	Boesen	Entire Document
	17	20030218064	A1	2003-11-27	Conner et al.	Entire Document
	18	20040070564	A1	2004-04-15	Dawson et al.	Entire Document
	19	20040160511	A1	2004-08-19	Boesen	Entire Document
	20	20050043056	A1	2005-02-24	Boesen	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	21	20050125320	A1	2005-06-09	Boesen	Entire Document
	22	20050148883	A1	2005-07-07	Boesen	Entire Document
	23	20050165663	A1	2005-07-28	Razumov	Entire Document
	24	20050196009	A1	2005-09-08	Boesen	Entire Document
	25	20050251455	A1	2005-11-10	Boesen	Entire Document
	26	20050266876	A1	2005-12-01	Boesen	Entire Document
	27	20060029246	A1	2006-02-09	Boesen	Entire Document
	28	20060074671	A1	2006-04-06	Farmaner et al.	Entire Document
	29	20060074808	A1	2006-04-06	Boesen	Entire Document
	30	20080254780	A1	2008-10-16	Kuhl et al.	Entire Document
	31	2009073070	A1	2009-03-19	ROFOUGARAN, Ahmadreza	Entire Document

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	32	2010172522	A1	2010-07-08	Mooring et al.	Entire Document
	33	2010203831	A1	2010-08-12	MUTH, James Michael	Entire Document
	34	2015131814	A1	2015-05-14	Usher et al.	Entire Document
	35	2015234187	A1	2015-08-20	Lee Vincent	Entire Document

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	1017252	EP	A2	2000-07-05	Bybee et al.	Entire Document	☓
	2	2074817	GB		1981-04-11	GEN ENGINEERING	Entire Document	☒
	3	06292195	JP		1998-10-18	Matsushita Electric Industrial Co. LTD	Entire Document	☒
	4	2014043179	WO	A2	2014-03-20	RUWE et al.	Entire Document	☒
	5	2015110577	WO	A1	2015-07-30	HVIID	Entire Document	☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	6	2015110587	WO	A1	2015-07-30	HVIID	Entire Document	☒

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	Announcing the $3,333,333 Stretch Goal (02/24/2014)	
	2	BRAGI Is On Facebook (2014)	
	3	BRAGI UPDATE - Arrival Of Prototype Chassis Parts - More People - Awesomeness (5/13/2014)	
	4	BRAGI UPDATE - Chinese New Year, Design Verification, Charging Case, More People, Timeline(3/6/2015)	
	5	BRAGI UPDATE - First Sleeves From Prototype Tool - Software Development Kit (6/5/2014)	
	6	BRAGI UPDATE - Let's Get Ready To Rumble, A Lot To Be Done Over Christmas (12/22/2014)	
	7	BRAGI UPDATE - Memories From April - Update On Progress (9/16/2014)	
	8	BRAGI UPDATE - Memories from May - Update On Progress - Sweet (10/13/2014)	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	9	BRAGI UPDATE - Memories From One Month Before Kickstarter - Update On Progress (7/10/2014)	
	10	BRAGI UPDATE - Memories From The First Month of Kickstarter - Update on Progress (8/1/2014)	
	11	BRAGI UPDATE - Memories From The Second Month of Kickstarter - Update On Progress (8/22/2014)	
	12	BRAGI UPDATE - New People @BRAGI- Prototypes (6/26/2014)	
	13	BRAGI UPDATE - Office Tour, Tour To China, Tour to CES (12/11/2014)	
	14	BRAGI UPDATE - Status On Wireless, Bits and Pieces, Testing-Oh Yeah, Timeline(4/24/2015)	
	15	BRAGI UPDATE - The App Preview, The Charger, The SDK, BRAGI Funding and Chinese New Year (02/11/2015)	
	16	BRAGI UPDATE - What We Did Over Christmas, Las Vegas & CES (01/19/2014)	
	17	BRAGI UPDATE - Years of Development, Moments of Utter Joy and Finishing What We Started(6/5/2015)	
	18	BRAGI UPDATE-Alpha 5 and Back To China, Backer Day, On Track(5/16/2015)	
	19	BRAGI UPDATE-Beta2 Production and Factory Line(8/20/2015)	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	20	BRAGI UPDATE-Certifications, Production, Ramping Up	
	21	BRAGI UPDATE-Developer Units Shipping and Status(10/05/2015)	
	22	BRAGI UPDATE-Developer Units Started Shipping and Status (10/19/2015)	
	23	BRAGI UPDATE-Developer Units, Investment, Story and Status(11/2/2015)	
	24	BRAGI UPDATE-Getting Close(8/6/2014)	
	25	BRAGI UPDATE-On Track, Design Verification, How It Works and What's Next(7/15/2015)	
	26	BRAGI UPDATE-On Track, On Track and Gems Overview	
	27	BRAGI UPDATE-Status On Wireless, Supply, Timeline and Open House@BRAGI(4/1/2015)	
	28	BRAGI UPDATE-Unpacking Video, Reviews On Audio Perform and Boy Are We Getting Close(9/10/2015)	
	29	Last Push Before The Kickstarter Campaign Ends on Monday 4pm CET (3/28/2014)	
	30	STAAB, Wayne J., et al., "A One-Size Disposable Hearing Aid is Introduced", The Hearing Journal 53(4):36-41) April 2000	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	31	Stretchgoal - It's Your Dash (02/14/2014)
	32	Stretchgoal - The Carrying Case for The Dash (02/12/2014)
	33	Stretchgoal - Windows Phone Support (02/17/2014)
	34	The Dash + The Charging Case & The BRAGI News (2/21/14)
	35	The Dash-A Word From Our Software, Mechanical and Acoustics Team + An Update (3/11/2014)
	36	Update From BRAGI - $3,000,000 - Yipee (3/22/2014)
	37	WEISIGER, "Conjugated Hyperbilirubinemia", (1/5/2016)

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.

[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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

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	/JOHN D. GOODHUE/	Date (YYYY-MM-DD)	2017-04-03
Name/Print	John D. Goodhue	Registration Number	47603

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.**

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.

Electronic Acknowledgement Receipt

EFS ID:	28813269
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Filer Authorized By:	John Darrell Goodhue
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	03-APR-2017
Filing Date:	12-NOV-2016
Time Stamp:	13:34:28
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	Information Disclosure Statement (IDS) Form (SB08)	BRAGIGmbH-P0075USA_15350020_IDS_3-30-17.pdf	1058095 f57cb4ffbddb4e3b7f7a11c1be0d55a563cc2b9b	no	17

Warnings:

Information:					
2	Non Patent Literature	Update5February242014.pdf	4011009 f70a0f42f18b57902831c24c966424f2d08051f5	no	14
Warnings:					
Information:					
3	Non Patent Literature	FacebookReferences.pdf	10610745 a4aa525b8f44d530668b63fc73c123b6bb8e4408	no	51
Warnings:					
Information:					
4	Non Patent Literature	Update12May132014.pdf	1528236 4a32e20e070a8ff7135d23e93dffed754fa71ae9	no	8
Warnings:					
Information:					
5	Non Patent Literature	Update26March62015.pdf	4942028 5c11f95c389b82da464e2011620cbee14bc71230	no	18
Warnings:					
Information:					
6	Non Patent Literature	Update13June52014.pdf	2047381 f5c44b60fa0b251cdfa4837b2bd50af5601f7ff5	no	8
Warnings:					
Information:					
7	Non Patent Literature	Update23December222014.pdf	4248019 03f382f7f9f327d4eb30c6454238f581f35d368b	no	18
Warnings:					
Information:					
8	Non Patent Literature	Update18September162014.pdf	3349573 3882add1a2dc5a9cab44075069409bf5f6e49db2	no	15
Warnings:					
Information:					

9	Non Patent Literature	Update20October132014.pdf	4184839 7b17adff3095969bcea51c3a56e88ebf8fc15dca	no	16
Warnings:					
Information:					
10	Non Patent Literature	Update15July102014.pdf	4585898 dbc1a9565b6a14b31e4102dc0db1cd5b893a1cca	no	17
Warnings:					
Information:					
11	Non Patent Literature	Update16August12014.pdf	4439836 c748f73768f3ac30d568f345e466a0ed5dbb0ce3	no	16
Warnings:					
Information:					
12	Non Patent Literature	Update17August222014.pdf	3596597 49e9f9e0b9a6d50c673ef28b3cec05f6d0adc2d3	no	15
Warnings:					
Information:					
13	Non Patent Literature	Update14June262014.pdf	2050097 930d600db29382aae5f8f5c4ceec025c1ba11ec7	no	9
Warnings:					
Information:					
14	Non Patent Literature	Update22December112014.pdf	3685338 60e6a28b2d55a2cac61b400b646883c5857ecd74	no	14
Warnings:					
Information:					
15	Non Patent Literature	Update28April242015.pdf	5370033 0e58bfca0da9d34469b2b18d83c791dcb1178a70	no	18
Warnings:					
Information:					

16	Non Patent Literature	Update25February112015.pdf	5131924 f90d8d3216c983d167e4c14eca15d406c6d68e73	no	19
Warnings:					
Information:					
17	Non Patent Literature	Update24January192015.pdf	5632994 ffa8590f0eea7deea34360e1c7c04abab68c20f2	no	21
Warnings:					
Information:					
18	Non Patent Literature	Update30June52015.pdf	4287884 1241654a24562ec997ff41cbfc992641bbcffd4a	no	21
Warnings:					
Information:					
19	Non Patent Literature	Update29May162015.pdf	3424142 b125a7d738304de5706c80804612408c0b4ab213	no	15
Warnings:					
Information:					
20	Non Patent Literature	Update35August202015.pdf	4281733 6378fbc1ebfc0ee024c8b6540faee3d01f87d3ab	no	16
Warnings:					
Information:					
		Total Files Size (in bytes):	82466401		

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:	28813460
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Filer Authorized By:	John Darrell Goodhue
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	03-APR-2017
Filing Date:	12-NOV-2016
Time Stamp:	13:43:10
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	Non Patent Literature	Update43November132015.pdf	4253804 26f9ae2bd1145e6e5a91f20a9b16ee306dcd152c	no	15

Warnings:

Information:					
2	Non Patent Literature	Update39October52015.pdf	6523516 0ad4193a92fbe7c39ea13a292d43cfa944cfdfe8	no	20
Warnings:					
Information:					
3	Non Patent Literature	Update40October192015.pdf	5399811 309558136d7219d95338f15eb4c52de70745bdf5	no	20
Warnings:					
Information:					
4	Non Patent Literature	Update41November22015.pdf	3337258 4eee37ffde1e0980f04bf7a0f44568ae0be7d2a7	no	14
Warnings:					
Information:					
5	Non Patent Literature	Update34August62015.pdf	4639632 3e05d1cc2f52cd2e63b4c4de12e66f8f9879488e	no	20
Warnings:					
Information:					
6	Non Patent Literature	Update32July152015.pdf	4856597 80584ca047a2d29d1296eebe9930d1d537a34913	no	17
Warnings:					
Information:					
7	Non Patent Literature	Update31June242015.pdf	4636264 7d2939b3719ac841232163e46941cd18f8e0d539	no	19
Warnings:					
Information:					
8	Non Patent Literature	Update27April12015.pdf	3980964 a0427ac38529891c49bac177c7abc09b26006025	no	17
Warnings:					
Information:					

9	Non Patent Literature	Update36September102015.pdf	3386456 3e0a29d906413acbbac020e9cfe22e544076136e	no	15
Warnings:					
Information:					
10	Non Patent Literature	Update9Mar282014.pdf	1423870 4cf7ae68f6250a2a037af887eccd7f689b264bbe	no	7
Warnings:					
Information:					
11	Non Patent Literature	A_one_size_disposable_hearing_aid_is_introduced.pdf	123404 59f9e5ef510a9f3c2fe9d2eb3cbb2ddbd5dfcb8f	no	4
Warnings:					
Information:					
12	Non Patent Literature	Update2February142014.pdf	3598244 2ca6f0a27927283cdc7c272e84a37656d5daeac2	no	14
Warnings:					
Information:					
13	Non Patent Literature	Update1February122014.pdf	1583282 a74d728f7a8f6c4c51cc1c50f8083f1f58fa37d2	no	9
Warnings:					
Information:					
14	Non Patent Literature	Update3February172014.pdf	5792675 0611de3026e03cbe58328b344f52cbcd9e1a7454	no	17
Warnings:					
Information:					
15	Non Patent Literature	Update4February212014.pdf	3421673 08e02601621bf68704a9300b182ddc292a1339e6	no	12
Warnings:					
Information:					

16	Non Patent Literature	Update6March112014.pdf	1657923 6a289bf052152e8c3d94a7ee3334135d87dc28b5	no	7
Warnings:					
Information:					
17	Non Patent Literature	update7March222014.pdf	2478404 34a502168e354a432fdd977e1c7f01318aeb41ab	no	11
Warnings:					
Information:					
18	Non Patent Literature	Weisiger_Conjugated_Hyperbilirubinemia_1-5-16.pdf	603771 ea8a93149324b88025dbc8db4222011e649ce10f	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	61697548	

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.

Sign in

Google

WO2014043179A2

Patents

English French

Find prior art

Discuss this patent

Powered headset accessory devices

WO 2014043179 A2

Publication number	WO2014043179 A2
Publication type	Application
Application number	PCT/US2013/059167
Publication date	Mar 20, 2014
Filing date	Sep 11, 2013
Priority date	Sep 14, 2012
Also published as	CN104737558A, 5 More »
Inventors	Matthew N. RUWE, Daniel D. Gonsalves
Applicant	Bose Corporation
Export Citation	BiBTeX, EndNote, RefMan

Patent Citations (5), Referenced by (1), Classifications (8), Legal Events (1)

External Links: Patentscope, Espacenet

ABSTRACT

A device for coupling to a connector on an ear cup of a headset includes a mating connector corresponding to the connector of the headset. The mating connector includes a crossover conductor coupled to a first and a second terminal within the mating connector. One or more accessory circuits is provided by the device, including a lamp configured to direct light onto a surface external to the device or a position detection circuit usable to adjust three-dimensional audio signals to account for the direction the user is looking.

DESCRIPTION

POWERED HEADSET ACCESSORY DEVICES

BACKGROUND

[0001] This disclosure relates to providing powered accessory devices for headsets.

[0002] U.S. Patent Publication 2010/0260361 , fully incorporated herein by reference, describes a headset with a modular connection allowing a down-cable, optionally supporting a boom microphone, to be connected to either ear cup, with a crossover plug connected to the opposite ear cup to connect an audio signal provided by the down-cable to the acoustic driver in the ear cup to which the plug is connected. Figures 1 A and 1 B are derived from figures 1 and 4 of that publication. As shown in figure 1 A, the system incorporates a headset assembly 10, a down-cable assembly 20 and a crossover plug 30. The headset assembly 10 incorporates a first ear cup 12a having an acoustic driver 14a and a connector 16a (both seen more clearly in figure 1 B), a second ear cup 12b having an acoustic driver 14b and a connector 16b, and a headband 18 that couples together the ear cups 12a and 12b. The down- cable assembly 20 incorporates an electrically conductive cable 22, an upper coupling 24 to couple one end of the conductive cable 22 to either of the connectors 16a and 16b, a communications microphone 26a, a microphone boom 26b coupling the microphone 26a to the upper coupling 24, and a lower coupling 28 for connecting the other end of the conductive cable 22 to another device (not shown) such as an aircraft communications panel, a mobile phone, or a portable radio. The plug 30 is able to be coupled to either of the connectors 16a and 16b.

[0003] As shown in figure 1 B, multiple electrical conductors (e.g., electrical cabling or other form of electrical conductors) are carried by the headband 18 to convey electrical signals between the earpieces 12a and 12b. Power and ground conductors 40 and 42 are connected to corresponding conductors 50 and 52 in the upper coupling 24 of the down-cable 20 via terminals 60a and 62a in the connector 16a. The power and ground conductors 40 and 42 are also connected to power and ground terminals 60b and 62b in the second ear cup 12b so that the down-cable 20 can be connected to that ear cup instead and still provide power

CLAIMS (1)

1. WHAT IS CLAIMED IS:

1 . A device (102) for coupling to a connector (16a, 16b) on an ear cup

(1 2a, 12b) of a headset (10), the device comprising

a mating connector (101) corresponding to the connector of the

headset, the mating connector including a crossover conductor (46) coupled to a first and a second terminal within the mating connector;

a power conductor and a ground conductor coupled to respective third and fourth terminals in the mating connector; and

an accessory electronic device (100, 102) powered by power received from the headset over the third and fourth terminal within the mating connector.

2. The device of claim 1 , wherein the accessory electronic device

comprises a lamp (122) configured to direct light onto a surface external to the device.

3. The device of claim 1 , further comprising:

a battery compartment having positive and negative terminals for

coupling to a battery, and

a power conductor and a ground conductor coupling power and ground terminals of the accessory device to the positive

to the headset. The power and ground conductors 40 and 42 provide power to first power electronics 64a in the first ear cup 12a and second power electronics 64b in the second ear cup 12b. A crossover conductor 44 is connected to crossover terminals 66a and 66b in

corresponding ear cup connectors 16a and 16b, but is not electrically coupled to anything else within either ear cup. The connectors 16a and 16b have left and right audio signal terminals 68a and 68b, respectively, coupled to the acoustic transducers 14a and 14b.

[0004] In the example of figure 1 B, a crossover conductor 46 in the crossover plug 30 connects the crossover terminal 66b to the right audio signal terminal 68b in connector 16b. In the upper coupling 24 of the down- cable 20, a left audio conductor 54 is coupled to the left audio signal terminal 68a in the connector 16a, while a right audio conductor 56 is connected to the crossover terminal 66a, from which the crossover conductor 44 conducts the right audio signal to the crossover terminal 66b in the connector 16b. In this way, the crossover conductor 46 couples the right audio from the crossover terminal 66b to the right audio terminal 68b. If the down-cable 20 and crossover plug 30 were reversed, the right audio conductor 56 would be connected directly to the right audio terminal 68b to deliver audio signals to the right transducer 14b (via the power electronics 64b), while the crossover conductors 44 and 46 would couple the left audio signals from the to the left audio conductor 54 to the left audio terminal 68a through the crossover terminals 60a and 60b. This allows the down-cable 20 to be connected to either ear cup, without having to provide both left and right signals across the headband, and without any need to detect which side the down cable is connected to.

[0005] The design described in publication 2010/0260361 is implemented commercially in the A20® Aviation Headset from Bose® Corporation of Framingham, Massachusetts.

SUMMARY

[0006] In general, in one aspect, a device for coupling to a connector on an ear cup of a headset includes a mating connector corresponding to the connector of the headset, the mating connector including a crossover conductor coupled to a first and a second terminal within the mating connector, and a lamp configured to direct light onto a surface external to the device.

[0007] Implementations may include one or more of the following. A power conductor and a ground conductor may couple power and ground terminals of the lamp to third and fourth terminals in the mating connector. A battery compartment may have positive and negative terminals for coupling to a battery, and a power conductor and a ground conductor coupling power and ground terminals of the lamp to the positive and negative battery terminals. A second power conductor and a second ground conductor may couple the positive and negative battery terminals of the lamp to third and fourth terminals in the mating connector. A body may house the mating connector, with a boom extending from the body including a first aperture through which light from the lamp may exit the boom and a cover, rotatable around the boom and having a second aperture, blocks the first aperture when the cover in in a first rotation position and aligns the second aperture with the first aperture when the cover in in a second rotation position, and a switch is electrically coupled to the lamp and mechanically coupled to the cover, such that rotating the cover between the first and second rotation positions activates the switch to turn the lamp on when the cover is in the second rotation position and off when the cover is in the first rotation position.

[0008] In general, in one aspect, a device for coupling to a connector on an ear cup of a headset includes a mating connector corresponding to the connector of

and negative battery terminals.

4. The device of claim 1 , further comprising:

a body housing the mating connector;

a boom extending from the body, the boom comprising:

a first aperture through which light from the lamp may exit the

boom;

a cover, rotatable around the boom and having a second aperture, such that the cover blocks the first aperture when the cover is in a first rotation position and aligns the second aperture with the first aperture when the cover is in a second rotation position; and a switch, electrically coupled to the lamp and mechanically coupled to the cover, such that rotating the cover between the first and second rotation positions activates the switch to turn the lamp on when the cover is in the second rotation position and off when the cover is in the first rotation position.

The device of claim 1 , wherein the accessory electronic device

comprises:

a position sensor (202) for determining a position of the device; and a data connection (206) outputting data from the position sensor.

The device of claim 5, further comprising:

a second position sensor for determining a position of the device on a second axis, orthogonal to a first axis on which the first position sensor determines position.

The device of claim 6, wherein the first and second position sensors comprise gyroscopes responsive to rotation around the respective first and second axes.

The device of claim 6, wherein the first and second position sensors comprise accelerometers responsive to displacement along the respective first and second axes.

The device of claim 6, wherein the first and second position sensors comprise magnetometers responsive to changes in magnetic fields associated with movement of the device around the respective first and second axes.

A system for providing directional audible information to a user, the system comprising:

a headset (10) having a first ear cup (12a) having a first connector

(16a) and a second ear cup (12b) having a second connector (16b), both of the first and the second connectors being operable for connection to an aircraft radio;

an acoustic imaging system operable to: receive a sound signal and first data identifying a first directional location;

the headset, the mating connector including a crossover conductor coupled to a first and a second terminal within the mating connector, a position sensor for determining a position of the device, and a data connection outputting data from the position sensor.

[0009] Implementations may include one or more of the following. A second position sensor may determine a position of the device on a second axis, orthogonal to a first axis on which the first position sensor determines position. The first and second position sensors may include gyroscopes responsive to rotation around the respective first and second axes. The first and second position sensors may include accelerometers responsive to displacement along the respective first and second axes. The first and second position sensors may include magnetometers responsive to changes in magnetic fields associated with movement of the device around the respective first and second axes.

[0010] In general, in one aspect, a system for providing directional audible information to a user includes a headset having a first ear cup having a first connector and a second ear cup having a second connector, both of the first and the second connectors being operable for connection to an aircraft radio. An acoustic imaging system is operable to receive a sound signal and first data identifying a first directional location, relative to a first external reference, associated with the sound, receive second data identifying a direction the user may be looking relative to a second external reference, generate binaural audio signals that represent the sound at a second directional location when perceived by the user, the second directional location corresponding to the first directional location and adjusted according to the direction the user may be looking, such that the user perceives the direction of the source of the sound to be at the first directional location relative to the first external reference, and output the binaural audio signals. An accessory device for coupling to either of the first or the second connector of the headset includes a mating connector corresponding to the connectors of the headset, the mating connector including a crossover conductor coupled to a first and a second terminal within the mating connector, a position sensor for determining a position of the accessory device, and a data connection outputting data from the position sensor to the acoustic imaging system. The data from the position sensor includes the second data representative of the direction the user may be looking relative to the external reference.

[0011] Implementations may include one or more of the following. The acoustic imaging system may be coupled to the aircraft radio, and the system may be configured to mix the binaural audio signals output by the acoustic imaging system with communications audio signals from the radio and deliver the mixed signals to the headset. The binaural audio signals output by the acoustic imaging system may be provided to the headset independently of signals from the aircraft radio. The accessory device may include a second data connection receiving the binaural audio signals from the acoustic imaging system and an audio output for providing the binaural audio signals to the headset through the mating connector. The accessory device may include a wireless transmitter for communication with the acoustic imaging system, and the acoustic imaging system may include a wireless receiver for communication with the accessory device. The first and second data may include two-dimensional location data. The two-dimensional location data may a horizontal angle away from a vertical origin of the first or second external reference, and a vertical angle away from a horizontal angle of the first or second external reference. The first external reference may be the Earth, the vertical origin of the first external reference may be a line parallel to gravity and ahead of the direction an aircraft may be traveling, and the horizontal origin of the first external reference may be the horizon. The second external reference may be an aircraft in which the user is located, the vertical origin of the second external reference may be a line directly in front of the aircraft and vertical

relative to a first external reference, associated with the sound,

receive second data identifying a direction the user is looking

relative to a second external reference,

generate binaural audio signals that represent the sound at a

second directional location when perceived by the user, the second directional location corresponding to the first directional location and adjusted according to the direction the user is looking, such that the user perceives the direction of the source of the sound to be at the first directional location relative to the first external reference, and

output the binaural audio signals; and

an accessory device for coupling to either of the first or the second connector of the headset, the accessory device comprising:

a mating connector corresponding to the connectors of the headset, the mating connector including a crossover conductor coupled to a first and a second terminal within the mating connector;

a position sensor for determining a position of the accessory device; and

a data connection outputting data from the position sensor to the acoustic imaging system;

wherein the data from the position sensor comprises the second data representative of the direction the user is looking relative to the external reference. The system of claim 10, wherein the acoustic imaging system is

coupled to the aircraft radio, and the system is configured to mix the binaural audio signals output by the acoustic imaging system with communications audio signals from the radio and deliver the mixed signals to the headset.

12. The system of claim 10, wherein the binaural audio signals output by the acoustic imaging system are provided to the headset independently of signals from the aircraft radio.

13. The system of claim 12, wherein the accessory device further

comprises:

a second data connection receiving the binaural audio signals from the acoustic imaging system; and

an audio output for providing the binaural audio signals to the headset through the mating connector.

14. The system of claim 10, wherein:

the accessory device further comprises a wireless

when the aircraft is level, and the horizontal origin of the second external reference may be in a plane intersecting the user's ears and perpendicular to gravity when the aircraft is level.

[0012] In general, in one aspect, a device for coupling to a connector on an ear cup of a headset includes a mating connector corresponding to the connector of the headset, the mating connector including a crossover conductor coupled to a first and a second terminal within the mating connector, and a wireless transceiver coupled to a third and a fourth terminal within the mating conductor.

[0013] In general, in one aspect, a device for coupling to a connector on an ear cup of a headset includes a mating connector corresponding to the connector of the headset, the mating connector including a crossover conductor coupled to a first and a second terminal within the mating connector, and a portable power supply coupled to a third and a fourth terminal within the mating conductor.

[0014] Advantages include the ability to provide modular accessories to a headset without requiring cumbersome attachment mechanisms. Power may be provided from the headset to the accessory, from the accessory to the headset, or shared between them.

[0015] Other features and advantages will be apparent from the description and the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] Figure 1 A shows a headset with a cable and terminator that can be attached to either ear cup.

[0017] Figure 1 B shows a schematic diagram of example wiring for the headset of figure 1 A.

[0018] Figures 2, 4, 5, 6, 7, 8, 9, 10, and 1 1 show schematic diagrams of modular accessories and their connection to a headset like that of figure 1 A.

[0019] Figures 3A, 3B, and 3C show an example of a modular accessory for use with a headset like that of figure 1 A.

DESCRIPTION

[0020] Additional capabilities may be added to a headset through the use of modular accessories that connect in place of the crossover plug described above. In figure 1 B, note that power and ground conductors 40 and 42 are connected to corresponding terminals 60a, 60b, 62a, and 62b in each ear cup, but are not used by the crossover plug 30. As shown in figure 2, a modular accessory 100 with an appropriate mating connector 101 housing the crossover cable 46 and connected in place of the crossover plug 30 may use the power available from the power and ground terminals 60b and 62b (or terminals 60a and 62a if connected to the first ear cup) for its own operation. Alternatively, the modular accessory 100 may provide power to the headset via those same conductors, in place of, or to supplement, the power provided by the down-cable 20. Several such accessories are described below. In other examples, the power available from the headset is insufficient to power the accessory, which supplies its own power, but is used to confirm for the accessory that the headset is in use. In still other examples, the power from the headset isn't needed by the accessory at all, but the connector 16a or 16b provides a useful attachment point for the accessory.

[0021] One type of accessory for this application is a reading lamp 102, as shown in figures 3A, 3B, 3C, and 4. For aviation headsets, such as the headset 104, pilots or passengers may need to view flight documents, e.g., a chart 106, and instrumentation, e.g., a control panel 108, in dark cockpits. Providing a small lamp 102 connected directly to the headset 10 keeps the light focused on whatever the user is looking at. Using the attachment point provided by the connector 16a or 16b (fig. 1 B) provides a more elegant and simple solution than other means of attaching a lamp to the headset, such as zip ties, glue, or hook-and-loop fasteners. It also leaves the user with one fewer piece of equipment to keep track of. A LED light source 110 will generally be sufficient, while having a low enough power requirement to either be powered by the headset power or by a small on-board battery 112. In particular, a red LED will help retain the user's dark-adapted vision and may be compatible with military night vision goggle systems.

[0022] A switch 114 is included which allows the user to turn the lamp on and off as needed. In some examples, the light

transmitter for

communication with the acoustic imaging system; and

the acoustic imaging system further comprises a wireless receiver for communication with the accessory device.

16. The system of claim 10, wherein the first and second data comprise two-dimensional location data.

16. The system of claim 15, wherein the two-dimensional location data comprise a horizontal angle away from a vertical origin of the first or second external reference, and a vertical angle away from a horizontal angle of the first or second external reference.

17. The system of claim 16, where the first external reference comprises the Earth, the vertical origin of the first external reference comprises a line parallel to gravity and ahead of the direction an aircraft is traveling, and the horizontal origin of the first external reference is the horizon.

18. The system of claim 16, where the second external reference is an aircraft in which the user is located, the vertical origin of the second external reference is a line directly in front of the aircraft and vertical when the aircraft is level, and the horizontal origin of the second external reference is in a plane intersecting the user's ears and perpendicular to gravity when the aircraft is level.

source 110 is located at the end of a short boom 116, and the switch 114 is connected to a rotatable section 118 at the end of the boom. Turning the rotatable section 118 (arrow 120 in figure 3B) turns the lamp 102 on and off. In some examples, the light source 110 may be part of the rotatable section 118 and rotate with it, or it may be located within the rotatable section and exposed or concealed by an aperture such as a window 122 in the rotatable section 118. The act of rotating the section 118 then serves to expose or conceal the light source 110, along with activating the switch 114 to turn it on when exposed and off when concealed. This provides a more intuitive interface to the user than a traditional push-button or toggle switch, in which the operation of the switch has no natural relationship to the state of the lamp.

[0023] Another type of accessory that may be coupled to the headset 10 through the connector 16a or 16b is a head-tracking sensor module. As shown in figure 5, a head tracking sensor module 200 includes sensors 202, such as gyroscopes, accelerometers, or magnetic field sensors, that measure the one-, two-, or three-dimensional angle of the headset, from which the direction the user is looking may be inferred. In a one-dimensional example, the rotation of the user's head in a horizontal plane is measured, i.e., how far left or right the user is looking. A second dimension would typically be elevation from the horizontal plane, i.e., how far up or down from the horizon the user is looking. In some examples, a third dimension, the side-to-side tilt of the user's head could also be measured. The sensor data is provided to an external processing system 204 through a data connection, such as a wireless link 206.

[0024] This information can then be used by two- or three-dimensional acoustic imaging systems to modify the sounds sent to the headset 10 to that the intended two- or three-dimensional position of a sound, relative to the vehicle, is adjusted to compensate for the actual direction the user is facing. For example, if an audible warning indicating the presence of another aircraft is meant to be positioned at 45 degrees to the right, relative to the aircraft's heading (the direction the aircraft is pointing), but the pilot is already looking 30 degrees to the right, then the sound should be delivered to the headset so that the pilot perceives it to be 15 degrees farther to the right of where he is facing. Vertical information, if present in the audio system and measured by the sensor module 200, can be similarly compensated. In some examples, vertical distance is provided as the relative elevation distance between the two aircraft. This may be combined with the lateral distance between them (absolute or projected into a horizontal plane, such as the ground) to compute the angle up or down at which the other aircraft can be observed.

[0025] In the example of figure 5, the external processing system 204 is connected to the aircraft's warning system 208 and radio 210. The processing system 204 receives the audio signals and intended position data from the warning system 208 and the actual head position information from the sensor module 200 (plus any available information about the aircraft's heading, such as from a GPS system 212), and modifies the audio signals based on the transfer function of the headset 10 so that the sounds will be heard from the correct location. It then provides the modified audio signals to the radio 210 for delivery to the headset.

[0026] Alternatively, the headset 10 may be directly connected to the external processing system 204 through its down-cable 20, such that the audio from the radio 210 is mixed with the modified directional audio signals within the external processing system 204 and delivered to the headset 10 by the processing system 204. In this embodiment, the wireless link 206 may be omitted, as the data from the sensors 202 can be delivered to the processing system 204 via the down-cable 20, for example by modulating it onto the power line 40 in the headset.

[0027] In some examples, directional information for warning sounds is delivered to an aircraft based on the direction the aircraft is moving (its "ground track"), which may not match the aircraft's actual heading (i.e., due to crosswinds adding a sideways component to the aircraft's movement), let alone the direction the pilot is facing within the aircraft. In such a situation, the audio system may compensate for both the aircraft's real heading relative to its ground track as well as the pilot's head position relative to the aircraft heading.

[0028] Similar systems may be used on ground vehicles, such as to warn a driver about nearby vehicles or to inform a gunner of the direction of a target, and on ships for similar purposes, when the available directional information is based on the heading of the vehicle or weapons platform, but the user may be looking another direction. A further example is use by a dismounted soldier, who may have a sniper-detection or other combat information system located in a backpack or otherwise on his body that produces audible indications of the direction of threats or squad mates. Adjusting audio warnings based on the direction the soldier is looking relative to the position of the detection system allows him to immediately know which direction the threat is located in. Similarly, if the relative position of other soldiers communicating over a radio is known, their voices can be delivered to the soldier's headset in the correct spatial position, helping maintain situational awareness. In a civilian context, such a system may be used to help a crane operator keep track audibly of the direction of a spotter communicating from the ground, to name one example.

[0029] As with the lighting example, using the connector on the headset minimizes the amount of equipment the user must have attached to his head or helmet, while allowing the headset itself to remain relatively simple, that is, the sensors and

related circuitry do not need to be integrated into the headset. If power available to the headset, such as from a vehicle intercom to which it is attached, is sufficient to power the sensor system, then the power and ground lines 40 and 42 may be used. If that power is not sufficient, or not always available, as in the case of a dismounted soldier using a portable radio, then an on-board battery 214 within the sensor module 200 may provide the required power.

[0030] Additional accessories that may make use of a connection socket on a headset are shown in figures 6 through 11 . In these figures, we refer to the ear cup 12, connector 16, and components including driver 14, ANR circuit 64, audio conductor 119, and terminals 60, 62, 66, and 68 generically, without specifying the right or left ear cup. Some figures also show additional signal terminals between the headset and the accessory - while minimizing changes to the headset provides the advantages discussed above, additional accessory features may be enabled by increasing the connectivity between the accessory and the headset, such as providing a data channel between processors located in each. In some examples, the audio and other signals between the headsets may be digitized and multiplexed, allowing the number of wires in the headband to be kept low.

[0031] In figure 6, an accessory 300 includes a battery circuit 302 coupled to the power and ground terminals, and optionally a power switch 304 to control whether power is provided or a power supply circuit 306 to control the flow of voltage and current between the battery and the headset. Such a battery circuit may be combined with any of the other accessories discussed here, or may be the entire purpose of the accessory device. Additional features may include a charge indicator light 308, and external charging contacts or plug 310 for recharging the battery. An accessory with such a battery circuit may be used with a variety of other accessories by plugging the accessory with the battery circuit 302 into one ear cup and the other accessory into the other. The battery accessory may also be used on its own to power the ANR circuits of a headset that doesn't otherwise need to be plugged in. In some examples, two accessories with batteries may be used, one attached to each ear cup, to further extend the time in which the headset can be operated. When the headset is plugged into a power supply through the down cable, the power supply circuit 306 may use that power to recharge the battery circuit 302.

[0032] In figure 7, a biometric monitoring accessory 350 includes biometric or environmental sensors 352 that measure, for example, blood or

atmospheric oxygen levels and heart rate of the user. When a processor 354 determines that the sensor data indicates a problem, such as hypoxia or CO poisoning, it injects a warning signal into the crossover conductor 46, causing the warning to be output by the acoustic driver 14 of the ear cup 12 the monitoring accessory 350 is coupled to. Atmospheric sensors may also be used to derive air pressure in the environment of the headset (i.e., in a cockpit), and adjust performance of the headset, such as by compensating noise cancellation filters based on the speed of sound in the actual cockpit pressure environment. The accessory 350 may make such adjustments itself, if it has appropriate connections to the headset electronics, or it may simply communicate the available data to another controller.

[0033] In some applications, a number of headsets are connected to an aircraft intercom, so that the passengers can communicate with the pilot. In figure 8, a wireless communication accessory 400 includes a short-range two- way radio 402 that allows the passengers' headsets to communicate with each other and the pilot over a local wireless network, avoiding the need to plug into or even provide wired connections to the aircraft intercom at passenger seating positions. In some examples, the radio circuit 402 provides audio output at terminals 66 and 68, one for the near-side ear cup and one for the cross-over cable for the far side ear cup; in this example, the usual crossover plug 30 would be attached to the opposite ear cup. In other examples, additional connections may be provided in the connectors, so that the accessory can provide audio to both ear cups when the normal down-cable assembly 20 is used.

[0034] In some examples, the accessory 400 includes a built-in or boom microphone 404. A push-to-talk button 406 allows the user to indicate when they wish to speak to other passengers. In other examples, no microphone is provided, and the user can only listen to conversations on the intercom. The no-microphone version may also be used by the pilot, since the pilot headset already has the boom microphone from the down-cable assembly 20, but in that case an additional cable and terminals are needed in the headset to bring the microphone signal across the headband from the down-cable assembly 20 to the wireless accessory 400 for transmission to other wireless headsets. In some examples, the push-to-talk button is provided even when the boom microphone is not, as it may be used with the boom microphone in the down- cable assembly 20 (not shown). Some intercom systems include a receiver for such a switch, and providing the switch in a module that connects integrally to the headset avoids the need to attach a stand-alone switch to the user's clothing or other equipment. In other examples, the pilot may use the version with a microphone to communicate over the aircraft radio, if it is equipped with a compatible transceiver, in place of the wired down-cable assembly 20. This eliminates the need for the pilot to be tethered to the control panel, though that may not be permitted in some situations.

[0035] In some examples, the radio 402 can also communicate with accessories such as mobile phones or portable music players, allowing the passengers to use their aircraft headsets to make phone calls or listen to entertainment audio. The

radio 402 may be a general-purpose radio transceiver circuit such as a Bluetooth® or WiFi® transceiver, or it may be a custom circuit. The radio 402 may alternatively or additionally receive broadcast radio signals, such as commercial broadcasts or localized broadcasts, such as may be provided at a car race.

[0036] In the example of figure 9, an accessory 450 includes a temperature control system 452 which operates to heat or cool the headset by pumping an appropriate fluid through a tube 454 to modified ear cushions 456. This may be useful in applications where the user's head is exposed to undesirable temperature environments, such as where the headset prevents the user from wearing a hat in a cold environment, or where the headset itself is the source of discomfort in a hot environment.

[0037] In the example of figure 1 0, an accessory 500 includes a microphone array 502 and array signal processor 504. Such a microphone array provides a talk-through feature, allowing the user to hear the sounds in their environment that would otherwise be blocked by the headset. While the array is shown with two microphones, more may be used in some applications. If paired with a similar microphone array in the other ear cup, or even the boom microphone, the talk-through feature may provide directional awareness to the user.

[0038] In some examples, two of the down-cable assembly 20 are used, one for each ear cup. The two assemblies may be slightly different, such as using different connectors for connecting to different types of radio or intercom, or providing different microphone types or bias voltages. One use for such an arrangement is to allow the user to easily connect to both radio types without having to obtain a specialized single down-cable assembly able to connect to both radios.

[0039] In yet another example, shown in figure 1 1 , a camera accessory 550 includes a camera 552. Applications for a headset-mounted camera include recording the pilot's operation of an aircraft as part of the flight record, allowing an instructor to see what a trainee pilot sees (whether live or after a flight), or simply recording the flight from the pilot's point of view for entertainment purposes. The camera accessory may include a trigger switch 554, built-in or wirelessly connected, to allow the pilot or a third party, such as an instructor, to initiate the capture of a still image or start and stop recording. A camera accessory may also be used with or integrated into the head- tracking accessory 204. Head motion data may be used to stabilize the image from the camera, or to map it to specific locations in a display when viewed later. For example, if a recording from the pilot's point of view is to be played back on a flight simulator, the picture should stay in place relative to the simulator, rather than moving around to follow where the pilot was looking.

[0040] In various of the above or other applications, two accessory modules may be used which need to communicate with each other. This may be accomplished in several ways, including the provision of additional wires in the headband, running an added wire between the modules separately from the headset, or by providing wireless transceivers, such as those discussed in regard to figure 8, in both modules. Any of the various accessories described may be combined with one or more of the others, such as combining the camera accessory with the wireless audio communication accessory or the head tracking with the biometric monitoring.

[0041] Other implementations are within the scope of the following claims and other claims to which the applicant may be entitled.

PATENT CITATIONS

Cited Patent	Filing date	Publication date	Applicant	Title
CH283612A *				*Title not available*
FR1392029A *				*Title not available*
FR2166276A1 *				*Title not available*
GB533718A				*Title not available*
US2151733	May 4, 1936	Mar 28, 1939	American Box Board Co	Container

* Cited by examiner

REFERENCED BY

Citing Patent	Filing date	Publication date	Applicant	Title
WO2015110587A1 *	Jan 23, 2015	Jul 30, 2015	Hviid Nikolaj	Multifunctional headphone system for sports activities

* Cited by examiner

CLASSIFICATIONS

International Classification	H04S7/00
Cooperative Classification	H04R5/033, H04R1/1091, H04R2420/03, H04S7/304, H04R1/1025, F21V21/084, H04R1/028

LEGAL EVENTS

Date	Code	Event	Description
May 14, 2014	121	Ep: the epo has been informed by wipo that ep was designated in this application	**Ref document number:** 13766188 **Country of ref document:** EP **Kind code of ref document:** A2

Google Home - Sitemap - USPTO Bulk Downloads - Privacy Policy - Terms of Service - About Google Patents - Send Feedback

Data provided by IFI CLAIMS Patent Services

Patents
WO2015110577A1
Patents
English French German

Stand-alone multifunctional headphones for sports activities

WO 2015110577 A1

Publication number	WO2015110577 A1
Publication type	Application
Application number	PCT/EP2015/051356
Publication date	Jul 30, 2015
Filing date	Jan 23, 2015
Priority date	Jan 24, 2014
Also published as	DE102014100824A1
Inventors	Nikolaj HVIID
Applicant	Hviid Nikolaj
Export Citation	BiBTeX, EndNote, RefMan

Patent Citations (4), Classifications (12), Legal Events (1)

External Links: Patentscope, Espacenet

ABSTRACT

An apparatus is described that has the following: (a) a housing that is set up to be worn in an ear, (b) a motion sensor unit for capturing motion data, (c) a physiological sensor unit for capturing physiological data, (d) a data processing unit that is set up to produce performance data on the basis of the motion data and/or the physiological data, (e) a signal processing unit that is set up to produce an audio signal on the basis of the performance data produced, and (f) a loudspeaker for outputting the audio signal produced, wherein the motion sensor unit, the physiological sensor unit, the loudspeaker, the data processing unit and the signal processing unit are integrated in the housing. In addition, a system, a method and a use are described.

DESCRIPTION translated from German

Independent multifunction headphone for sports activities

Field of inventions ung The invention relates to the field of multimedia devices with functionality for recording, evaluating and output of data with regard to sports

Activities or medical rehabilitation measures, in particular the field of portable systems, which are suitable for collection, analysis and output of any personal data in connection with the practicing of sports activities.

Background There is a variety of different systems that make it user in practicing sports activities possible, variety

performance-related and interesting information in other ways, such as heart rate, respiratory rate, speed, duration, and many other data, record and analyze, both during the application and after the practice of physical activity.

All these systems have in common that they consist of several parts, for example, one or more sensors, such as a heart rate belt, and a central unit, such as a sports watch, a

Bicycle computer or a smartphone.

Since many users also like listening to music or radio while they exercise sports activities, the user often has to bring three or more devices, such as a heart rate belt, a bike computer, an MP3 player and headphones. The present invention has for its object to provide a device that can provide the functionality of many devices previously required and is to easy and comfortable to wear and bring and easy to use.

Summary

This object is achieved by the subject matters of the independent

Claims. Advantageous embodiments of the present invention are described in the

CLAIMS (20) translated from German

Claims

1. An apparatus comprising:

a housing which is adapted to be worn in an ear,

a motion sensor unit for detecting motion data, a physiological sensor unit for acquiring physiological data,

a data processing unit which is arranged to generate performance data based on the motion data and / or the physiological data,

a signal processing unit which is adapted to generate an audio signal based on the generated performance data, and

a speaker for outputting the generated Audiosignals, wherein the motion sensor unit, the physiological sensor unit, the speaker, the data processing unit and

Signal processing unit are integrated in the housing.

2. A device according to claim 1, wherein the motion sensor unit has an accelerometer.

3. A device according to claim 1 or 2, wherein the physiological sensor unit comprises a pulse oximeter sensor.

4. The device according to one of the preceding claims, wherein the Audiosignal generated by the signal processing unit, one or more pre-stored speech elements or sound signals, which are indicative of at least a value of the performance data,

5. The device according to one of the preceding claims, wherein the signal processing unit for modifying pre-stored audio data in

https://www.google.com/patents/WO2015110577A1?cl=en&dq=WO2015110577A1&hl=en&sa=X&ved=0CB0Q6AEwAGoVChMIoqvUzvacyQIVgXOmCh09Wgc4[11/19/2015 10:41:06 AM]

dependent claims.

According to a first aspect of the invention, an apparatus is described. The device described comprises: (a) a housing which is adapted to be worn in an ear, (b) a motion sensor unit for detecting motion data, (c) a physiological sensor unit for acquiring physiological data, (d) a data processing unit, which is arranged to generate performance data based on the motion data and / or the physiological data, (e) a

Signal processing unit which is adapted to generate an audio signal based on the generated performance data, and (f) a speaker for outputting the audio signal generated, wherein the motion sensor unit, the physiological sensor unit, the speaker, the data processing unit and the signal processing unit are integrated in the housing.

The described device is set up in the ear for carrying and capable of independently producing an audio signal and to provide a user through the issue by means of a speaker is available, whereby the output audio signal based on movement data and / or physiological data integrated by the device Sensor units are recorded. Thus the user can obtain information regarding the sensed motion data and / or physiological data without the

Device with other devices connect to must. The device thus forms an autonomous entity that can be worn, for example, in connection with sports activities by the user in the ear while

various information can provide in terms of movement and / or physiological parameters of the user in real time.

In this document referred to as "sensor unit" in particular a unit with one or more individual sensors that is adapted to generate one or more electrical signals based on electric signals from each individual sensor.

In this document referred to as "motion sensor unit" in particular a sensor unit which is arranged to generate one or more electrical signals in response to movement of the sensor unit, in particular electrical signals that depend on a Beschleunigung, inclination or displacement of the sensor unit relative to one or more predetermined directions . In this document referred to as "motion data" in particular, a digital representation of one or more electrical signals, which are generated by the movement sensor unit.

Referred to in this document, "physiological sensor unit" in particular a sensor unit which is arranged to generate one or more electrical signals in dependence of one or more physiological values of a user.

This document refers to "physiological data" in particular a digital representation of one or more electrical signals that are generated by the physiological sensor unit. In this document, "Performance" refers in particular data that have values in terms of sports activities. Especially those values include values that are descriptive of the physical activity, such as a length of a way past, driven or distance swum or a height difference, and values that are descriptive of the user, such as speed, respiratory rate,

Blood oxygen saturation or heart rate.

The data processing unit is adapted to both the

Motion data from the motion sensor unit and the

physiological data of the physiological sensor unit, preferably ais digital signals to obtain and process to generate performance data by calculation. Here, some values of performance solely based on the transaction data, other values of

Dependency is established by at least one value of the performance data.

6. The device according to one of the preceding claims, wherein the housing comprises a first portion and a second portion, the first portion for insertion into an ear canal and the second

Section are adapted for mounting in a pinna, with a shape and / or size of the second section is customizable.

7. The device according to one of the preceding claims, further comprising a capacitive sensor unit on a surface of the

Housing is arranged such that it can be touched by a user when the device is mounted in the user's ear.

8. The device according to one of the preceding claims, further comprising a microphone, in particular a bone conduction microphone for detecting user speech, in particular by the user

spoken voice commands, is set up.

9. The device according to one of the preceding claims, further comprising a electroencephalography sensor unit which is set up for detecting an electric Signals to a skin surface of a user.

10. The device according to any one of claims 7 to 9, further comprising a control unit which is integrated in the housing, and further for controlling the apparatus in response to touches, the capacitance of the

Sensor unit are detected, and / or as a function of

User Talk, which is detected by the microphone, and / or in

Response to an electrical signal which is detected by sensor unit Elektroenzephalografie-.

11. The device according to one of the preceding claims, further comprising a contact sensor for detecting whether the apparatus is mounted in the ear.

12. The device according to one of the preceding claims, further comprising a memory for storing the the

Data processing unit generated performance.

13. The device according to one of the preceding claims, further comprising a built-in housing communication unit for wireless data communication with an external device.

14. The device according to one of the preceding claims, further comprising a Nahfeldkommunikationseinheit.

15. The system comprising two devices according to one of the

preceding claims wherein both devices are configured for wireless data communication with each other.

16. System according to the preceding claim, wherein the

Signal processing unit of at least one of the two devices is arranged to generate a binaural audio signal based on the generated performance data.

17. System according to claim 15 or 16, wherein at least one of

performance solely based on the physiological data and additional values

Performance data are calculated based on both the movement data and the physiological data.

The signal processing unit is adapted to a Audiosignal based on performance data to produce such a way that a user while listening to the audio signal values, in particular one or more specific values of the performance data, changes in one or more specific values of the performance data and / or a relation between one or more specific values of the performance data and the corresponding reference thresholds, can recognize or know.

The data processing unit and the signal processing unit like the individual processing units (hardware) or they may be implemented on one or more processors (software) as functional units. The case in which the entire device is integrated is adapted to support in a user's ear. The housing is shaped so that the device can be good fits and detained in a typical ear, even during sporting activities. The housing preferably has an opening which is configured and positioned so that the speakers can deliver sound into the ear canal of the user

In summary, the device that a user at the

Exerting a sporting activity Mitteis listen on values of

Performance data is informed, the individual values of the performance on motion data and / or physiological data are based, which are recorded during exercise each of the motion sensor unit and the physiological sensor unit,

Thus, the apparatus provides a plurality of functionalities, without additional devices or external sensors are needed. The device is very compact, discreet and comfortable to wear in the ear. According to one embodiment of the invention the

Motion sensor unit on an accelerometer or a Beschieunigungssensor.

The accelerometer is arranged to detect acceleration and / or changes in acceleration in at least one predetermined direction relative to the housing. In a preferred embodiment, the

Accelerometer, a 3D accelerometer that can detect accelerations along three mutually perpendicular directions, and spend three corresponding electrical signals. By processing the signals from the motion sensor unit, for example by means of pattern recognition, the data processing unit, for example, create the following and more performance: a

Step number value, a distance value and a speed value.

According to a further embodiment of the invention, the

physiological sensor unit to a pulse oximeter sensor, i.e. a sensor for non-invasive determination of arterial oxygen saturation on the measurement of light absorption.

The pulse oximetry sensor may comprise two differently colored light sources, especially LEDs, and a photo sensor and is

preferably mounted in the housing such that the light sources may illuminate an area of skin surface in the user's ear and the photo sensor can detect corresponding rejections from the skin surface when the device is placed in the user's ear. The

Pulse oximetry sensor may be particularly appropriate in the area of a surface of the housing such that the pulse oximeter sensor with the skin surface when worn, the device in the ear in close contact in the ear, especially the skin surface in the area behind the tragus. (As the small tragus Knorpelmasse is referred to the ear, the ear canal just before the (external acoustic meatus) rests). Through

Driving the light sources and processing of the photo-sensor

signal output, the data processing unit, for example, create the following performance data, among other things: an arterial

Oxygen saturation value, a respiratory rate value, a cardiovascular flow value, a cardiac output value, a blood pressure value and a

Devices comprising a bone conduction microphone, and both devices comprise a microphone that is adapted for detecting ambient sound.

16. System according to the preceding claim, wherein at least one of said devices having a detection unit which is adapted for detecting predetermined movement pattern, resulting from stroking touches a body surface of a user.

19. A method comprising:

Detecting motion data by means of a motion sensor unit,

Measuring physiological data by means of a physiological sensor unit,

Based on the movement data and / or the physiological data by means of a data processing unit, generating a Audiosignais generated generating performance data based on the

Performance data by means of a signal processing unit, and

Outputting the audio signal generated by a speaker, wherein the motion sensor unit, the physiological sensor unit, the speaker, the data processing unit and

Signal processing unit are integrated into a housing that is set in the ear to wear.

20. Use of a device according to any one of claims 1 to 14 or a system according to one of claims 15 to 18 as a headset in conjunction with a mobile communication device.

Blood sugar levels.

According to another embodiment of the invention, the audio signal generated by the signal processing unit, one or more pre-stored Spracheiemente or sound signals, which are indicative of at least a level of performance, that is, to be acoustically by example tone, pitch, Hal l, Echo, echo , Nachschall,

Three-dimensional perception or further the state and the constitution of the wearer to communicate ..

The generated Audiosignal like Beispieisweise of a name of a

Power value followed by the current value of the power value exist as beispieisweise "speed" followed by "23 kilometers per hour", "speed" followed by "Save Review 5 minutes and 17 seconds per kilometer" or "heart rate" followed by "155 beats per minute" ,

Alternatively, like the audio signal generated from a name

Power value followed by a pulsed Tonsignal exist, the pulse rate and / or pitch of the pulsed sound signal depends on the value of the power value. The user can change in the

Identify performance value by the pulse frequency and / or pitch of the beep to change. Further alternatively, like the audio signal generated only from a pulsed sound signal, as described above, are made.

According to a further Ausführungsbeispiel the invention is the

Signal processing unit for modifying pre-stored audio data, in particular music, a function of at least one value of the

Performance data set.

Modifying the pre-stored audio data may in particular consist of a volume, a playback speed and / or pitch of the pre-stored audio data depending on the increase or reduce at least one value of the performance. In other words, the signal processing unit may, for example, the volume, playback speed and / or pitch of the pre-stored

Increase audio data when the heart rate an upper

Exceeds threshold, and reduce when the heart rate falls below a lower threshold value.

According to a further Ausführungsbeispiel of the invention, the housing has a first portion and a second portion, the first portion for insertion into an ear canal and the second portion are adapted for mounting in an auricle, wherein a shape and / or size of the second portion adapted is.

The first section is tapered and shaped in essence, that it fits in an outer part of the ear canal. The speaker is preferably mounted within the first section to deliver sound directly into the ear canal.

The second section is formed so that it can be used in the concha of the auricle of a typical ear and held there. The shape and / or size of the second section may, for example, by adding adhesive material on a portion of the surface of the second

Section to be adjusted.

The entire housing may be made in particular of plastic. The openings for speakers, sensors, etc. may be sealed watertight so that the device can also be used while swimming.

According to a further embodiment of the invention, the

Apparatus further comprises a capacitive sensor unit, which is arranged on a surface of the housing such that it can be touched by a user when the device is mounted in the user's ear. The capacitive Sensoreinheit may be mounted in particular on a surface of the housing which faces outwards when the device is mounted in the ear.

The capacitive sensor unit is arranged to detect touches, especially klopfenden or striking touches, which are made for example with a finger by the user.

According to a further Ausführungsbeispiel the invention, the

Device further comprises a microphone, in particular a

Bone conduction microphone for detecting user speech,

is especially spoken by the user voice commands, set up.

The use of a particular Knochenleitungsmikrofons enables that user speech can be recorded, to be influenced without (or only slightly) of ambient noise.

According to a further embodiment of the invention, the

Apparatus further includes electroencephalography sensor unit

(Brain current measurement), which is adapted for detecting an electrical signal to a skin surface of a user.

Through pattern recognition can from the detected electrical Signal predetermined brain activity when users are recognized, in particular personally exciting thoughts.

According to a further embodiment of the invention, the

Device further comprises a control unit which is integrated in the housing, and further for controlling the apparatus in response to touches, which are detected by the capacitive sensor unit and / or depending on the user saying that detected by the microphone, and / or in response to an electrical signal which is detected by Elektroenzephalografie- sensor unit.

Thus, the user can, for example, the functionality of the device by touching the capacitive sensor unit, by pronouncing

Voice commands and / or control by predetermined thoughts.

In particular may trigger on the capacitive sensor unit a first control signal one short touch (knocking), two consecutive short touches trigger a second control signal, etc. may Weiteren in a swipe up, down, forward and backward respectively predetermined control signals trigger.

According to a further embodiment of the invention, the

Device further comprises a contact sensor for detecting on whether the

Device is mounted in the ear.

The contact sensor may be particularly capacitive and be mounted on a part of the surface of the housing, the contact when worn in the ear, the skin surface. When the contact sensor has registered for a long time no contact with a skin surface, the device can be shadowed for example, in a standby mode or switched off completely.

According to a further embodiment of the invention, the

Apparatus further comprises a memory for storing the the

Data processing unit generated performance data,

By storing the performance data can be read later from memory and processed externally. Furthermore, can be accessed in the course of a sporting activity to the stored performance data to calculate for example, averages, or perform comparisons with previous activities, According to a further embodiment of the invention, the

Device further comprises a built-in housing communication unit for wireless data communication with an external device.

The communication unit may particularly be a Bluetooth device with which a wireless data communication can be performed with one or more external devices, such as a mobile phone, a smart phone, a tablet, a laptop computer, etc. Further, a data communication with a other similar or the same device carried, for example a device which is adapted to be worn in the other ear. The communication unit may be an infrared unit that enables data transmission with modulated infrared light alternatively.

According to a further Ausführungsbeispiel the invention, the

Apparatus further comprises Nahfeldkommunikationseinheit on (NFC unit).

The NFC unit allows storing and / or reading out various data to and from the device, for example, identification data of the user or GPS data indicating the last position of the device, such GPS data can be transferred, for example, regularly from a smartphone will.

According to a second aspect of the invention, a system is described which two devices according to the first aspect or any of the above

Comprises embodiments, wherein both devices are adapted to each other for wireless data communication, in particular Mittels Bluetooth.

One of the two devices preferably functions as a primary device (master) in the system, in the sense that this device transmits control and data signals to the second (secondary) device, in particular sensor $_{signals,}$ which detects from the secondary device and the primary device are received, are taken into account in the generation of control and data signals in the primary device.

The two devices can use the same audio signal or two

output different audio signals.

According to a Ausführungsbeäspiel the invention is the

Signal processing unit of at least one of the two devices adapted to a binaural audio signal generated based on the

To generate performance data.

In this document "binaural audio signal" in particular an audio signal, which causes a spatial listening experience with precise direction localization in spending in the two ears of a user. In other words, the user of a single component, such as a pulsed sound signal, a binaural audio signal, a certain Assign position in three-dimensional space.

The binauraie Audiosignal may be used to reproduce values regarding various performance data in different predetermined locations in three-dimensional space around the user's head around, such as a first pulsed tone or voice signal regarding a first power value at one point on the top left and second pulsed tone or voice signal respect, a second power value at one point front bottom.

The binaural audio signal may also be used to reveal changes in a power value relative to a predetermined reference value by changing the reproducing position. This can be done, for example, so that the position of a component of the Audiosignals upwardly or forwardly moves when a Letstungswert exceeds a predetermined reference value or threshold, wherein the amount of

Shift of the difference between the power value and the

Reference value depends. Similarly, the position of the component of the audio signal to the back or bottom are moved when the power value to (or other) falls below the reference value or threshold. Illustrative of this could be implemented so that a pulsed tone with respect to the heart rate of the user is listening to ear level as long as the heart rate is within a predetermined range, such as 130-140 beats per minute, up

is shifted, when the heart rate of the maximum value

is exceeds predetermined range, and shifted downwards, when the heart rate to the minimum value of the predetermined range

below.

According to a further Ausführungsbeispiel of the invention, at least one of the devices on and both a Knochenleitungsmikrofon

Devices comprise a microphone for detecting

Ambient sound is established.

The Knochenleitungsmikrofon is particularly useful for detecting

Voice Commands furnished pronounced by the user to control the system. Here the value detected by the external microphones ambient sound can be used for noise reduction to improve the detection of Sprachbefehle. The recognition of voice commands as well as the processing for noise reduction are preferably carried out in a

corresponding signal processing unit, which is integrated in the primary device of the system.

According to a further Ausführungsbeispiel the invention includes at least one of the devices on a detection unit which is adapted to detect a predetermined movement patterns in trending

Touching a body surface of a user are formed.

The detection unit is in particular to set up to receive a signal from the bone conduction microphone in the primary device, and signals from the microphones outwardly of the two devices and process. The processing has in particular an analysis of the time course of the pitch (frequency) and volume for each of the three signals. This processing of sound signals that have propagated through each and to the user's body around, allows a recognition of predetermined movement patterns, in particular the recognition of the direction of a striking touch of the user's body surface. Such a detection is based on the fact that the pitch and volume of the sensed signal from one of the microphones is increased during the movement when the movement is in the direction toward the microphone out and decreases when the movement is carried out away from the microphone. An analysis of the signal from the bone conduction microphone thus enables detection of whether the

Movement is directed upwards or downwards. Similarly, an analysis of the signals from the two microphones outwardly enables detection of whether the movement is to the left or right. By further analysis aller three signals also oblique movements can be detected. In other words, the detection unit can detect when the user for example, draws a finger from left to right or from top to bottom across his cheek, chest or his stomach.

The recognition of such patterns of movement and contact patterns can advantageously or to control the devices, the system can be used. More specifically, may be associated with a predetermined control command of each detectable movement pattern. For example, increase the playback volume and reduce an upward movement the playback volume movement upwards.

According to a third aspect of the invention, a method will be described. The method described comprises the steps of: (a) detecting motion data by means of a motion sensor unit, (b) acquiring physiological data by means of a physiological sensor unit, (c)

Generating performance data based on the motion data and / or the physiological data by means of a data processing unit, (d) generating an audio signal based on the generated performance data by means of a signal processing unit, and (e) outputting the generated audio signal via a speaker, wherein the motion sensor unit, the physiological sensor unit, the speakers, the

Data processing unit and the signal processing unit in a

Housing are integrated, which is set up in the ear to wear.

The described method is essentially based on the same

Knowledge as the device described above in the first aspect and the Ausführungsbeispielen them, namely that motion data and physiological data are collected and processed in a separate device to an audio signal as a function of generated

To generate performance and output. According to a fourth aspect of the invention provides a use of a device or a system according to the first aspect or second aspect or any one of the above embodiments is described as a headset in conjunction with a mobile communication device, in particular a mobile phone, smartphone, or tablet.

The use as a headset allows, among other things, that the

various control functions of the apparatus or system are used for controlling the mobile communication device and that data, such as GPS data or voice commands by an application running on the mobile communication device navigation application, is transmitted to the device or the system.

The invention can be used both by means of a computer program, that is software, as well as means of one or more special electrical

Circuits, that is in hardware or in any hybrid form, that is to say by means of software components and hardware components can be realized.

It should be noted that embodiments of the invention have been described with reference to different subjects of the invention.

In particular, some embodiments of the invention are

Process claims and other embodiments of the invention described with device claims. The skilled person will however be immediately clear when reading this application that, unless explicitly stated otherwise, in addition to a combination of features belonging to one type of subject invention also any

Combination of features is possible, belonging to different types of the invention articles. Further advantages and features of the present invention will become apparent from the following exemplary description of a preferred

Embodiment.

Brief Description of Drawings

1 shows a block diagram of a device according to a

Ausführungsbeispiel.

Figure 2A shows a first view of an apparatus in accordance with a

Embodiment.

Figure 2B shows a second view of an apparatus according to a

Ausführungsbeispiel.

Figure 2C shows a third view of a device according to a

Ausführungsbeispiel.

Detailed Description

1 shows a device according to a Blockdiagramm

Ausführungsbeispiel. The device is integrated in a housing which is arranged in the ear for supporting and will be further described in more detail below in connection with Figures 2A, 2B and 2C and has a

Data processing unit 1, a signal processing unit 2, a

3 speakers, an accelerometer 4 and a pulse oximeter or a

5 pulse oximeter on. The data processing unit 1 receives data from the accelerometer 4 and the Pulsoximeter 5 and processes them to performance data, such as, for

To produce or calculate a Schrittzahl example, a distance, a speed, an arterial oxygen saturation, a respiration rate, a cardiovascular flow, a cardiac output, blood pressure, a BSutzuckerwert etc. The performance data are transmitted to the signal processing unit 2 and from the latter used to generate an audio signal that is output by the loudspeaker 3 into the user's ear. The

Audio signal is generated so that the user of the hearing

Schalls corresponding information on at least one value of the

May experience performance. This can be through the issue of language elements (for example, pre-stored numbers and words) or pulsed

Sound signals, carried out by manipulation of music or otherwise.

The apparatus further comprises a central control unit or controller 9 and a memory 11. The controller 9 is connected to the data processing unit 1, the signal processing unit 2, and the memory 11 and adapted to control these units and information from these

To obtain or read out units. The controller 9 controls, for example, what the performance data generated by the data processing unit 1, which is to consider the signal processing unit 2 in generating the audio signal, for example, whether the Audiosignal just information on heart rate, speed or what should be different. The controller can also control in such a way the signal processing unit 2, that in the memory 11

stored music or the like (for example, an audio book) is rendered independent of the performance.

The control unit 9 is further provided with a first microphone 7, a second microphone 14, a touch sensor unit 6, an EEG unit - (Elektroenzephalografie unit) 8, a contact sensor unit 10, a Bluetooth unit 12 and an NFC unit (Nahfeldkommunikationseinheit) 13. These units are also integrated in the housing and

generally allow that the user can influence or control the functionality of the device and that the device can communicate with an external device, such as a similar device, a smartphone or a computer.

The first microphone 7 is a bone conduction microphone that ast mounted in the housing so that it can detect sound which is

passed through the skull bone, for example when speaking. A feature of the first microphone 7 is to capture user speaking, top Example! Voice commands to control the device or the user speaking, when the device is used as a headset in conjunction with an external device.

The second microphone 14 is mounted in the housing so that it can capture ambient sound in particular. By processing the signals of both the first microphone 7 and the second microphone 14 ambient noise of the users speak can be filtered, which improves the use of a headset and the recognition quality of voice commands. A further application of the two microphone signals is the

Detection of acoustic gestures, that is the recognition of certain moving or striking touches the body surface. More specifically like an acoustic gesture top Example! consist in the user a quick sweeping motion of his body or clothes in a certain direction (vertical, horizontal, etc.) makes a finger, the finger touched by the whole movement, the skin or clothing. Such stroking movements and sound is created by analyzing the 7 and 14 picked up by the microphones signals can direction, speed and other characteristics of the gesture to be recognized and converted into control signals. The touch sensor unit 6 comprises a plate having a plurality of capacitive sensors and is mounted on a portion of the surface of the housing, that the user can touch with your finger when the device is worn in the ear. In other words, there is the

Touch sensor unit 6 on a surface of the housing, from the

Ear canal facing away. Strikethrough and / or tapping with your finger on the touch sensor unit 6, the user can control the device. For example, the control unit 9 associate a trending upward movement with a volume increase and a trending downward movement with a volume reduction and control the signal processing unit 2 accordingly. Similarly, the control unit can connect eg a unique tapping on the touch sensor unit 6 with a function change and a twice repeated knocking with a selection of a function.

The EEG unit 8 has a plurality of electrodes which are so attached to the surface of the housing that measurements can be carried out by electrical potentials at the skin surface in the ear. These measurements are analyzed by the control unit and compared with pre-stored measurements to detect certain thoughts of the user and to use them as control commands. For example, the intensive thinking about their own favorite food trigger an announcement of the previous calorie consumption. The contact sensor unit 10 includes a capacitive sensor, in the so-

is mounted surface portion of the housing that it contacts when worn in the ear of the user's skin surface. Thus, the controller 9 can detect whether the device is used or not, and accordingly generate different control signals. For example,

Power consumption intensive functions are switched off some

Minutes after the device was removed from the ear. The Bluetooth unit 12 is used for wireless communication with other devices (for example, a worn in the other ear devices) or external devices (mobile phone, PC, etc.). If communication with a device in the other ear of the user sensor signals can be considered by both sides to provide improved precision in the

To achieve performance. Further, the audio signal generated

stereofonisch or binaural to be edited. In such systems,

does a device as the primary device or master in the sense that it receives data from both devices and processes and defines the respective audio signals to be output.

Communication with an external device, during use of the device, that is, during the exercise of a sporting activity to take place. In this case, data may, for example music or GPS data, are transmitted from the device to the apparatus, where they are used or stored. Simultaneously, data such as

For example, sensor data collected or calculated performance data, are transmitted from the device to the unit. This also allows use of the device as a headset in conjunction with

Communication applications.

Communication with the external device can also take place when the device is not in use in the ear, for example, the various above-described control options to configure to

Thresholds (for example, heart rate, respiratory rate, distance, time or speed etc.) to determine or to read performance data for external processing. This is expediently carried out by means of a specific application or app. NFC unit 13 enables communication with a

Nahfeldkommunikationsfähigen device, such as a smart phone, when the latter is brought into the vicinity of the device. It

can

Configuration data is transferred from the smartphone to the device or the device data stored in, for example,

Contact information for the user can be read. This information may be useful when the device lost

is found or in conjunction with an accident. Figures 2A, 2B and 2C show different views of an apparatus 20 according to an embodiment, in particular the shape of the housing, are integrated in which all the units of the apparatus 20.

Figure 2A shows a view of a device 20 having a housing. The housing is made of plastic, for example silicone, manufactured and basically has a first portion 21 and a second section 22. The first portion 21 is to be inserted into the ear canal of a user and the second section 22 is to be mounted in the concha of the

User formed. Here, the first portion 21 is substantially

Cone-shaped to fit well in the outer part of the ear canal. In the end region of the first section 21, an elastic collar 24

provided that works while wearing the apparatus 20 in the ear as a seal, so that the device 20 blocks the user's ear canal. The second portion 22 is shaped so that it in the Concha

Can be used ear pinna of a typical and held there.

The housing also has a surface 23 which faces away from the ear canal, and thus the user top Example! is accessible by a finger. The surface 23 has in particular a capacitive

Sensor unit for detecting control commands from the user, top Example! if the user with his finger knocking on the surface 23 or sweeps over the surface 23 in a certain direction. Near the surface 23, the housing has a closable opening 25, through which a (not shown) plug can be coupled to a socket, to charge the battery of the device 20 or to transfer data to the apparatus 20 to be replaced.

The housing further has an opening 26 which is located in a place in the surface of the housing that contacts the device 20 when worn in the ear skin, in particular in the region behind the tragus, closely. The opening 26 may a pulse oximeter sensor enthalten, the two

differently colored light sources, especially LEDs, and a photo sensor has. In this case, the opening 26 is so mounted in the housing such that the light sources may illuminate an area of skin surface in the user's ear and the photo sensor can detect corresponding rejections from the skin surface. The opening 26 may alternatively include a Knochenleitungsmikrofon. In a system with two devices, a left to the ear and a right to the ear that a device like the Pulsoximetriesensor and the other device the

Have Knochenleitungsmikrofon.

Figure 2B shows a further view of the device 20, wherein the

Surface 23 can be seen in the foreground. The surface 23 has a gap or slot-shaped opening 27 which passes from the outside coming sound to a (not shown) microphone. The device 20 further comprises a collar or sleeve 28, the part of the surface 23 surrounds and is used to adjust the size of the device to a user's ear. The sleeve 28 is made of soft plastic and detachable from the housing, allows the user to experiment with different sleeves 28 with different sizes and choose the one that provides the best fit. Figure 2C shows yet Wettere view of the apparatus 20, the apparatus in comparison with the view in Figure 2B is rotated by 180 °.

As well as the collar 24 and the end of the first portion, which projects most deeply into the ear canal, have openings 29 through which the sound generated from a built-in speaker of the device, can be output,

The openings 25, 26, 27 and 29 are all waterproof sealed, so that the device 20 while swimming or rain can be used.

PATENT CITATIONS

Cited Patent	Filing date	Publication date	Applicant	Title
US20080076972 *	Mar 27, 2007	Mar 27, 2008	Apple Inc.	Integrated sensors for tracking performance metrics
US20080255430 *	Apr 16, 2007	Oct 16, 2008	Sony Ericsson Mobile Communications Ab	Portable device with biometric sensor arrangement
US20090097689 *	Aug 21, 2008	Apr 16, 2009	Christopher Prest	Sports Monitoring System for Headphones, Earbuds and/or Headsets

US20090105548 *	Oct 23, 2007	Apr 23, 2009	Bart Gary F	In-Ear Biometrics

* Cited by examiner

CLASSIFICATIONS

International Classification	H04R1/14, H04R1/10, H04R5/033
Cooperative Classification	H04R1/1016, H04R2201/107, H04R1/1083, H04R1/14, H04R1/1041, H04R5/033, H04R2460/13, H04R2420/07, H04R1/1091

LEGAL EVENTS

Date	Code	Event	Description
Sep 9, 2015	121	Ep: the epo has been informed by wipo that ep was designated in this application	**Ref document number:** 15701337 **Country of ref document:** EP **Kind code of ref document:** A1

Google Home - Sitemap - USPTO Bulk Downloads - Privacy Policy - Terms of Service - About Google Patents - Send Feedback

Data provided by IFI CLAIMS Patent Services

Sign in

Google

WO2015110587A1

Patents

English French German

Find prior art Discuss this patent

Multifunctional headphone system for sports activities

WO 2015110587 A1

Publication number	WO2015110587 A1
Publication type	Application
Application number	PCT/EP2015/051374
Publication date	Jul 30, 2015
Filing date	Jan 23, 2015
Priority date	Jan 24, 2014
Inventors	Nikolaj HVILD
Applicant	Hvild Nikolaj
Export Citation	BiBTeX, EndNote, RefMan

Patent Citations (3), Classifications (11), Legal Events (1)

External Links: Patentscope, Espacenet

ABSTRACT

A multifunctional headphone system for sports activities is described that has the following: a first apparatus that is set up to be worn in one ear of a user and has a first data communication unit and a first loudspeaker, and a second apparatus that is set up to be worn in the other ear of the user and has a second data communication unit and a second loudspeaker, wherein at least one of the first and second apparatuses has a sensor unit and a data processing unit, wherein the data processing unit is set up to produce performance data on the basis of measurement data captured by the sensor unit, wherein the first apparatus additionally has a signal processing unit that is set up to produce a binaural audio signal on the basis of the performance data, the binaural audio signal having a first signal component for output by the first loudspeaker and a second signal component for output by the second loudspeaker, and wherein the first data communication unit is set up to transmit the second signal component of the binaural audio signal to the second data communication unit. In addition, a method is described.

DESCRIPTION translated from German

Multifunctional headphone system for sports activities

Field of the Invention The invention relates to the field of multimedia devices with functionality for recording, evaluating and output of data with regard to sports

Activities or medical rehabilitation measures, in particular the field of portable systems, which are suitable for collection, analysis and output of any personal data in connection with the practicing of sports activities.

Background There is a variety of different systems that make it user in practicing sports activities possible, variety

performance-related and interesting information in other ways, such as heart rate, respiratory rate, speed, duration, and many other data, record and analyze, both during the application and after the practice of physical activity.

Some of these systems are in need of a display device to the user information on the above information by outputting various audio signals, such as sounds or voice signals to quantify the information. This edition is the form but with significant

Limitations connected. Thus, for example, be given access to an alert individual information after another. Furthermore, the lack of a simple and intuitive way to provide information about the relationship between a current value and a preset threshold. The present invention has for its object to provide a headphone system for sporting activities, which provides information about performance-related information in a simple and intuitively easy detectable manner can give.

SUMMARY This object is achieved by the subject matters of the independent

Claims. Advantageous embodiments of the present invention are described in the dependent claims.

CLAIMS (11) translated from German

Claims

1. Multifunction headphone system for sporting activities, the system comprising:

a first device which is adapted to be worn in an ear of a user and having a first data communication unit and a first speaker, and

a second device which is adapted for wearing in the other ear of the user and having a second data communication unit and a second speaker,

wherein at least one of the first and second devices having a sensor unit and a data processing unit, wherein the

Data processing unit is arranged to generate performance data based on collected measurement data from the sensor unit,

wherein the first device further comprises a signal processing unit which is set up for generating a binaural audio signal based on the performance data, the binaural audio signal comprising a first signal part for output by the first loudspeaker and a second signal part for output by the second speaker, and

wherein the first data communication unit for transmitting the second signal part of the binaural audio signal to the second

Data communication unit is set up.

2. The system according to the preceding claim, wherein the binaural audio signal generated by the signal processing unit a

Comprising signal component is indicative of a value of the performance data.

3. The system according to the preceding claim, wherein the

https://www.google.com/patents/WO2015110587A1?cl=en&dq=WO2015110587A1&hl=en&sa=X&ved=0CB0Q6AEwAGoVChMI9ICYkfecyQIVxOsmCh3Apg4C[11/19/2015 10:42:48 AM]

According to a first aspect of the invention is a

Multifunctional headphone system for sporting activities described. The system described includes the following: (a) a first device which is adapted to be worn in an ear of a user and a first

Data communication unit and a first speaker, and (b) a second device which is adapted for wearing in the other ear of the user and a second data communication unit and a second speaker having, (c) wherein at least one of the first and second devices, a sensor unit and a having data processing unit, wherein the data processing unit for generating

Performance data is set based on detected measurement data from the sensor unit, (d) wherein the first apparatus further comprises

Having signal processing unit, which is adapted to generate a binaural audio signal based on the performance data, the binaural audio signal comprising a first signal part for output by the first speaker and a second signal part for output by the second speaker, and (e) the first data communication unit for transmitting the second signal part of the binaural audio signal is set to the second data communication unit.

The described system consists of two devices, each of which is to be worn in one ear (left and right) set up and has a speaker and a data communication unit. The first and second

Device can communicate with one another by means of the respective data communication units, and in particular, they can both transmit data to the other device and receive data from the other device. At least one of the two devices has a sensor unit and a data processing unit, the latter being for generating

Performance data is set based on measurement data of the

Sensor unit are recorded. The first (or second) device further includes a signal processing unit which is set up for generating a binaural audio signal based on the performance data. The binaural audio signal comprises a first signal part, which is provided for output by the first loudspeaker, and a second signal part, which is provided for output by the second speaker. The first

Data communication unit is for transmitting the second signal part of the binaural audio signal to the second data communication unit

arranged so that the second signal part can be outputted from the second speaker. By synchronized output of the first

Signal part in one ear and the second signal part in the other ear, the user can perceive the binaural audio signal and thus obtain information that is relevant for the application of a sporting activity.

In this document "binaural AudiosignaT referred in particular an audio signal, which causes a spatial listening experience with precise direction localization in spending in the two ears of a user. In other words, the user of a single component, such as a pulsed sound signal, a binaural audio signal can assign a specific position in three-dimensional space.

In this document referred to as "sensor unit" particularly a unit having one or more individual sensors for generating one or more electrical signals (data) is set up based on electrical signals from each individual sensor.

In this document, "Performance" refers in particular data that have values in terms of sports activities. In particular, certain values include values that are descriptive of the physical activity, such as a length of a way past, driven or

Signal processing unit is further adapted to generate the binaural audio signal so that a spatial position of the

Signal component is dependent on the value of the performance.

4. The system according to the preceding claim, wherein the spatial position of the signal component relative to a plane dependent on a

Difference between the value of the performance data and a predetermined reference value.

5. The system according to any one of claims 2 to 4, wherein the binaural audio signal generated by the signal processing unit further

Comprising signal component that is indicative of an additional value of the performance data, and wherein the signal processing unit is further adapted to generate the binaural audio signal so that a spatial position of the further signal component is different from the spatial position of the signal component.

6. The system according to one of the preceding claims, wherein the signal processing unit is arranged for modifying pre-stored audio data in dependence on at least one value of the performance data.

7. The system according to one of the preceding claims, wherein the first data communication unit and the second

Data communication unit data wireless communication units that are adapted to communicate with each other.

8. The system according to one of the preceding claims, wherein the sensor unit comprises a physiological sensor unit.

9. The system according to one of the preceding claims, wherein the sensor unit includes a motion sensor unit.

10. The system according to the preceding claim, wherein both

Devices have a motion sensor unit.

11. A method comprising:

Detecting measurement data by a sensor unit,

Generating performance data based on the measurement data by means of a data processing unit,

wherein the sensor unit and the data processing unit in a first device, which is adapted to be worn in an ear of a user and having a first data communication unit and a first speaker, or in a second device, which is adapted for wearing in the other ear of the user and a second data communication unit and a second speaker having included,

Generating a binaural audio signal based on the

Performance data by means of a signal processing unit, which is part of the first device, the binaural audio signal comprising a first signal part for output by the first speaker and a second signal part for output by the second speaker, and

Transmitting the second signal part of the binaural audio signal to the second data communication unit using the first

Data communication unit.

distance swum or a difference in height, and values that are descriptive of the user, such as speed, respiratory rate,

Blood oxygen saturation or heart rate.

The data processing unit is adapted to receive the measurement data from the sensor unit, preferably as digital signals, and

process to generate performance data through calculation.

The signal processing unit is adapted, based on performance data to produce a binaural audio signal such that a user while listening the binaural audio signal one or more specific values of the performance data, changes in one or more specific values of the performance data and / or a relation between one or more can recognize and learn specific values of performance data and corresponding reference values, in particular thresholds. The binaural audio signal enables in particular that information about multiple values simultaneously listen to different spatial locations. The data processing unit and the signal processing unit like the individual processing units (hardware) or they may be implemented on one or more processors (software) as functional units.

Each device has a housing, in which the respective entire

Device is integrated. Each case is to be worn in the ear of a

User set. Here each case is shaped so that the respective device can be good fits and detained in a typical (left or right) ear, even during sporting activities. Each housing preferably has an opening which is configured and positioned such that the (first or second) speaker sound can emit into the ear canal of the user. In summary, the system that a user is informed by practice a sporting activity by binaural audio output through values of performance, the individual values of performance data are based on measurement data of during athletic activity

Sensor unit are recorded.

Thus, the system provides a variety of functionalities without additional devices or external sensors are needed, and in particular allows an output of performance-related information in a simple and intuitively easy detectable manner. Here, the

Devices of the system very compact, discreet and comfortable to wear in the ear.

According to one embodiment of the invention, has the

Signal processing unit produced binaural audio signal a

Signal component that is indicative of a value of the performance data. In this document referred to as "signal component" a particular part of the binaural audio signal, the user of the other

Can distinguish components of the audio signal or clearly

can identify. Specifically, the user of the signal component can assign a spatial position, that is, it can detect a direction from which the signal component will play.

The signal component may have, in particular pre-recorded speech elements or a sound signal.

The signal component may for example consist of a name of the value followed by the current value of the value, such as "speed" followed by "23 kilometers per hour", "speed" followed by "Save Review 5 minutes and 17 seconds per kilometer" or "heart rate" followed by "155 beats per minute."

Alternatively, the signal component may consist of a name of the value followed by a pulsed sound signal, wherein the pulse rate and / or pitch of the pulsed sound signal depends on the value of the performance data. Here the user can recognize changes in the value by the pulse frequency and / or pitch of the beep to change.

Further alternatively, like the signal component only of a pulsed sound signal, as described above, are made.

According to a further embodiment of the invention is the

Signal processing unit further to set up to generate the binaural audio signal so that a spatial position of the signal component is dependent on the value of the performance. In other words, the spatial position of the signal component is shifted if the relevant value changes. This can be done, for example, so that the signal component is shifted forward or upward, if the value increases, and is displaced backward or downward, when the value decreases.

According to a further Ausführungsbeispiel of the invention is the spatial position of the signal component relative to a plane

dependent on a difference between the value of the performance data and a predetermined reference value.

The level may in particular by the user or a horizontal plane body through the head (near the ear) to be user a vertical plane. As long as the signal component will play in one of these levels, that is, directly to the left or right side of the user, or at the level of the user's ears, then the value is equal to or close to the predetermined reference value.

If the value exceeds the predetermined reference value or threshold, the position of the signal component is shifted, for example towards the front or upwards, wherein the amount of shift of the difference between the power value and the reference value is dependent. Similarly, the position of the signal component downward or backward are moved when the value of the (or another)

Reference value or falls below threshold. Illustrative of this could be implemented, that a pulsed tone with respect to the heart rate of the user is listening to ear level as long as the heart rate is within a predetermined range, such as 130-140 beats per minute, will be moved upward, if the heart rate exceeds the maximum of the predetermined range, that is, 140

Beats per minute, and move downward, when the heart rate falls below the minimum value of the predetermined range, that is, 130

Beats per minute.

Thus, the user can easily and intuitively recognize whether the value of the predetermined reference value deviates, and if this is the case,

act accordingly, by the value again to the predetermined

To approach the reference value.

According to a further embodiment of the invention, the binaural audio signal generated by the signal processing unit further

Signal component that is indicative of an additional value of the performance data, and the signal processing unit is further to adapted to generate the binaural audio signal so that a spatial position of the further signal component is different from the spatial position of the signal component.

When the binaural audio signal having a plurality of signal components can thus values with respect to different performance at different predetermined locations in the three-dimensional space around the head of

User around to play. For example, a first pulsed tone or voice signal regarding a first power value at one point on the top left and a second pulsed tone or voice signal with respect. Of a second power value at one point are forward play below. The playback of each signal component may take place simultaneously or at different times.

According to a further embodiment of the invention is the

Signal processing unit arranged for modifying pre-stored audio data in dependence on at least one value of the performance data. Modifying the pre-stored audio data may in particular consist of a volume, a playback speed and / or pitch of the pre-stored audio data depending on the increase or reduce at least one value of the performance. In other words, the signal processing unit may, for example, the volume, playback speed and / or pitch of the pre-stored

Increase audio data when the heart rate an upper

Exceeds threshold, and reduce when the heart rate falls below a lower threshold value.

According to a further embodiment of the invention, the first data communication unit and the second data communication unit, wireless data communication units are arranged to communicate with each other.

The data communication units may be particularly Bluetooth units, with wireless data communication between the two

Can be carried out devices to transfer measurement data, performance data and audio signals reversed from one device to another device and.

At least one of the wireless data communication units may also be adapted for wireless data communication with an external device, such as a mobile phone, a smart phone, a tablet, a laptop computer, etc. The data communication unit may optionally include an infrared unit, a data transmission with a modulated allows infrared light.

According to a further embodiment of the invention, the

Sensor unit a physiological sensor unit. In this document, "physiological sensor unit" particularly denotes a sensor unit for

generating one or more electrical

Signals is set up as a function of one or more physiological values of a user.

The physiological sensor unit may particularly comprise a pulse oximeter sensor, i.e. a sensor for non-invasive determination of arterial oxygen saturation on the measurement of light absorption. This may be two differently colored light sources, in particular light-emitting diodes, and having a photo sensor and is preferably mounted in such a way in the housing of the device that the light sources of a portion of the

Can shed light on the skin surface in the user's ear and the photo sensor can detect respective reflections from the skin surface when the device is mounted in the user's ear. The pulse oximetry sensor may in particular in the area of a surface of the housing such

be mounted so that the pulse oximeter sensor, the while wearing

Device is in the ear in close contact with the skin surface in the ear, especially the skin surface in the area behind the tragus. (As the small tragus cartilage of the outer ear is called that shortly before the ear canal (external auditory meatus) rests). By controlling the

Light sources and processing of the output from the photo sensor signal, the data processing unit, for example, create the following performance data, among other things: an arterial oxygen saturation value, a respiratory rate value, a cardiovascular flow value, a

Cardiac output value, a blood pressure value and a blood glucose level.

According to a further embodiment of the invention, the

Sensor unit motion sensor unit to a. In this document referred to as "motion sensor unit" in particular a sensor unit which is arranged to generate one or more electrical signals in response to movement of the sensor unit, in particular electrical signals that depend on an acceleration, inclination or displacement of the sensor unit relative to one or more predetermined directions ,

The motion sensor unit may particularly comprise an accelerometer or an acceleration sensor, or for detecting

Acceleration and / or changes in acceleration is arranged in at least one predetermined direction relative to the housing of the device. In a preferred embodiment the accelerometer is a 3-D

Accelerometer that can detect accelerations along three mutually perpendicular directions, and spend three corresponding electrical signals. By processing the signals from the motion sensor unit,

for example by means of pattern recognition, the data processing unit, for example, create the following and more performance: a

Step number value, a distance value and a speed value. According to a further embodiment of the invention both have

Devices motion sensor unit to a.

By processing of transaction data that is collected in the field of both ears of the user, an increased precision of the performance can be achieved.

The data processing unit may be particularly configured to receive both the measurement data from the movement sensor unit (transaction data) and the measurement data from the physiologic sensor unit (physiological data), preferably as digital signals, and processed to generate performance data through calculation. In this case, some values of the performance based solely on the motion data, other values of the performance data are calculated solely based on the physiological data and further values of the performance data based on both the movement data and the physiological data.

In summary, the system that a user is informed by practice a sporting activity by binaural audio output through several levels of performance, with the individual values of the performance on motion data and / or physiological data based that the during exercise each of

Motion sensor unit and / or the physiological sensor unit are recognized, and sounding signal component are represented by at different spatial locations around the user's head around. According to a further embodiment of the invention, the housing of each device a first portion and a second portion, the first portion for insertion into an ear canal and the second portion are adapted for mounting in an auricle, wherein a shape and / or size of the second section is customizable.

The first section is tapered and shaped in essence, that it fits in an outer part of the ear canal. The speaker is preferably mounted within the first section to deliver sound directly into the ear canal.

The second section is formed so that it can be used in the concha of the auricle of a typical ear and held there. The shape and / or size of the second section may, for example, by adding adhesive material on a portion of the surface of the second

Section to be adjusted. The entire housing may be made in particular of plastic. The openings for speakers, sensors, etc. may be sealed watertight so that the device can also be used while swimming. According to a further embodiment of the invention further comprises at least one of the devices on a capacitive sensor unit which is arranged on a surface of the housing such that it can be touched by a user when the device is mounted in the user's ear.

The capacitive sensor unit may be mounted in particular on a surface of the housing which faces outwards when the device is mounted in the ear. The capacitive sensor unit is arranged to detect touches, especially beating or striking touches, which are made for example with a finger by the user.

According to a further embodiment of the invention further comprises at least one of the devices to a microphone, in particular a

Bone conduction microphone for detecting user speech,

is especially spoken by the user voice commands, set up.

The use of a bone conduction microphone allows particular that users speak can be detected without being affected (or only slightly) of ambient noise.

According to a further embodiment of the invention further comprises at least one of the devices on an electroencephalography sensor unit (brain current measurement), which is adapted for detecting an electrical signal to a skin surface of a user. Through pattern recognition predetermined brain activity at the user can be detected from the detected electrical signal, especially personally exciting thoughts.

According to a further embodiment of the invention further comprises at least one of the devices has a control unit which is integrated in the housing, and further for controlling the apparatus in response to touches, which are detected by the capacitive sensor unit and / or depending on the user saying that detected by the microphone, and / or in response to an electrical signal received from

Electroencephalography sensor unit is detected.

Thus, the user can, for example, the functionality of the device by touching the capacitive sensor unit, by speaking voice commands and / or predetermined by thought control.

In particular may trigger on the capacitive sensor unit a first control signal one short touch (knocking), two consecutive short touches trigger a second control signal, etc. Further, like a swipe up, down, forward and backward respectively predetermined control signals trigger.

According to a further embodiment of the invention further comprises at least one of the devices on a contact sensor for detecting whether the apparatus is mounted in the ear.

The contact sensor may be particularly capacitive and be mounted on a part of the surface of the housing, the contact when worn in the ear, the skin surface. When the contact sensor has registered for a long time no contact with a skin surface, the device can be connected, for example in a standby mode or switched off completely.

According to a further embodiment of the invention, at least one of the devices furthermore a memory for storing the performance data generated by the data processing unit.

By storing the performance data can be read later from memory and processed externally. Furthermore, can be accessed in the course of a sporting activity to the stored performance data to calculate for example, averages, or perform comparisons with previous activities.

According to a further embodiment of the invention further comprises at least one of the devices on a Nahfeldkommunikationseinheit (N FC unit).

The NFC unit enables storing and / or reading out various data in or from the apparatus, for example, identification data of the user or GPS data indicating the last position of the device. Such GPS data can be transferred, for example, regularly from a smartphone.

Generally, one of the two devices of the system preferably functions as a primary device (master) in the system, in the sense that this device transmits control and data signals to the second (secondary) device, in particular sensor signals sensed by the secondary device and are transmitted to the primary device, are taken into account in the generation of control and data signals in the primary device. According to a further embodiment of the invention, at least one of the devices of the system, a bone conduction microphone, and both devices comprise a microphone for detecting

Ambient sound is established.

The bone conduction microphone is particularly useful for detecting

Voice Commands furnished pronounced by the user to control the system. Here the value detected by the external microphones ambient sound can be used for noise reduction to improve the recognition of voice commands. The recognition of voice commands as well as the processing for noise reduction are preferably carried out in a

corresponding signal processing unit, which is integrated in the primary device of the system. According to a further embodiment of the invention, at least one of the devices of the system, a detection unit which is adapted for detecting predetermined movement patterns, at the

trending touches a body surface of a user created. The detection unit is in particular to set up to receive a signal from the bone conduction microphone in the primary device, and signals from the microphones outwardly of the two devices and process. The processing has in particular an analysis of the time course of the pitch (frequency) and volume for each of the three signals. This processing of sound signals to each through and around

The user's body around have propagated, enables detection of predetermined movement patterns, in particular the recognition of the direction of a striking touch of the user's body surface. Such a detection is based on the fact that the pitch and volume of the sensed signal from one of the microphones is increased during the movement when the movement is in the direction toward the microphone out and decreases when the movement is carried out away from the microphone. An analysis of the signal from the bone conduction microphone thus enables detection of whether the movement is upward or downward. Similarly, an analysis of the signals from the two microphones outwardly enables detection of whether the movement is to the left or right. By further analysis of all three signals also oblique movements can be detected.

In other words, the detection unit can detect when the user, for example a finger from left to right or top to bottom on his cheek. Chest or his stomach pulls.

The recognition of such patterns of movement and contact patterns can be advantageously used to control the devices or system. More specifically, may be associated with a predetermined control command of each detectable movement pattern. For example, increase the playback volume and reduce an upward movement the playback volume movement upwards. The system may as a headset in conjunction with a mobile

Communication apparatus can be used, in particular a

Mobile phone, smartphone or tablet.

The use as a headset allows, among other things, that the

control various functionalities of the system are used for controlling the mobile communication device and that data, such as GPS data or voice commands is transmitted from an application running on the mobile communication device navigation application, to the system. According to a second aspect of the invention, a method will be described. The method described comprises the steps of: (a) detecting measurement data by a sensor unit, (b) generating performance data based on the measurement data by means of a data processing unit, wherein the sensor unit and the data processing unit in a first

Device, which is adapted to be worn in an ear of a user and a first data communication unit and a first speaker having, or at a second device, which is adapted for wearing in the other ear of the user and having a second data communication unit and a second speaker are , (c) generating a binaural audio signal based on the performance data by a signal processing unit, which is part of the first device, the binaural audio signal comprising a first signal part for output by the first speaker and a second signal part for output by the second speaker, and (d) transmitting the second signal part of the binaural audio signal to the second data communication unit using the first data communication unit.

The described method is essentially based on the same

Knowledge as the system described above in the first aspect and the embodiments thereof, which is that metrics such as transaction data and / or physiological data are collected and processed in at least one of two independent means to generate a binaural audio signal as a function of the generated performance data and outputting.

The invention can be used both by means of a computer program, that is software, as well as means of one or more special electrical

Circuits, that is in hardware or in any hybrid form, that is to say by means of software components and hardware components can be realized. It should be noted that embodiments of the invention have been described with reference to different subjects of the invention.

In particular, some embodiments of the invention are

Process claims and other embodiments of the invention described with device claims. The skilled person will however be immediately clear when reading this application that, unless explicitly stated otherwise, in addition to a combination of features belonging to one type of subject invention also any

Combination of features is possible, belonging to different types of the invention articles.

Further advantages and features of the present invention will become apparent from the following exemplary description of a preferred

Embodiment.

Brief Description of Drawings

1 shows a block diagram of one of the two devices of a system according to an embodiment.

Figure 2A shows a first view of an apparatus in accordance with a

Embodiment. Figure 2B shows a second view of an apparatus according to a

Embodiment.

Figure 2C shows a third view of a device according to a

Embodiment.

Figure 3 shows a system according to an embodiment. Detailed Description Figure 1 shows a block diagram of one of the two devices of a system according to an embodiment. The device is integrated in a housing which is arranged in the ear for supporting and will be further described in more detail below in connection with Figures 2A, 2B and 2C, and has a data processing unit 1, a signal processing unit 2, a speaker 3, an accelerometer 4 and a pulse oximeter and a pulse oximeter to 5.

The data processing unit 1 receives data from the accelerometer 4 and the pulse oximeter 5 and processes these to performance, such

To generate or calculate as a number of steps, a distance, a speed, an arterial oxygen saturation, a respiration rate, a cardiovascular flow, a cardiac output, blood pressure, a blood glucose level etc.. The performance data are transmitted to the signal processing unit 2 and from the latter used to generate an audio signal that is output by the loudspeaker 3 into the user's ear. The

Audio signal is generated so that the user of the hearing

corresponding sound information about at least one value of the

May experience performance. This can be through the issue of language elements (for example, pre-stored numbers and words) or pulsed

Sound signals, carried out by manipulation of music or otherwise.

The apparatus further comprises a central control unit or controller 9 and a memory 11. The controller 9 is connected to the Datenverarbeätungseinheit 1, the signal processing unit 2, and the memory 11 and adapted to control these units and information from these

To obtain or read out units. The controller 9 controls, for example, what the performance data generated by the data processing unit 1, which is to consider the signal processing unit 2 in generating the audio signal, for example, whether the audio signal straight information on heart rate, speed or what should be different. The controller can also control in such a way the signal processing unit 2, that in the memory 11

stored music or the like (for example, an audio book) is rendered independent of the performance.

The control unit 9 is further provided with a first microphone 7, a second microphone 14, a touch sensor unit 6, an EEG unit - (electroencephalography unit) 8, a contact sensor unit 10, a Bluetooth unit 12 and an NFC unit (Nahfeldkommunikationseinheit) 13. These units are also integrated in the housing and

generally allow that the user can influence or control the functionality of the device and that the device can communicate with an external device, such as a similar device, a smartphone or a computer.

The first microphone 7 is a bone conduction microphone that is mounted in the housing so that it can detect sound which is passed through the skull bone, for example when speaking. A function of the first microphone 7 is to detect user speaking, for example, voice commands for controlling the device or the user speaking, when the device is used as a headset in conjunction with an external device.

The second microphone 14 is mounted in the housing so that it can capture ambient sound in particular. By processing the signals of both the first microphone 7 and the second microphone 14 ambient noise of the users speak can be filtered, which improves the use of a headset and the recognition quality of voice commands. A further application of the two microphone signals is the detection of acoustic gestures, that is, the detection of certain moving or sweeping touches the body surface. More specifically like an acoustic gesture for example are that the user a quick sweeping motion of his body or clothes in a certain direction (vertical, horizontal, etc.) makes a finger, the finger by the whole movement, the skin or clothing touches. Such stroking movements and sound is created by analyzing the 7 and 14 picked up by the microphones signals can direction, speed and other characteristics of the gesture to be recognized and converted into control signals.

The touch sensor unit 6 comprises a plate having a plurality of capacitive sensors and is mounted on a portion of the surface of the housing, that the user can touch with your finger when the device is worn in the ear. In other words, the touch sensor unit 6 is located on a surface of the housing, from the

Ear canal facing away. Strikethrough and / or tapping with your finger on the touch sensor unit 6, the user can control the device. For example, the control unit 9 associate a trending upward movement with a volume increase and a trending downward movement with a volume reduction and control the signal processing unit 2 accordingly. Similarly, the control unit can connect eg a unique tapping on the touch sensor unit 6 with a function change and a twice repeated knocking with a selection of a function.

The EEG unit 8 has a plurality of electrodes which are so attached to the surface of the housing that measurements can be carried out by electrical potentials at the skin surface in the ear. These measurements are analyzed by the control unit and compared with pre-stored measurements to detect certain thoughts of the user and to use them as control commands. For example, the intensive thinking about their own favorite food trigger an announcement of the previous calorie consumption. The contact sensor unit 10 includes a capacitive sensor that is mounted in the surface region of the housing that it contacts when worn in the ear of the user's skin surface. Thus, the controller 9 can detect whether the device is used or not, and accordingly generate different control signals. For example,

Power consumption intensive functions are switched off some

Minutes after the device was removed from the ear.

The Bluetooth unit 12 is used for wireless communication with other devices (for example, a worn in the other ear devices) or external devices (mobile phone, PC, etc.). If communication with a device in the other ear of the user sensor signals can be considered by both sides to provide improved precision in the

To achieve performance. Further, the audio signal generated

edit stereofonisch or binaural. In such systems,

does a device as the primary device or master in the sense that it receives data from both devices and processes and defines the respective audio signals to be output.

Communication with an external device, during use of the device, that is, during the exercise of a sporting activity to take place. In this case, data may, for example music or GPS data, are transmitted from the device to the apparatus, where they are used or stored. Simultaneously, data such as

For example, sensor data collected or calculated performance data, are transmitted from the device to the unit. This also allows use of the device as a headset in conjunction with

Communication applications.

Communication with the external device can also take place when the

Device is not used in the ear to configure for example to the various above-described control ways

Thresholds (for example, heart rate, respiratory rate, distance, time or speed etc.) to determine or to read performance data for external processing. This is expediently carried out by means of a specific application or app.

The NFC unit 13 enables communication with a

Nahfeldkommunikationsfähigen device, such as a smart phone, when the latter is brought into the vicinity of the device. It can

Configuration data is transferred from the smartphone to the device or the device data stored in, for example,

Contact information for the user can be read. This information may be useful when the device lost

is found or in conjunction with an accident.

Figures 2A, 2B and 2C show different views of an apparatus 20 according to an embodiment, in particular the shape of the housing, are integrated in which all the units of the apparatus 20. Figure 2A shows a view of a device 20 having a housing. The housing is made of plastic, for example silicone, manufactured and basically has a first portion 21 and a second section 22. The first portion 21 is to be inserted into the ear canal of a user and the second section 22 is to be mounted in the concha of the

User formed. Here, the first portion 21 is substantially

Cone-shaped to fit well in the outer part of the ear canal. In the end region of the first section 21, an elastic collar 24

provided that works while wearing the apparatus 20 in the ear as a seal, so that the device 20 blocks the user's ear canal. The second portion 22 is shaped so that it in the Concha

Can be used ear pinna of a typical and held there.

The housing also has a surface 23 which faces away from the ear canal and thus, for example with a finger reachable by the user. The surface 23 has in particular a capacitive

Sensor unit for detecting control commands from the user, for example if the user with his finger on the surface 23 knocks or sweeps over the surface 23 in a particular direction. Near the surface 23, the housing has a closable opening 25, through which a (not shown) plug can be coupled to a socket, to charge the battery of the device 20 or to transfer data to the apparatus 20 to be replaced.

The housing further has an opening 26 which is located in a place in the surface of the housing that contacts the device 20 when worn in the ear skin, in particular in the region behind the tragus, closely. The opening 26 may include a pulse oximeter sensor, the two

differently colored light sources, especially LEDs, and a photo sensor has. In this case, the opening 26 is so mounted in the housing such that the light sources may illuminate an area of skin surface in the user's ear and the photo sensor can detect corresponding rejections from the skin surface. The opening 26 may alternatively include a bone conduction microphone. In a system with two devices, a left to the ear and a right to the ear that a device like the pulse oximeter and the other device the

Have bone conduction microphone. Figure 2B shows a further view of the device 20, wherein the

Surface 23 can be seen in the foreground. The surface 23 has a gap or slot-shaped opening 27 which passes from the outside coming sound to a (not shown) microphone. The device 20 further comprises a collar or sleeve 28, the part of the surface 23 surrounds and is used to adjust the size of the device to a user's ear. The sleeve 28 is made of soft plastic and detachable from the housing. Thus, the user can try different sleeves 28 with different sizes and choose the one that provides the best fit.

Figure 2C shows yet another view of the apparatus 20, the apparatus in comparison with the view in Figure 2B is rotated by 180 °.

As well as the collar 24 and the end of the first portion, which in the

Auditory canal extends deepest, have openings 29 through which the sound generated from a built-in speaker of the device, can be output. The openings 25, 26, 27 and 29 are all waterproof sealed, so that the device 20 while swimming or rain can be used.

Figure 3 shows a system according to an embodiment. The system comprises a first device and a second device 20L 20R. The first device 20R is adapted to be worn in the right ear and the second device is adapted to be worn in the left ear. Each device 20R and 20L are essentially the apparatus 20 described above, but, the first device 20R, a bone conduction microphone 7 in its opening 26, the second device 20L a pulse oximeter sensor 5 has in its opening 26. The first device 20R functions as a primary device or master in the sense that it receives data from both devices 20R, 20L and processes and defines the respective outputted Audiosignale. The two devices 20 R and 20L communicate with each other over their respective Bluetooth unit 12 (see Figure 1) and can thus sensor data,

Replacing performance data, audio data, control data, etc.. In operation, the secondary device 20L sends particular Pulsoximeterdaten and

Motion sensor data or performance data, which are derived from Pulsoximeterdaten and / or motion sensor data to the primary device 20R. The data processing unit 1 of the first device 20R generates performance data based on the data and the measurement data detected by its own sensor unit received from the second device 20L. The performance data are used by the signal processing unit 2 of the first device for generating a binaural audio signal.

The binaural audio signal consists of a first (right) signal portion, which is output through the speaker 3 of the first device 20R, and a second (left) signal part transmitted to the second device via the Bluetooth connection and output from the speaker 3 becomes. By synchronized output of the first signal part in the right ear and the second signal part in the left ear, the user can binaural

Perceive audio signal and thus obtain information that is relevant for the application of a sporting activity. Specifically, the user may have a while listening the binaural audio signal or a plurality of specific values of the performance data, changes in one or more specific values of the performance data and / or a relation between one or more specific values of the performance data and

corresponding reference values, especially thresholds recognize or know. The binaural audio signal enables, in particular, that information on a plurality of values simultaneously (or nearly simultaneously) can be heard at different spatial positions.

The binaural audio signal generated contains a signal component, for example a pulsed audio signal or a sequence of pre-stored speech elements, which is indicative of a value of the performance data. This signal component can be heard for the user at a particular spatial location. This spatial position can be moved or changed, if changes to the corresponding value of the performance. This can be done, for example, so that the signal component is shifted forward or upward, if the value increases, and is displaced backward or downward, when the value decreases. The displacement of position can, in particular relative to a vertical plane extending through the user's body, or a horizontal plane defined by the head extends (at the level of the ears) of the user occur. As long as the

Signal component is to play in one of these levels, that is, directly to the left or right side of the user, or at the level of the user's ears, then the value is equal to or close to a predetermined reference value. If the value of the predetermined reference value or

Exceeds threshold value, the position of the signal component to be

Example forward or moved upward, wherein the amount of

Shift of the difference between the power value and the

Reference value depends. Similarly, the position of the

Signal component to be moved down and back or if the value of the (or another) reference value or threshold

below.

Thus, the user can easily and intuitively recognize whether the value of the predetermined reference value deviates, and if this is the case,

act accordingly, by the value again to the predetermined

To approach the reference value. The binaural audio signal is produced may contain other signal component, which are indicative for other values of the performance data. In this case, the binaural audio signal is generated so that a spatial

position of each signal component of the spatial position of the other signal is different components. This values can be reproduced in various performance data in different predetermined locations in three-dimensional space around the user's head around in terms. For

Example, a first pulsed tone or voice signal regarding the heart rate at a point on the top left and a second pulsed

Will play at one point front lower tone or voice signal with respect. A speed. The playback of each signal component may simultaneously or slightly offset in time take place in order to facilitate the perception by the user.

PATENT CITATIONS

Cited Patent	Filing date	Publication date	Applicant	Title
WO2014043179A2 *	Sep 11, 2013	Mar 20, 2014	Bose Corporation	Powered headset accessory devices
US20080076972 *	Mar 27, 2007	Mar 27, 2008	Apple Inc.	Integrated sensors for tracking performance metrics
US20090097689 *	Aug 21, 2008	Apr 16, 2009	Christopher Prest	Sports Monitoring System for Headphones, Earbuds and/or Headsets

* Cited by examiner

CLASSIFICATIONS

International Classification	H04R25/00, H04R5/033, H04R1/10
Cooperative Classification	H04R2420/07, H04R1/1041, H04R5/033, H04R2460/13, H04R1/1016, H04R2201/107, H04R1/1091, H04R25/552

LEGAL EVENTS

Date	Code	Event	Description
Sep 9, 2015	121	Ep: the epo has been informed by wipo that ep was designated in this application	**Ref document number:** 15701341 **Country of ref document:** EP **Kind code of ref document:** A1

Google Home - Sitemap - USPTO Bulk Downloads - Privacy Policy - Terms of Service - About Google Patents - Send Feedback

Data provided by IFI CLAIMS Patent Services

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 017 252 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
05.07.2000 Bulletin 2000/27

(51) Int. Cl.[7]: **H04R 25/00**

(21) Application number: **99125134.9**

(22) Date of filing: **16.12.1999**

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

(30) Priority: **31.12.1998 US 114513 P**

(71) Applicant:
RESISTANCE TECHNOLOGY, INC.
Arden Hills, MA 55112 (US)

(72) Inventors:
- **Bybee, Thomas D.**
  Ramsey, MN 55303 (US)
- **Darbut, Alexander L.**
  Fdina, MN 55436 (US)
- **Gorder, Mark S.**
  North Oaks, MN 55127 (US)

(74) Representative:
Becker Kurig Straus
Patentanwälte
Bavariastrasse 7
80336 München (DE)

(54) Hearing aid system

(57) A hearing aid system includes an earpiece for producing sound representative of a listening environment. A module worn by the hearing aid user is in wireless communication with the earpiece. A plurality of microphones are located in the module to receive incoming sound signals from the listening environment. Processing circuitry in the module analyzes the incoming sound signals received by the plurality of microphones and generates control signals to govern the production of sound by the earpiece.



Fig. 1

EP 1 017 252 A2

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a hearing aid system, and more particularly to a personal hearing aid and information system that employs beamforming and other processing techniques to optimize the performance of the hearing aid system in a variety of sound environments.

[0002] Hearing aids have become a popular and effective tool for enabling a person with a hearing deficiency to detect and recognize audible sounds by filtering and amplifying the sounds and reproducing them in a microphone worn in the ear of the user. Hearing aid devices have become more and more sophisticated, and binaural hearing aid systems have been developed so that a user wearing a hearing aid in each ear may identify the direction from which a sound originated based on differences in the time of arrival of a sound at each ear and differences in loudness level between the ears.

[0003] Despite the improvements in hearing aid technology and hearing aid system processing, existing hearing aid systems are still unable to approximate the selective listening patterns that are generated by the human brain in response to particular sound environments. Specifically, hearing aid systems are typically unable to effectively "focus" the attention of the listener onto a particular sound source where other sounds are also present. There is a continuing need in the art for a complete hearing aid system providing improved ability to discriminate among sound levels and sources.

BRIEF SUMMARY OF THE INVENTION

[0004] The present invention is a hearing aid system that includes at least one earpiece and a module in wireless communication with the earpiece. A plurality of microphones are located in the module to receive incoming sound signals from a listening environment. Processing circuitry in the module analyzes the incoming sounds signals received by the microphones and generates control signals that direct the earpiece to produce sounds representative of the listening environment. The processing and analysis amplify sound signals originating from desired directions and attenuate sound signals originating from undesired directions, resulting in superior listening performance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005]

FIG. 1 is a diagram illustrating a human outfitted with a hearing aid system according to the present invention

FIG. 2 is a diagram illustrating the components of a hearing aid system according to a first embodiment of the present invention.

FIG. 3 is a diagram illustrating the components of a hearing aid system according to a second embodiment of the present invention.

FIG. 4 is a block diagram illustrating the functional components of a medallion utilized in the hearing aid system of the present invention.

FIG. 5 is a block diagram illustrating the functional components of an earpiece utilized in the hearing aid system of the present invention.

FIG. 6 is a diagram illustrating a simplistic example of a multi-element sensor array for receiving incoming sound signals.

FIG. 7 is a stacked graph illustrating a beamforming example where the left and right sensor signals are in phase.

FIG. 8 is a stacked graph illustrating a beamforming example where the left and right sensor signals are 180 degrees out of phase.

FIG. 9 is a stacked graph illustrating a beamforming example where the left and right sensor signals are less than 180 degrees out of phase.

FIG. 10 is a graph illustrating the response of a hearing aid system employing two omni-directional microphones 5.25 inches apart where incoming sound signals have a frequency of 1275 Hz.

FIG. 11 is a graph illustrating the response of a hearing aid system employing two omni-directional microphones 5.25 inches apart where incoming sound signals have a frequency of 1000 Hz.

FIG. 12 is a graph illustrating the response of a hearing aid system employing two omni-directional microphones 5.25 inches apart where incoming sound signals have a frequency of 1500 Hz.

FIG. 13 is a graph illustrating the response of a hearing aid system employing two directional microphones 5.25 inches apart where incoming sound signals have a frequency of 1275 Hz.

FIG. 14 is a diagram illustrating an exemplary beam pattern exhibited by a microphone array and beamformer according to an embodiment of the present invention.

FIG. 15 is a diagram illustrating the exemplary beam pattern shown in FIG. 14 in relation to a first exemplary sound environment.

FIG. 16A is a graph illustrating an uncorrupted input signal from the speaker shown in FIG. 15 to be listened to with the hearing aid system of the present invention.

FIG. 16B is a graph illustrating the input signal of FIG. 16A corrupted with random noise.

FIG. 16C is a graph illustrating the beamformer output of the hearing aid system of the present invention.

FIG. 17 is a diagram illustrating the exemplary beam pattern shown in FIG. 14 in relation to a second exemplary sound environment.

FIG. 18A is a graph illustrating an uncorrupted input signal from the speaker shown in FIG. 17 to be listened to with the hearing aid system of the present invention.

FIG. 18B is a graph illustrating the input signal of FIG. 18A corrupted with directional noise, random noise and reverberation.

FIG. 18C is a graph illustrating the beamformer output of the hearing aid system of the present invention.

DETAILED DESCRIPTION

[0006] FIG. 1 is a diagram illustrating a human equipped with a hearing aid system 10 according to the present invention. Hearing aid system 10 includes left earpiece 12, right earpiece 14 and medallion 16 worn round the user's neck or clipped onto the user's shirt, for example. As will become apparent in the detailed description of hearing aid system 10 to follow, earpieces 12 and 14 and medallion 16 are equipped with microphones, wireless transceivers, processing circuitry, or a combination of these components, enabling hearing aid system 10 to provide performance above and beyond the performance of the individual earpieces or medallion.

[0007] FIG. 2 is a diagram illustrating the configuration of a first embodiment of hearing aid system 10a. Left earpiece 12 includes FM receiver 22, and right earpiece 14 includes FM receiver 24. Medallion 16 includes microphones 26, 28 and 30 and FM transmitter 32. FM transmitter 32 is operable to wirelessly transmit signals and data to FM receiver 22 of left earpiece 12 via wireless link 24, and to FM receiver 24 of right earpiece 14 via wireless link 36.

[0008] In an exemplary mode of operation, microphones 26, 28 and 30 operate to receive incoming sound signals from the environment around the hearing aid system user. Medallion 16 includes processing means (not shown in FIG. 2) to interpret the incoming sound signals received by microphones 26, 28 and 30 and generate appropriate control signals for reproducing sounds in the ears of the user at earpieces 12 and 14. The control signals are transmitted from medallion 16 via FM transmitter 32 along wireless links 34 and 36 to FM receivers 22 and 24 in earpieces 12 and 14. Earpieces 12 and 14 are operable in response to the control signals to reproduce the appropriate sounds in the ears of the user.

[0009] FIG. 3 is a diagram illustrating the configuration of a second embodiment of hearing aid system 10b. Left earpiece 12 includes FM transceiver 22 and microphone 23. Right earpiece 14 includes FM transceiver 24 and microphone 25. Medallion 16 includes microphones 26, 28 and 30 and FM transceiver 32. FM transceivers 22, 24 and 32 are operable to wirelessly transmit signals and data between left earpiece 12, right earpiece 14 and medallion 16 on wireless links 34 and 36.

[0010] In an exemplary mode of operation, microphones 23 and 25 in earpieces 12 and 14, respectively, and microphones 26, 28 and 30 in medallion 16 operate to receive incoming sound signals from the environment around the hearing aid system user. Data representing the sound signals received by microphone 23 in left earpiece 12 and microphone 25 in right earpiece 14 is sent from FM transceiver 22 on wireless link 34 and from FM transceiver 24 on wireless link 36 to FM transceiver 32 in medallion 16. Medallion 16 includes processing means (not shown in FIG. 3) to interpret the incoming sound signals received by microphones 26, 28 and 30 and the data signal received from earpieces 12 and 14 by FM transceiver 32. The processing means generates appropriate control signals for reproducing sounds in the ears of the user at earpieces 12 and 14. The control signals are transmitted from medallion 16 via FM transceiver 32 along wireless links 34 and 36 to FM transceivers 22 and 24 in earpieces 12 and 14. Earpieces 12 and 14 are operable in response to the control signals to reproduce the appropriate sounds in the ears of the user.

[0011] FIG. 4 is a block diagram illustrating the functional components of medallion 16 utilized in hearing aid system 10 of the present invention. In an exemplary embodiment, medallion 16 houses the main processing circuitry of hearing aid system 10, in addition to an array of microphones and an FM transceiver. Microphones 26, 28, 30 and 31 are spatially arranged on medallion 16 to optimize the ability of the microphones to distinguish the direction from which an incoming sound originates. The details of this spatial arrangement may vary; a simplistic example showing the effects of different spatial arrangements is discussed below with respect to FIGS. 6-13. Any number of microphones may be provided in medallion 16, as schematically demonstrated in FIG 4. The signals received by microphones 26, 28, 30 and 31 are amplified by amplifiers 46, 48, 50 and 51, respectively. The outputs of amplifiers 46, 48, 50 and 51 are coupled to analog multiplexer and analog-to-digital (A/D) converter 52. Analog multiplexer and A/D converter 52 converts the analog signals from amplifiers 46, 48, 50, 51 into digital representations of those signals and sequences the signals into a digital data packet for input to digital signal processor (DSP) 54. In an embodiment such as hearing aid system 10b shown in FIG. 3, signals from remote microphones in earpieces worn by the user are transmitted on wireless links 34 and 36 to FM transceiver 32 in medallion 16. These signals are converted into digital form by FM radio receiver 58 and coupled as input to DSP 54.

[0012] DSP 54 implements a numerical algorithm to process the signals received from analog multiplexer and A/D converter 52 and FM radio receiver 58 in a predetermined manner. Given a desired processing scheme for the input signals, it is within the expertise of one skilled in the art to configure the DSP 54 to imple-

ment the appropriate numerical algorithm to achieve the desired processing scheme. The objectives of such processing schemes are described below with respect to FIGS. 7-13. Executing the algorithm produces control signals for generating appropriate signals in the earpieces worn by the user. The control signals are output from DSP 54 to FM radio transmitter 56 for wireless transmission via FM transceiver 32 on wireless links 34 and 36 to the respective earpieces.

[0013] FIG. 5 is a block diagram illustrating the functional components of earpiece 12 (or 14) utilized in hearing aid system 10 of the present invention. Incoming sound signals are received by directional microphone 23a and omni-directional microphone 23b. In an alternative embodiment, only one of directional microphone 23a and omni-directional microphone 23b is provided in earpiece 12. The signals received by microphones 23a and 23b are amplified by amplifiers 66 and 68, respectively, which are in turn coupled to analog multiplexer and analog-to-digital (A/D) converter 70. Signals from remote microphones in a medallion worn by the user are transmitted on wireless link 34 to FM transceiver 22. These signals are converted into digital form by FM radio receiver 74 and coupled as input to DSP 72.

[0014] As with DSP 54 shown in FIG. 4, DSP 72 implements a numerical algorithm to process the signals received from analog multiplexer and A/D converter 70 and FM radio receiver 74 in a predetermined manner. Executing the algorithm produces control signals for generating appropriate signals in the earpieces worn by the user. The control signals are output from DSP 72 directly to receiver 78 in earpiece 12, and also to FM radio transmitter 76 for wireless transmission via FM transceiver 22 on wireless link 34 to the medallion worn by the user, where the signal will be relayed to the other earpiece worn by the user.

[0015] In the embodiment schematically pictured in FIG. 5, DSP 72 is shown as being located in earpiece 12. In this embodiment, DSP's may be employed in the earpieces only, with a medallion worn by the user serving as an additional location for microphones in the microphone array and as an FM relay station for signals to be transmitted between earpieces. Alternatively, an additional DSP may also be located in the medallion, to distribute the processing functions between the physical components of the hearing aid system, or for redundancy purposes. In another embodiment, a DSP may only be located in the medallion (as shown in FIG. 4), with no DSP in the earpieces. Other arrangements of functional components within the physical parts of the hearing aid system are contemplated by the present invention.

[0016] With the components provided as shown in FIGS. 1-5, the hearing aid system of the present invention is able to achieve high performance operation and listening features that were not possible with prior art hearing aids. To understand the performance advantages enabled by the present invention, a simplified description of a multi-sensor processing technique called beamforming is beneficial. Beamforming is a technique that works by combining the signals received by an array of sensor elements, such as microphones, to generate a desired composite response. For example, a hearing aid system beamformer boosts the signal arriving from some directions and attenuates signals arriving from other directions, to enable the hearing aid system user to "focus" attention on a particular sound source. The direction of maximum response, referred to as the maximum response axis (MRA), can be steered in different directions by properly combining the signals from each sensor element.

[0017] FIG. 6 depicts a simple example where multiple sensor elements are positioned in a straight line. The angle perpendicular to a line that passes through the elements is defined as the "boresight" angle, or zero degrees. The physical angle of incident sound is therefore defined within a range of -180 to +180 degrees, where 0 degrees is boresight, ±180 degrees is straight behind, +90 degrees is to the right, and -90 degrees is to the left. This simple example is illustrated in FIG. 6, where microphones 80, 82 and 84 are linearly aligned at a distance d apart and an incoming sound signal having wavelength λ creates an angle θ with the microphone line. The difference in time of the sound signals received by adjacent microphones in the array is defined by:

$$x = \frac{360*d*\sin\theta}{\lambda} \text{ degrees of phase or}$$

$$\frac{d*\sin\theta}{c} \text{ seconds,}$$

where c is the speed of the waves. This difference in time may be utilized to determine the direction from which sound signals are originating.

[0018] In one scenario, the objective is to maximize the response of the system along the boresight axis and minimize the response in all other directions. This is a simple processing scenario - the signals from the sensors need only be added together with equal weight given to the signals from each sensor. The results of this scheme are simplistically shown in FIGS. 7-9, where it is assumed that there are only two sensor elements for illustration purposes. FIG. 7 illustrates that where the incoming sound signals are in phase with each other (that is, the sound signals reach the two sensors at the same time, meaning that their origination direction is "boresight"), and the signals received by the sensors are as illustrated by curves 90 and 92, adding the signals will result in curve 94 having the sum of the amplitudes of curves 90 and 92. FIG. 8 illustrates that where the incoming sound signals are 180 degrees out of phase (that is, the sound signals reach the sensors at

times separated by a half cycle), and the signals received by the sensors are as illustrated by curves 100 and 102, adding the signals will result in a zero signal 104 - the signals completely cancel. This will occur when the sound signals are coming from an angle that is ±90 degrees from boresight. FIG. 9 illustrates that where the incoming sound signals are somewhat out of phase (that is, the sound signals reach the sensors at times separated by less than a half cycle), and the signals received by the sensors are as illustrated by curves 110 and 112, adding the signals will result in curve 114 having an amplitude that is less than the sum of the amplitudes of curves 110 and 112. The angle of arrival of the incoming sound signals can be calculated based on the difference in time of arrival, where the spacing between microphones is known.

[0019] It can be appreciated from the discussion above that the spacing of sensor elements is important to the ability to determine the origination direction of incoming sound signals. The ideal spacing of sensor elements is a half wavelength, so that an incoming sound signal coming from 90 degrees to boresight reaches adjacent sensors at times separated by a half cycle and the signals completely cancel one another. With this spacing, the range of combined signal amplitudes extends from 0 (complete cancellation) to twice the amplitude of the incoming signal, for the two-sensor example, which is the maximum range. Where microphones are spaced more than a half wavelength apart (typically for higher frequencies which have lower wavelengths), spatial aliasing occurs and grating lobes form in the response pattern, which makes accurate determination of the origination of the sound signal more difficult.

[0020] FIGS. 10-13 show the response of the two-microphone array over the full range of sound signal origination angles, with 0 degrees being boresight, -90 degrees being to the left, and +90 degrees being to the right. FIG. 10 illustrates the scenario where the two microphones are omni-directional microphones spaced 5.25 inches apart and the frequency of incoming sound signals is 1275 Hz (at 1275 Hz, 5.25 inches is a half wavelength). Curve 120 shows that the peak response of the system (adding the signals received at the two microphones) is at angles of 0 and ±180 degrees, with a deep "null" (attenuated response) at an angle of ±90 degrees. FIG. 11 illustrates the same microphone scenario where the frequency of the incoming sound signals is 1000 Hz - at this frequency, using the same adding formula, curve 130 shows that the nulls at ±90 degrees are much less definitive. FIG. 12 illustrates the same microphone scenario where the frequency of the incoming sound signals is 1500 Hz - at this frequency, using the same adding formula, curve 140 shows that side lobes are formed at ±90 degrees, with lower peak amplitudes, and the nulls are shifted to about ±60 degrees and ±120 degrees. These curves illustrate the importance of having microphone elements that are a half wavelength apart; where the microphone spacing is more or less than a half wavelength, the response curves are not as well defined, which tends to result in less ability for the user of a hearing aid system to focus on particular sounds.

[0021] FIG. 13 illustrates an alternative scenario where the microphones utilized in the two-element array are directional microphones, spaced 5.25 inches apart, where the frequency of incoming sound signals is 1275 Hz. Curve 150 shows that the peak response of the system is again at the boresight angle, with a lesser peak at ±180 degrees, and wide nulls in the vicinity of ±90 degrees. The use of directional microphones can potentially allow the hearing aid user to more effectively focus on frontal sounds while attenuating sounds originating from the rear.

[0022] FIG. 14 is a diagram illustrating an exemplary beam pattern exhibited by microphone array 200 and an associated beamformer according to an embodiment of the present invention. In the embodiment depicted in FIG. 14, microphone array 200 exhibits a large frontal or main lobe 202, representing sounds coming from the front of a user. Microphone array 200 also exhibits two side lobes 204 and 206 and a back lobe 208. The beam former outputs are such that sounds in main lobe 202 are amplified the most, while sounds in side lobes 204 and 206 are attenuated somewhat and sounds in back lobe 208 are attenuated even more. This beam pattern is designed to allow the user to effectively focus on sounds originating in front of the user (where the user is typically looking), even in an environment where random noise exists to the user's sides and rear. It should be understood that other beam patterns may be formed according to the present invention, and the pattern shown in FIG. 14 is an example of one particular beam pattern that may be implemented when desirable.

[0023] FIG. 15 is a diagram illustrating the exemplary beam pattern shown in FIG. 14 in relation to a first exemplary sound environment. The sound environment includes multiple sources of random noise 210 (such as a crowd of people) at several points around the hearing aid user (wearing microphone array 200), and a keynote speaker 212 in front of the user. As can be seen in FIG. 15, keynote speaker 212 is located at the center of main lobe 202, and sounds originating from speaker 212 will therefore be maximally amplified. Random noise 210 originates from locations at the sides of main lobe 202, and at side lobes 204 and 206 and back lobe 208, and therefore will be attenuated to a level below that of keynote speaker 212.

[0024] FIGS. 16A, 16B and 16C are graphs depicting an uncorrupted sound signal from keynote speaker 212 (FIG. 15), the sound signals received at the left and right input channels of the hearing aid system worn by the user, and the beamformer output from the hearing aid system to the ears of the user. The uncorrupted signal is shown in FIG. 16A. The sound signals received at

the left and right input channels are shown in FIG. 16B. The original input signal (shown in FIG. 16A) is received at each input channel, with a time-shift that is based on the physical distance between the left and right input channel microphones. The left and right channel signals are also corrupted by some level of random noise that persists throughout the listening time frame. The beamformer output is shown in FIG. 16C. The beamformer recognizes the characteristics of the random noise and of the original input signal, and also recognizes, based on the time-shift of the input signal at the left and right channels, which direction the input signal originates from. Since the signal originates from the user's front (see FIG. 15), the signal is amplified to a higher level, while the random noise is attenuated to a lower level, thereby permitting the hearing aid user to better distinguish between the desired sound (keynote speaker 212, FIG. 15) and random noise (noise sources 210, FIG. 15).

[0025] FIG. 17 is a diagram illustrating the exemplary beam pattern shown in FIG. 14 in relation to a second exemplary sound environment. The sound environment includes multiple sources of random noise 210 (such as a crowd of people) at several points around the hearing aid user (wearing microphone array 200), a keynote speaker 212 in front of the user, and a relatively loud directional noise source 214. The sound environment may also include reverberation 216 of the desired noise signal from the walls of the room. As can be seen in FIG. 15, keynote speaker 212 is located at the center of main lobe 202, and sounds originating from speaker 212 will therefore be maximally amplified. Random noise 210, directional noise 214 and reverberation 216 originate from locations at the sides of main lobe 202, and at side lobes 204 and 206 and back lobe 208, and therefore will be attenuated to a level below that of keynote speaker 212.

[0026] FIGS. 18A, 18B and 18C are graphs depicting an uncorrupted sound signal from keynote speaker 212 (FIG. 17), the sound signals received at the left and right input channels of the hearing aid system worn by the user, and the beamformer output from the hearing aid system to the ears of the user. The uncorrupted signal is shown in FIG. 18A. The sound signals received at the left and right input channels are shown in FIG. 18B. The original input signal (shown in FIG. 18A) is received at each input channel, with a time-shift that is based on the physical distance between the left and right input channel microphones. The left and right channel signals are also corrupted by some level of random noise that persists throughout the listening time frame, a higher level of directional noise, and reverberation of the input signal from the walls of the room. The beamformer output is shown in FIG. 18C. The beamformer recognizes the characteristics of the random noise, directional noise, reverberation, and the original input signal, and also recognizes, based on the time-shift of the input signal at the left and right channels, which direction the input signal originates from. Since the signal originates from the user's front (see FIG. 17), the signal is amplified to a higher level, while the random noise and the directional noise is attenuated to a lower level, thereby permitting the hearing aid user to better distinguish between the desired sound (keynote speaker 212, FIG. 17) and noise (noise sources 210, directional noise source 214, FIG. 17).

[0027] The hearing aid system of the present invention, as shown in FIGS. 1-5, provides an extensive sensor array and processing capability that enables significant flexibility and control of the response of the system to particular sound patterns. The shape of the response curves (shown simplistically in FIGS. 10-13 for a two-microphone example where the signals are merely added together) can be adjusted by performing different numerical algorithms on the signals received by the sensors. This adjustment can involve a technique called "adaptive null steering" which operates to move the nulls in the response pattern to a particular angular location, so that a particular noise source may be somewhat blocked out of the user's hearing, enabling better focus on the desired sound source. The provision of wireless communication links between earpieces and a medallion worn around a user's neck allows a number of spacings between microphones in the array to be utilized to provide the optimum half wavelength spacing to accommodate a higher range of frequencies of incoming sound signals. The hearing aid system therefore is able to provide superior performance compared to prior hearing aid devices, effectively enabling a listener to focus attention on a desired sound source in a variety of listening environments.

[0028] Although the present invention has been described with reference to preferred embodiments, workers skilled in the art will recognize that changes may be made in form and detail without departing from the spirit and scope of the invention.

Claims

1. A hearing aid system comprising:

   an earpiece for producing sound representative of a listening environment;
   a module in wireless communication with the earpiece;
   a plurality of microphones located in the module to receive incoming sound signals from the listening environment;
   processing circuitry in the module for analyzing the incoming sound signals received by the plurality of microphones and generating control signals to govern the production of sound by the earpiece.

2. The hearing aid system of claim 1, further comprising:

at least one microphone located in the earpiece to receive incoming sound signals from the listening environment.

3. The hearing aid system of claim 2, wherein the at least one microphone located in the earpiece comprises an omni-directional microphone.

4. The hearing aid system of claim 2, wherein the at least one microphone located in the earpiece comprises a directional microphone.

5. The hearing aid system of claim 2, wherein the at least one microphone located in the earpiece comprises an omni-directional microphone and a directional microphone.

6. The hearing aid system of claim 2, wherein the earpiece and the module each include a wireless transceiver for effecting communication between the earpiece and the module.

7. The hearing aid system of claim 1, wherein the earpiece includes a wireless receiver and the module includes a wireless transmitter for transmitting information from the module to the earpiece.

8. The hearing aid system of claim 1, further comprising a second earpiece for producing sound representative of the listening environment, the module being in wireless communication wit the second earpiece.

9. The hearing aid system of claim 8, further comprising:

at least one microphone located in the first-named and second earpieces to receive incoming sound signals from the listening environment.

10. The hearing aid system of claim 9, wherein the first-named and second earpieces and the module each include a wireless transceiver for effecting communication between the earpieces and the module.

11. The hearing aid system of claim 9, wherein the at least one microphone in the first-named and second earpieces comprises an omni-directional microphone.

12. The hearing aid system of claim 9, wherein the at least one microphone in the first-named and second earpieces comprises a directional microphone.

13. The hearing aid system of claim 9, wherein the at least one microphone in the first-named and second earpieces comprises an omni-directional microphone and a directional microphone.

14. The hearing aid system of claim 8, wherein the first-named and second earpieces each include a wireless receiver and the module includes a wireless transmitter for transmitting information from the module to the earpieces.

15. The hearing aid system of claim 1, wherein the processing circuitry comprises a digital signal processor for performing a numerical algorithm on the incoming sound signals received by the microphones to shape a response of the hearing aid system that is represented by the sound produced by the earpiece.

16. A method of producing sounds in the ears of a user that represent a listening environment, the method comprising:

providing a plurality of microphones in a module worn by the user to receive incoming sound signals from the listening environment;
processing the incoming sound signals received by the microphones to amplify sound signals originating from desired directions and to attenuate sound signals originating from undesired directions;
generating control signals to govern the production of sound in the user's ears according to the result of the processing step; and
communicating the control signals to earpieces located in the user's ears to govern the production of sound therein.

17. The method of claim 16, further comprising:

providing at least one microphone in the earpieces located in the user's ears to receive incoming sound signals from the listening environment.

18. The method of claim 16, wherein the processing step comprises:

performing a numerical algorithm on the incoming sound signals received by the microphones to modify the signals according to a predetermined scheme for locating peaks and nulls in the response of the hearing aid system.

19. The method of claim 16, wherein the communicating step comprises wirelessly transmitting the control signals from the module to the earpieces.

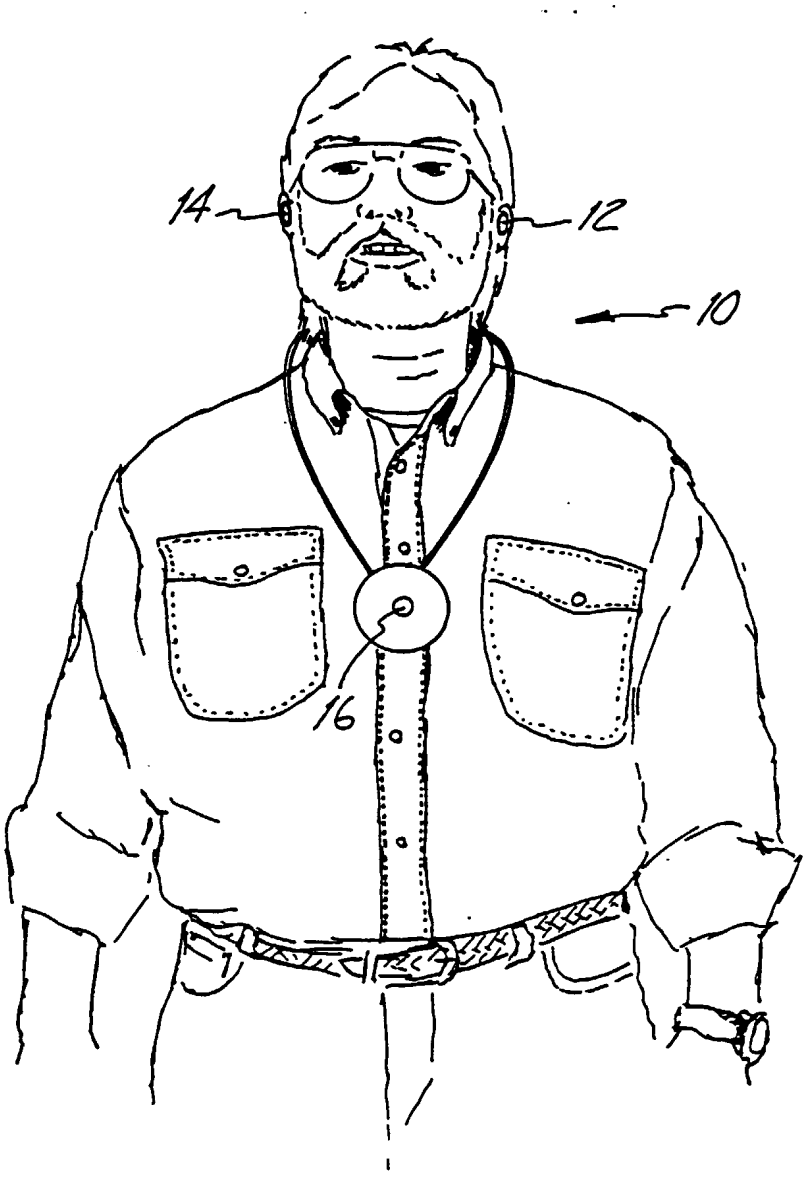


Fig. 1

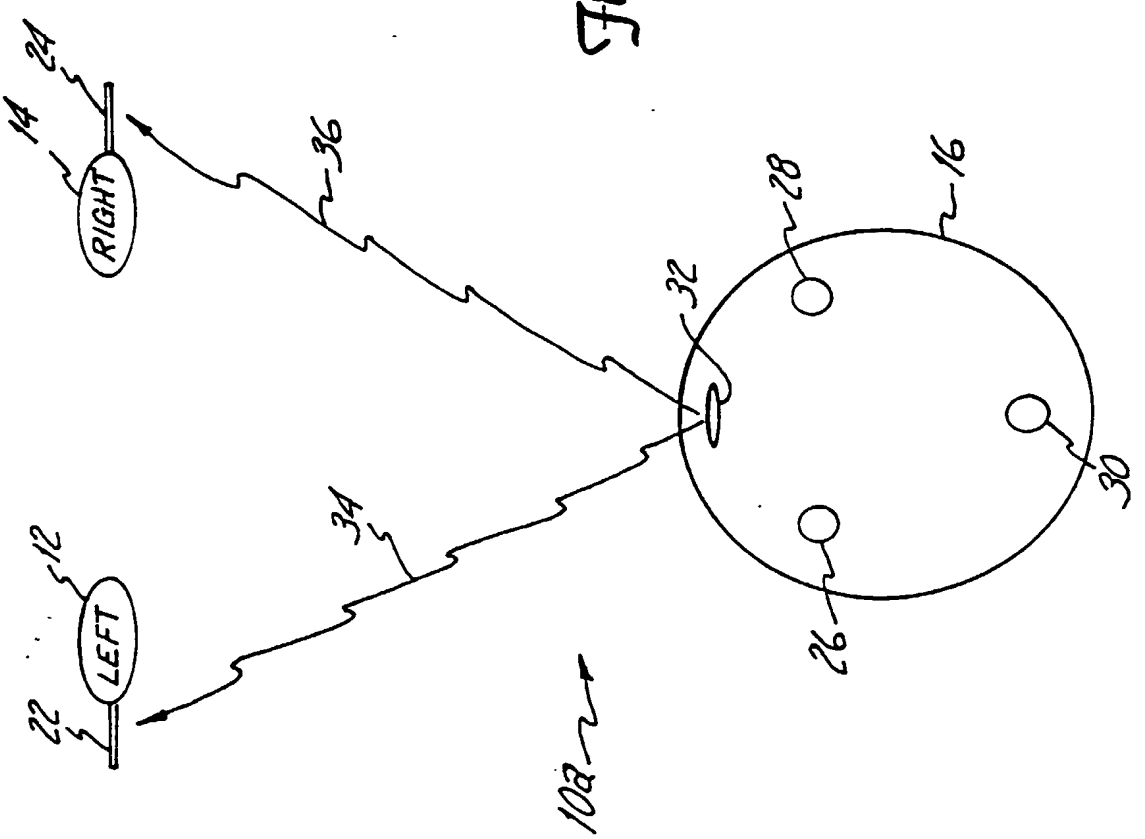
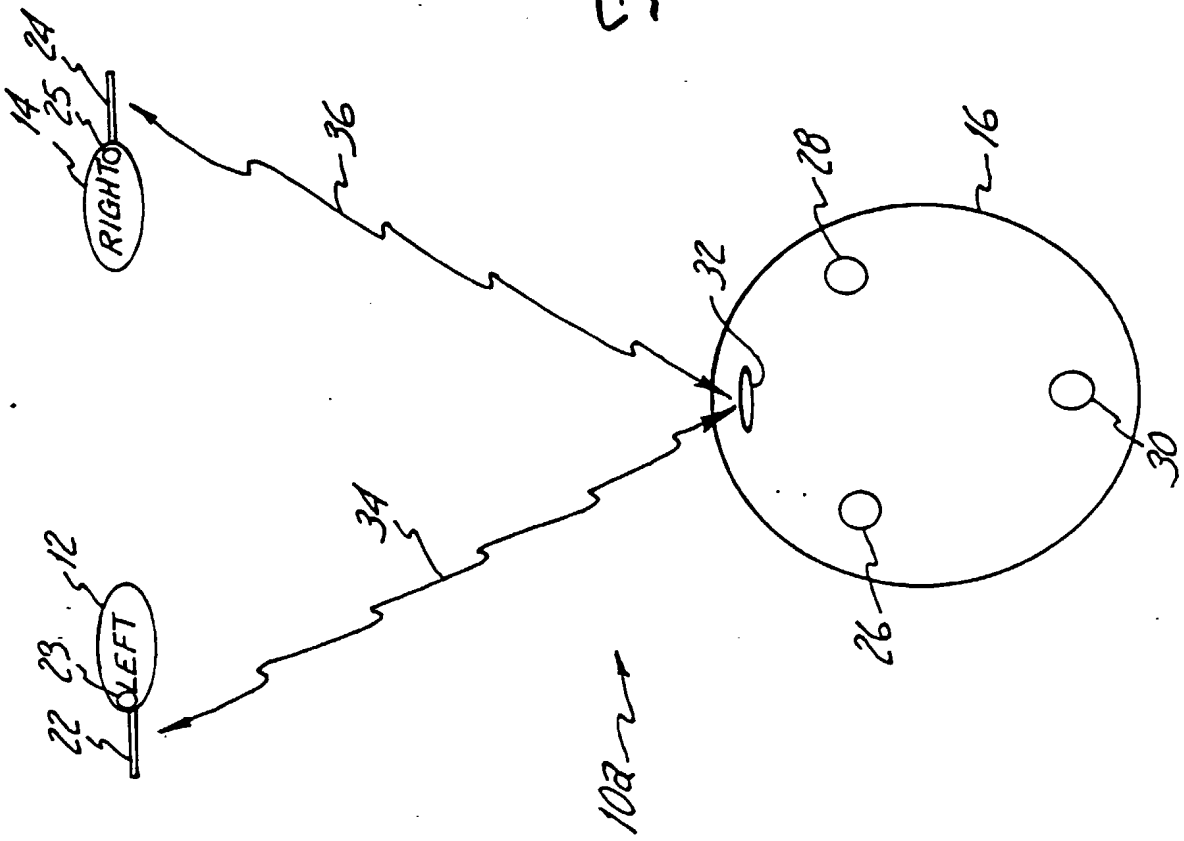


Fig. 2


Fig. 3
14
24
25
RIGHT
36
28
16
32
30
34
12
23
LEFT
22
26
10a

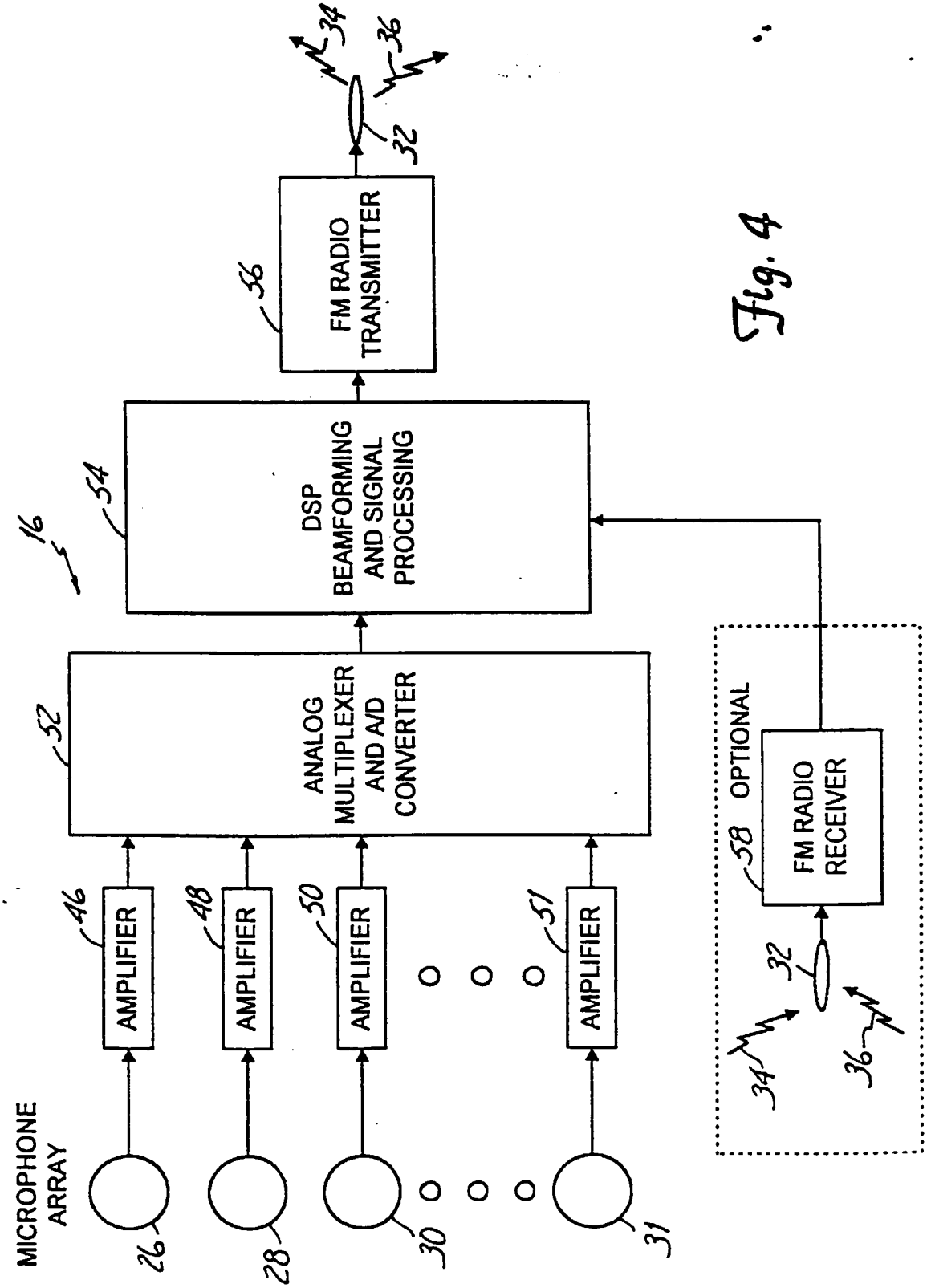

MICROPHONE ARRAY
26
28
30
31
AMPLIFIER
46
AMPLIFIER
48
AMPLIFIER
50
AMPLIFIER
51
ANALOG MULTIPLEXER AND A/D CONVERTER
52
DSP BEAMFORMING AND SIGNAL PROCESSING
54
16
FM RADIO TRANSMITTER
56
32
34
36
OPTIONAL
FM RADIO RECEIVER
58
32
34
36

Fig. 4

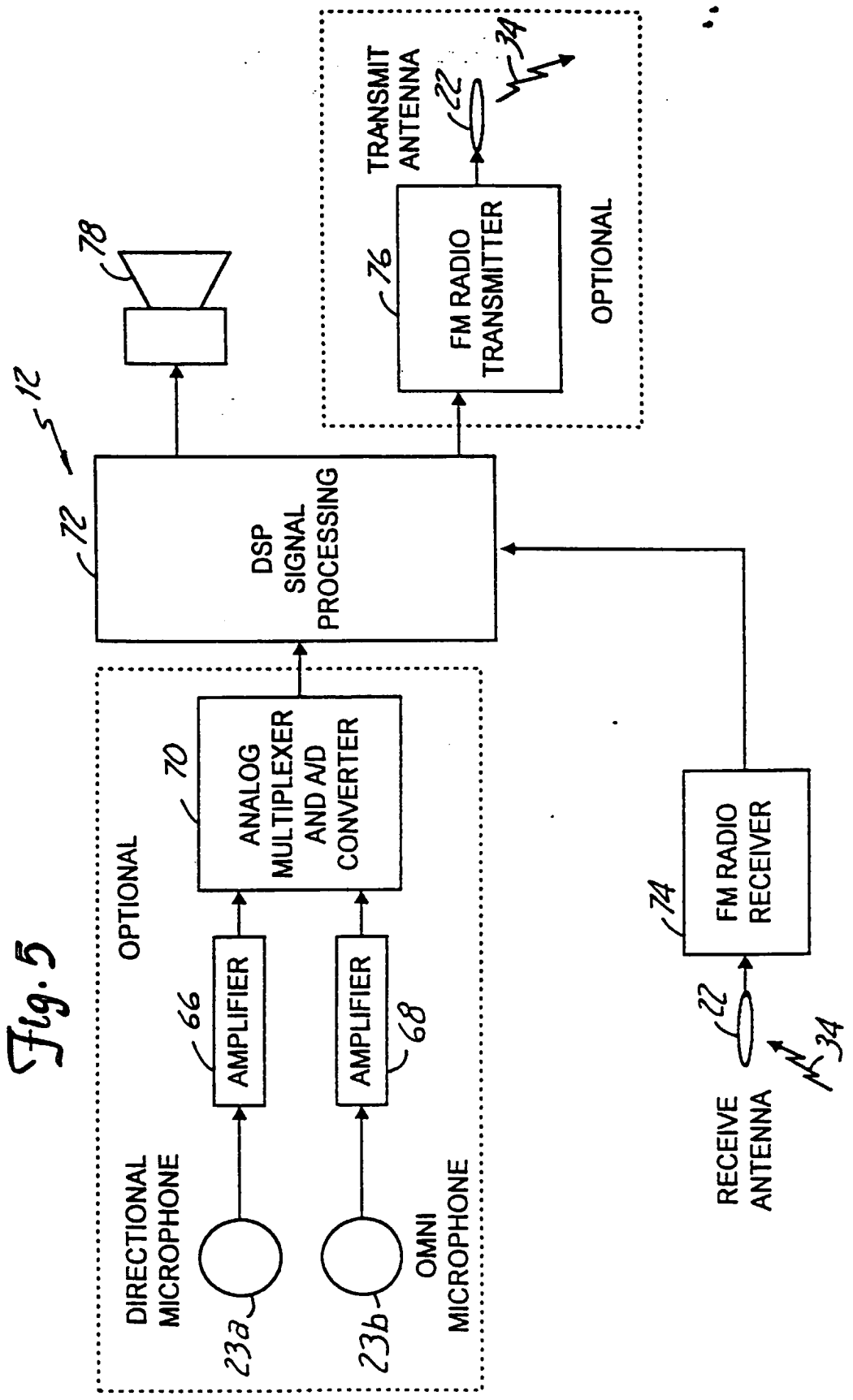

12
72
DSP SIGNAL PROCESSING
78
OPTIONAL
76
FM RADIO TRANSMITTER
TRANSMIT ANTENNA
22
34
OPTIONAL
70
ANALOG MULTIPLEXER AND A/D CONVERTER
66
AMPLIFIER
68
AMPLIFIER
DIRECTIONAL MICROPHONE
23a
23b
OMNI MICROPHONE
74
FM RADIO RECEIVER
22
34
RECEIVE ANTENNA

Fig. 5

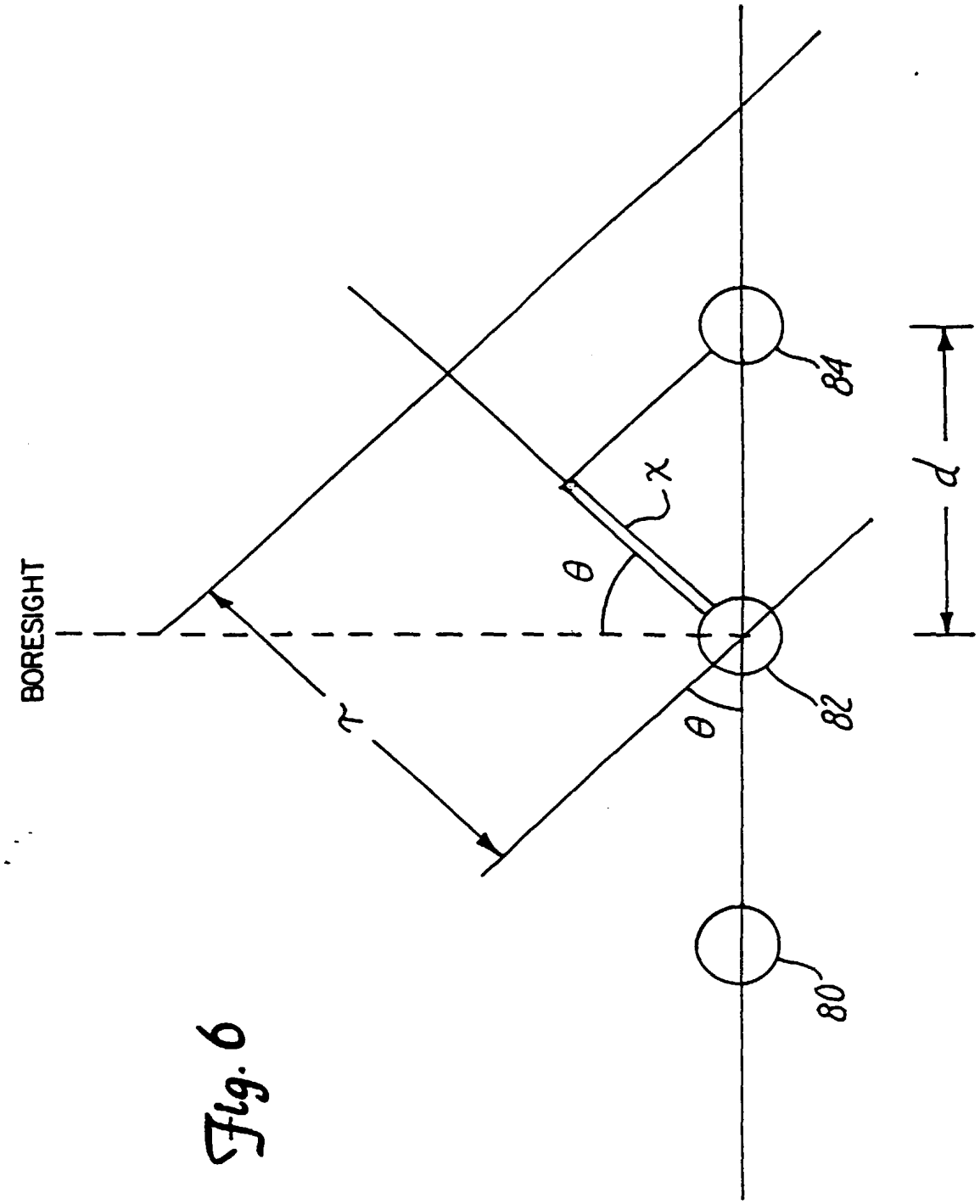


Fig. 6

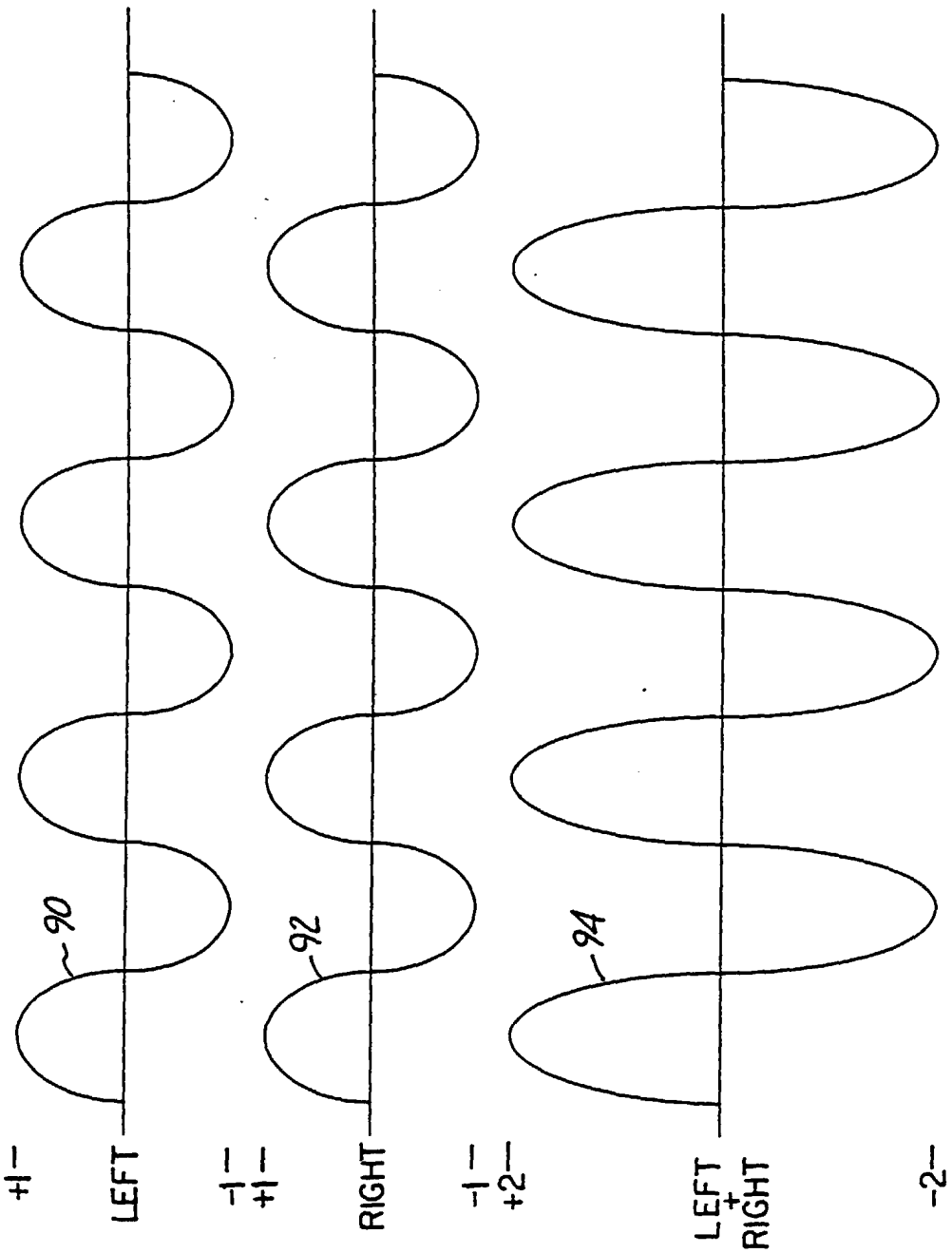


Fig. 7

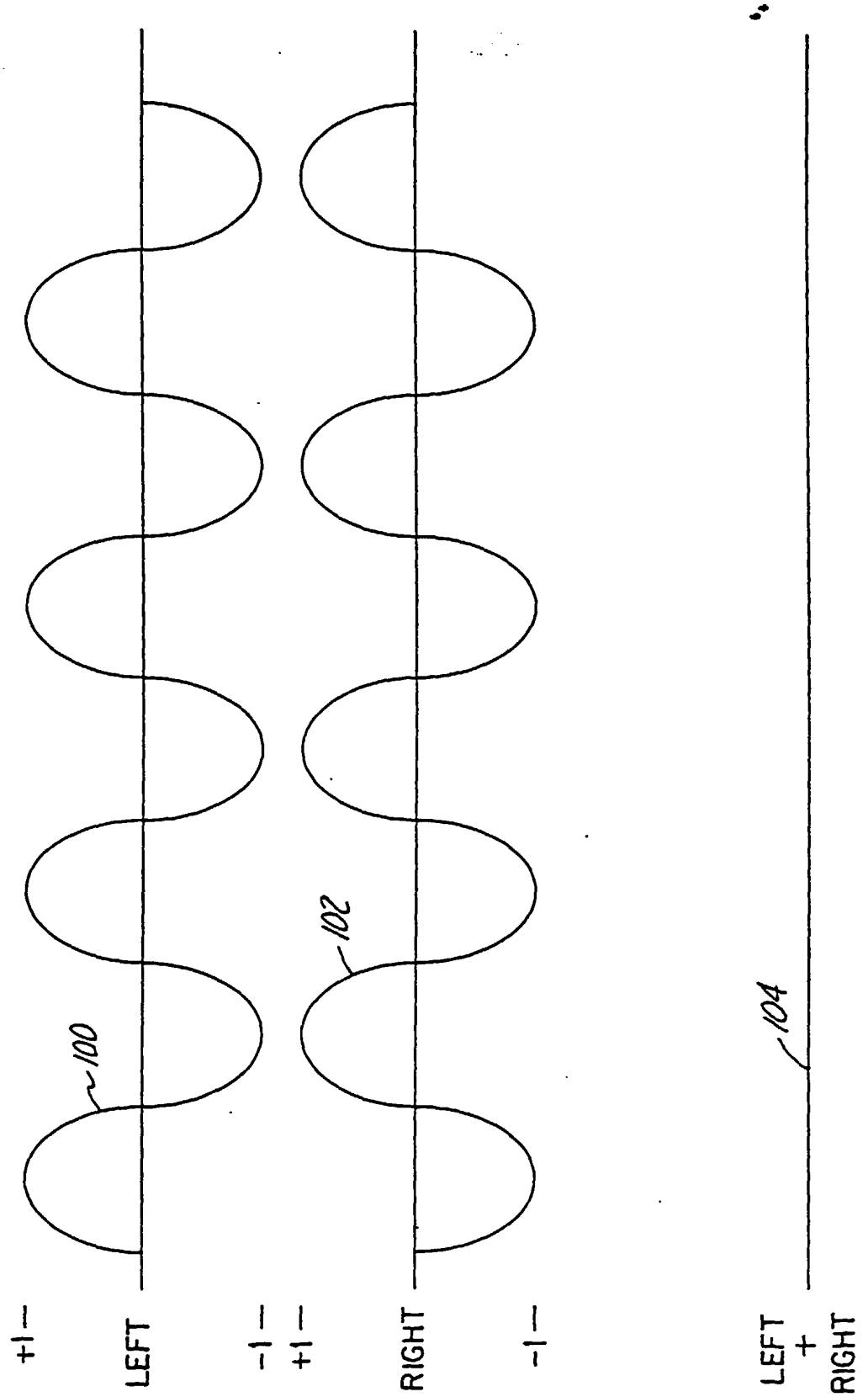


Fig. 8.

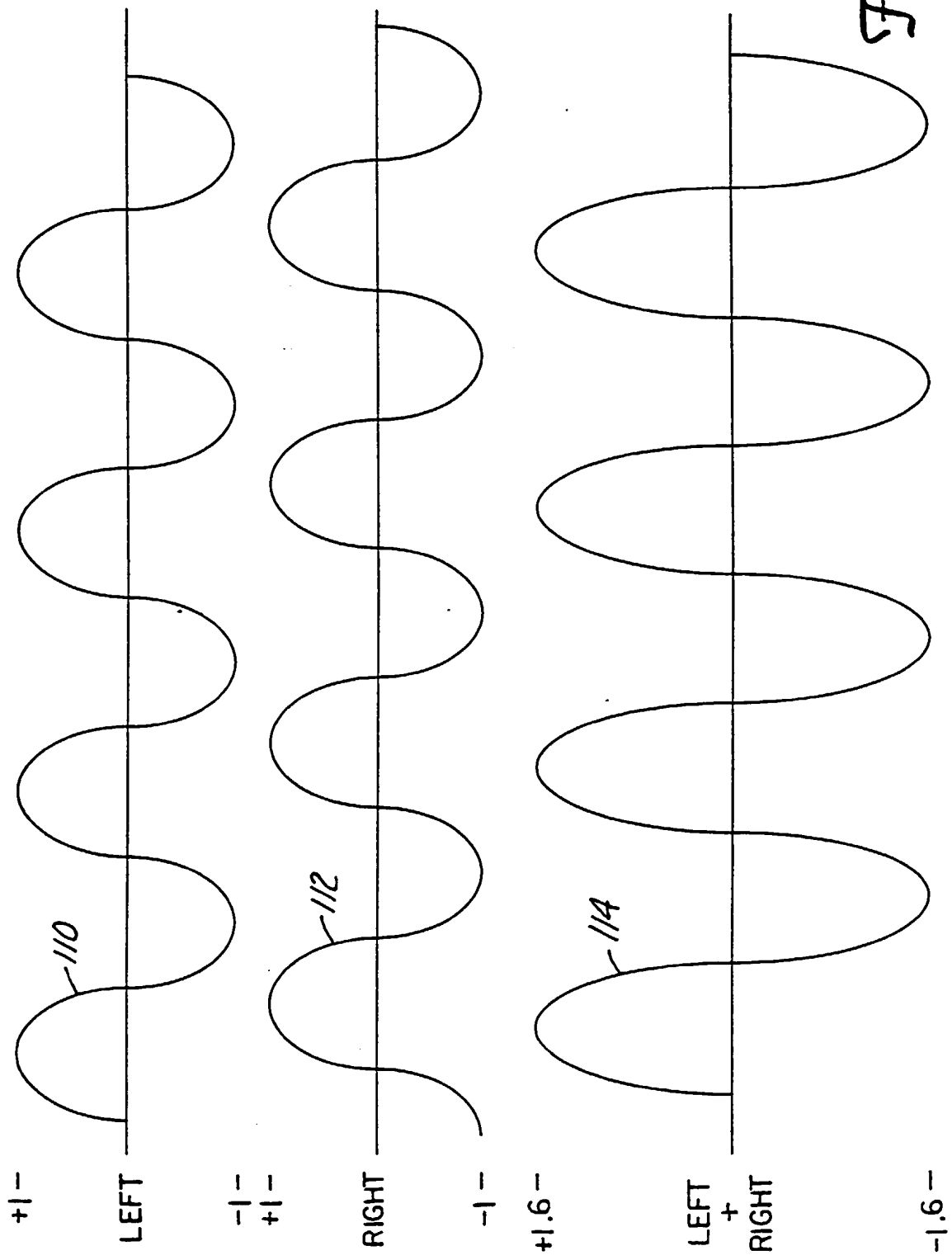


Fig.9

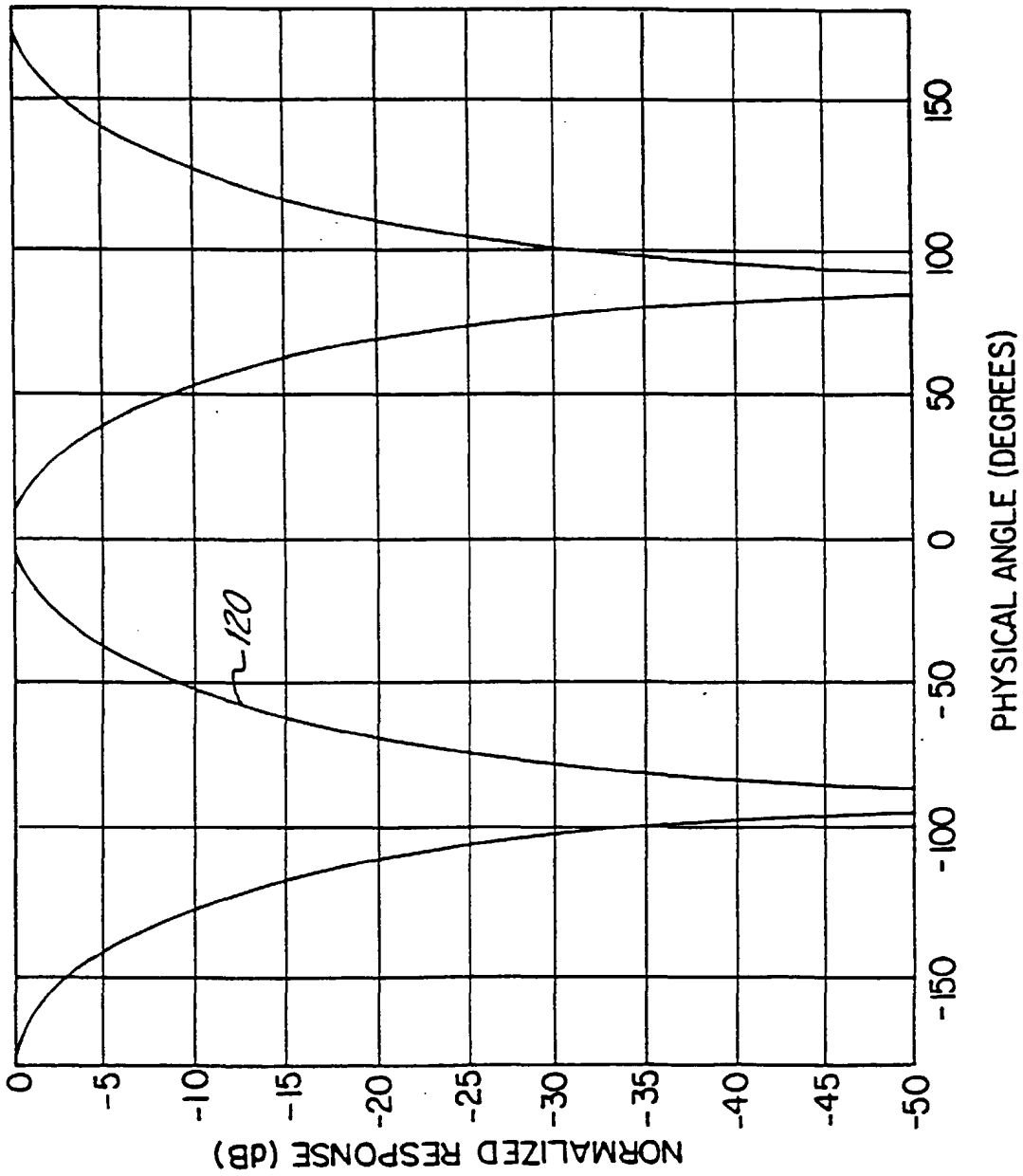

NORMALIZED RESPONSE (dB)
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
PHYSICAL ANGLE (DEGREES)
150
100
50
0
-50
-100
-150
120

Fig. 10

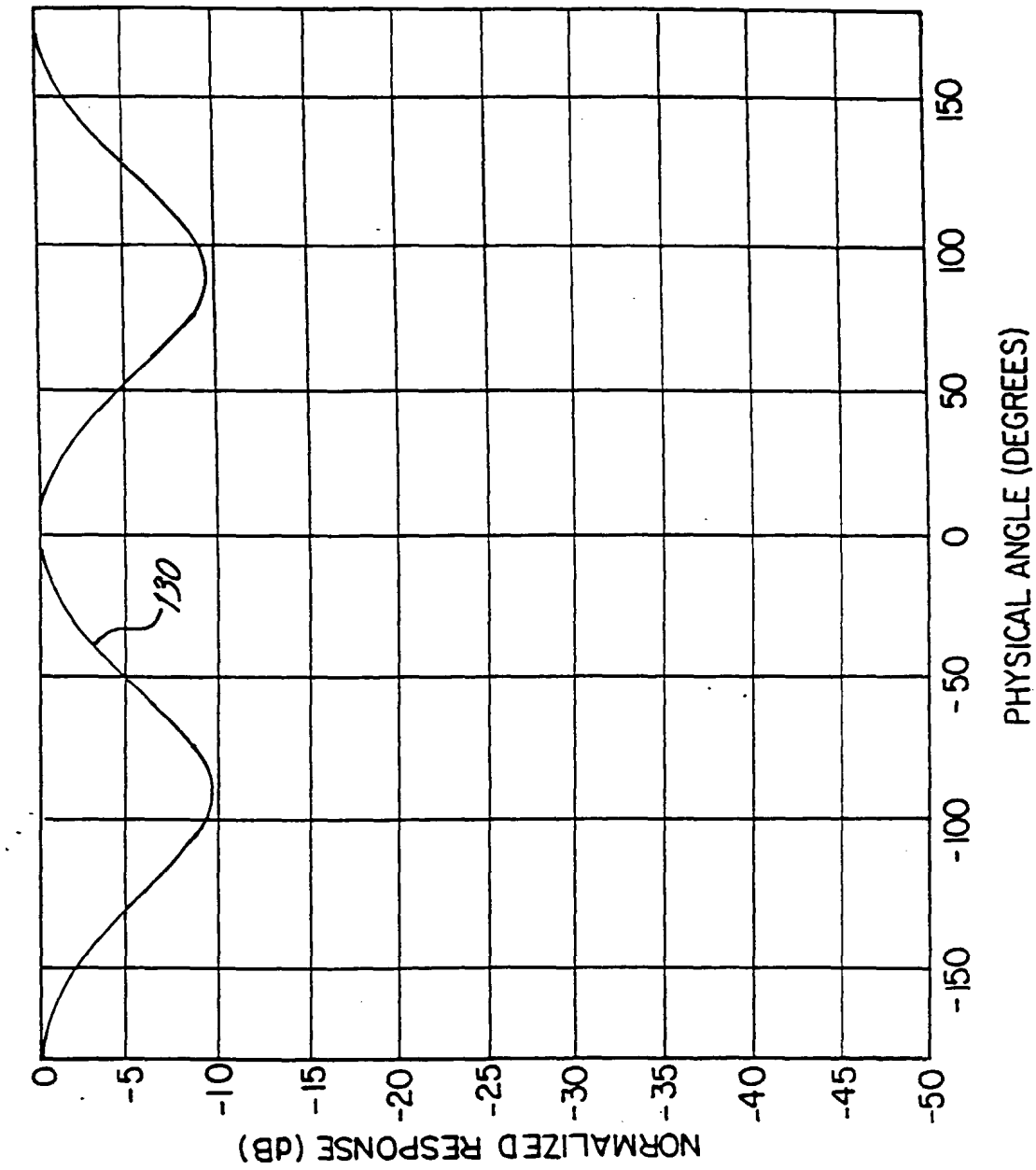

NORMALIZED RESPONSE (dB)
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
PHYSICAL ANGLE (DEGREES)
-150
-100
-50
0
50
100
150
130

Fig. 11

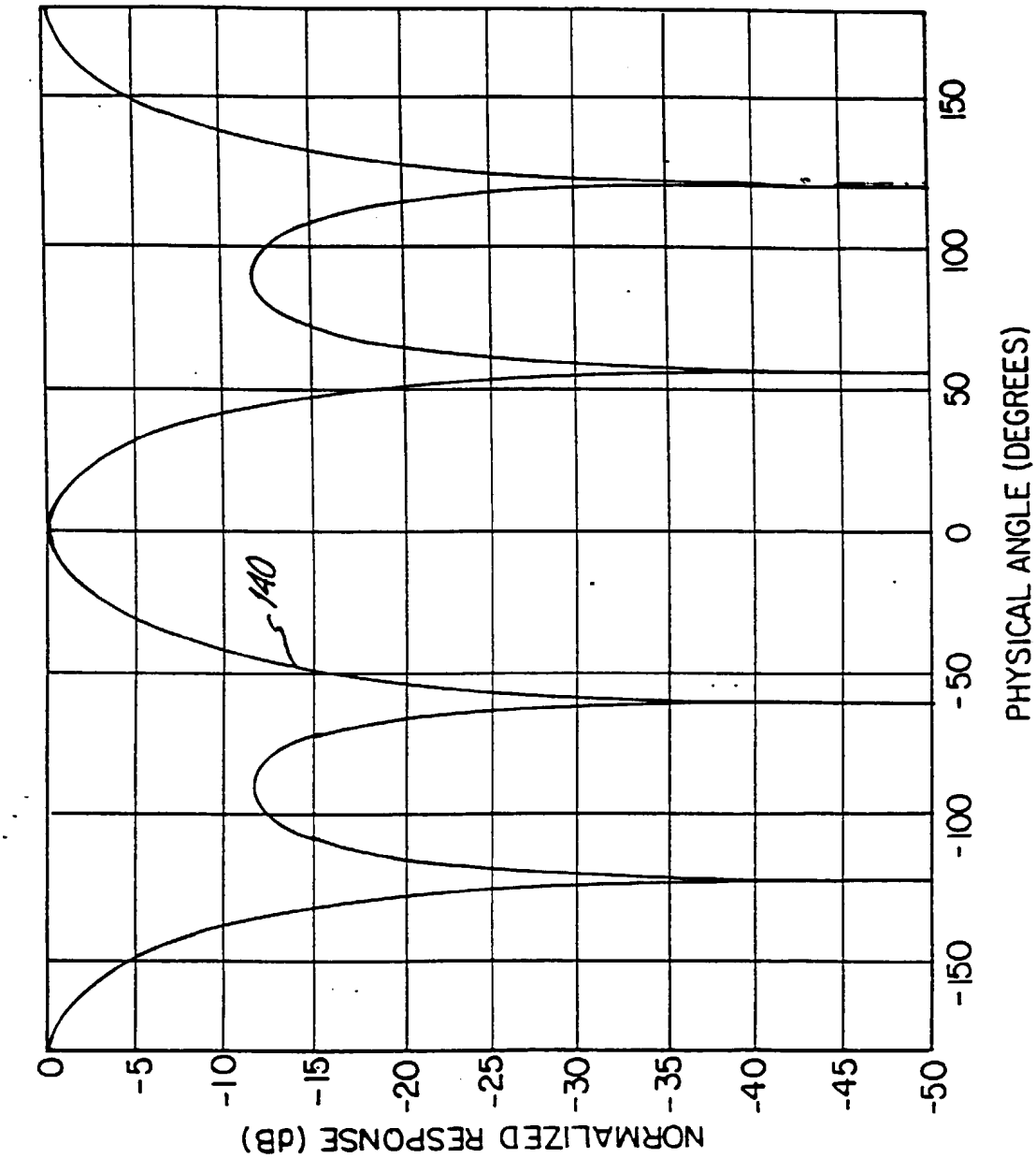

NORMALIZED RESPONSE (dB)
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
PHYSICAL ANGLE (DEGREES)
150
100
50
0
-50
-100
-150
140

Fig. 12

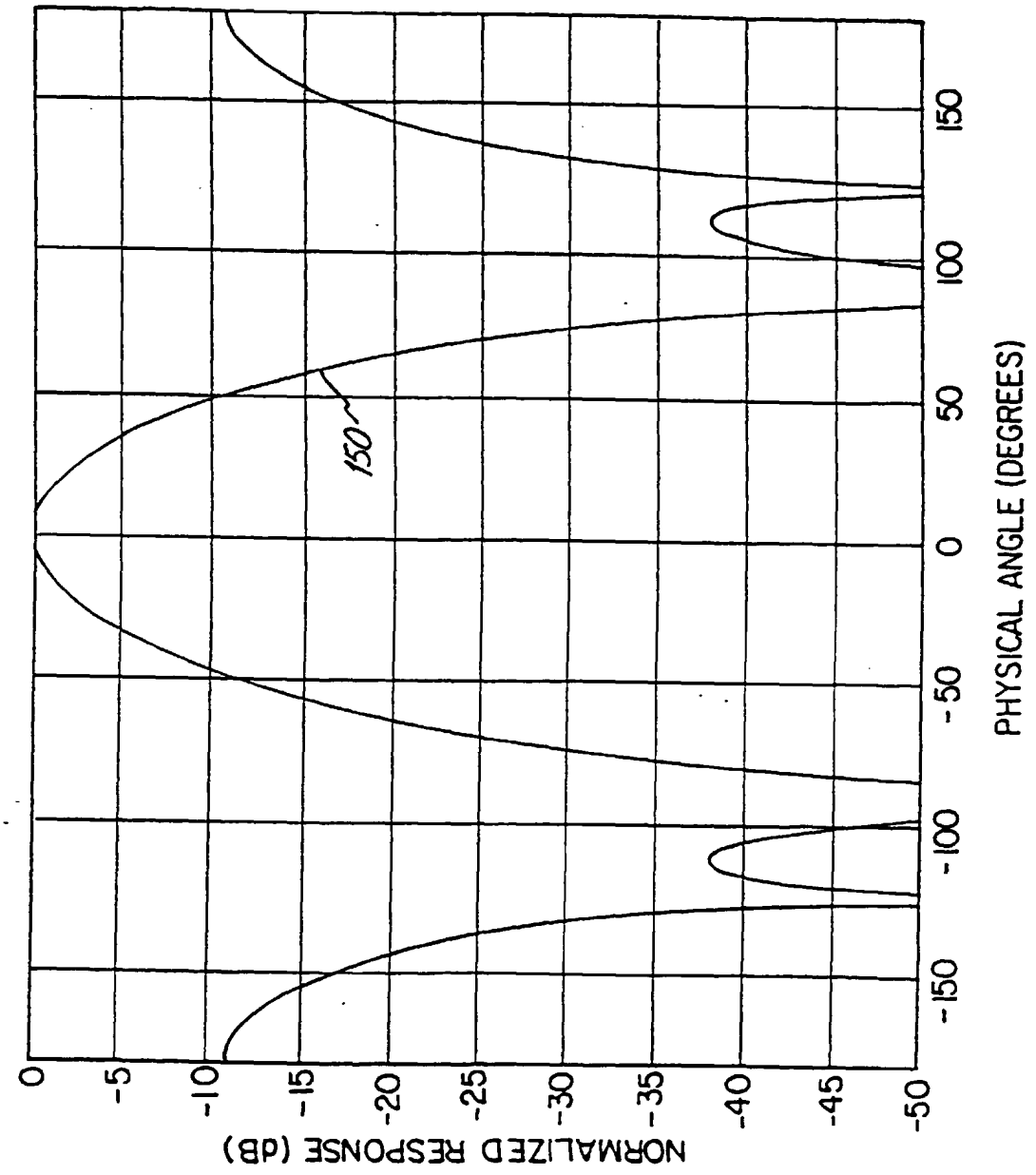

NORMALIZED RESPONSE (dB)
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
PHYSICAL ANGLE (DEGREES)
150
100
50
0
-50
-100
-150
150

Fig. 13

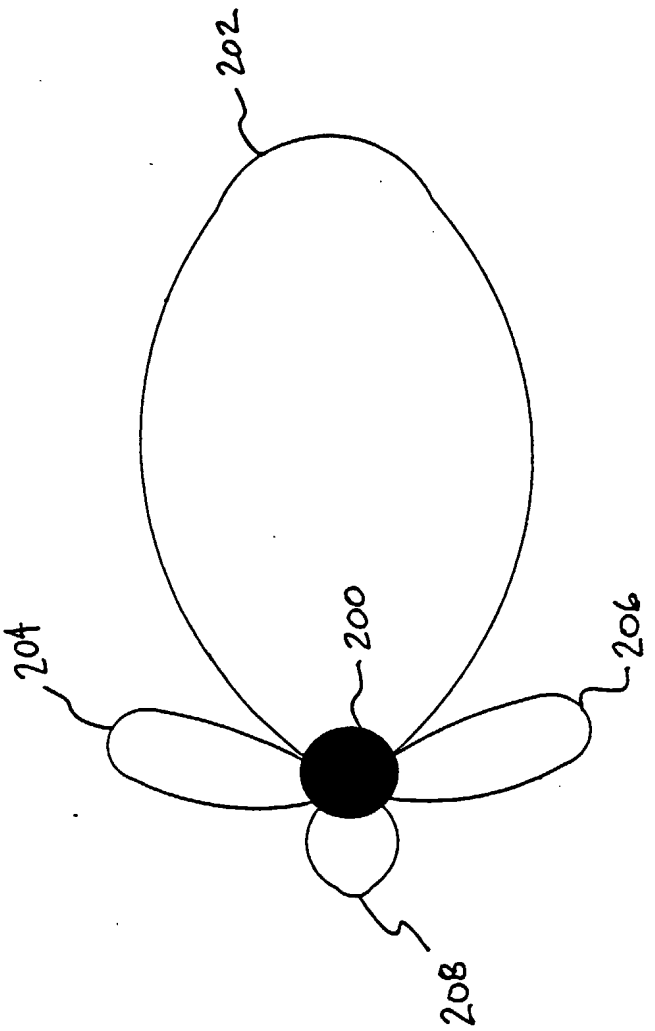


FIG. 14

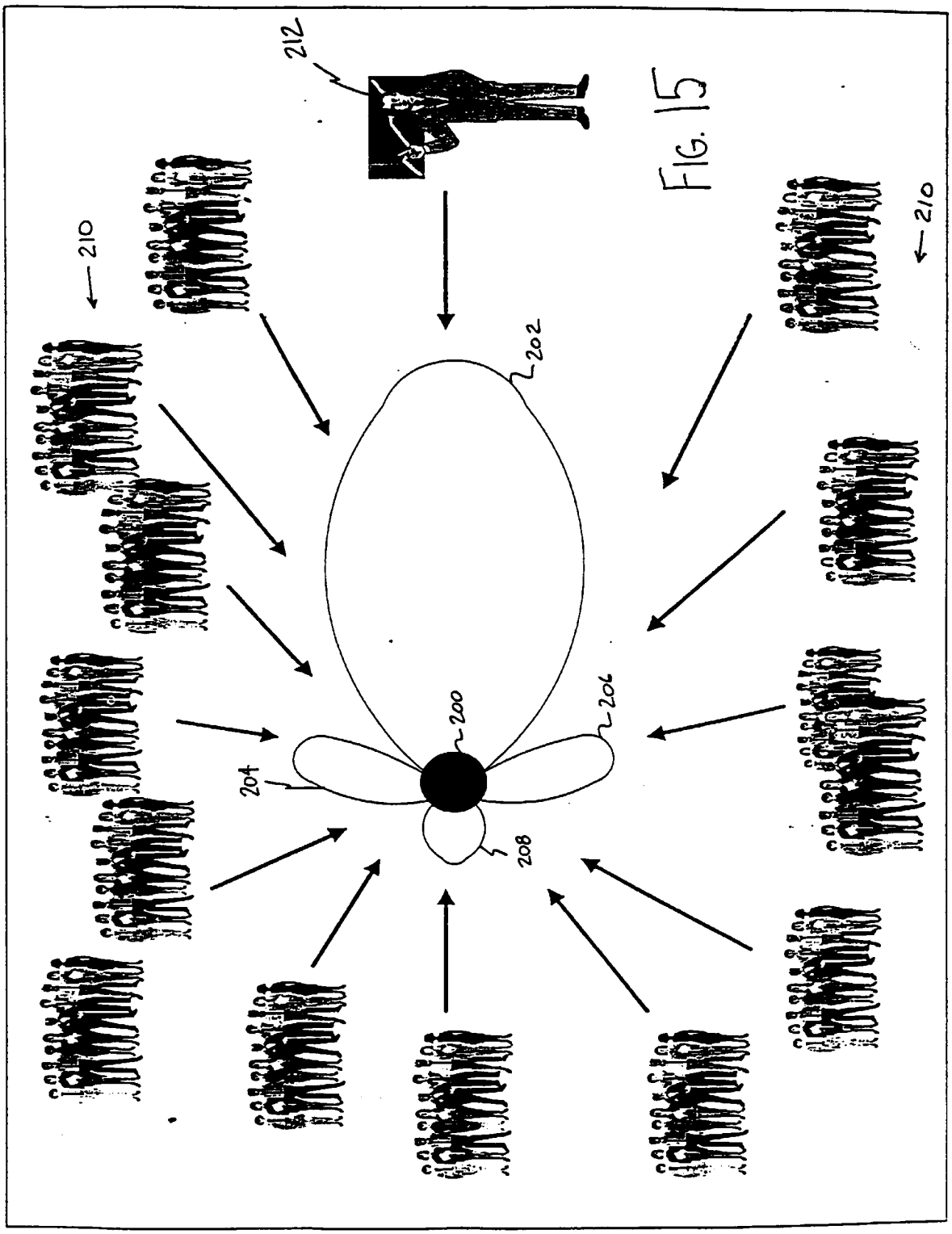
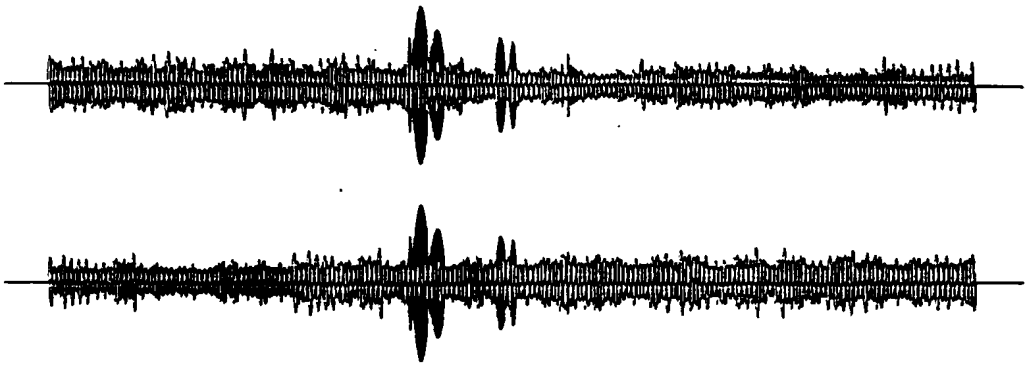


FIG. 15



Uncorrupted Signal

FIG. 16A



Left and Right Input Channels
(corrupted with random noise)

FIG. 16B

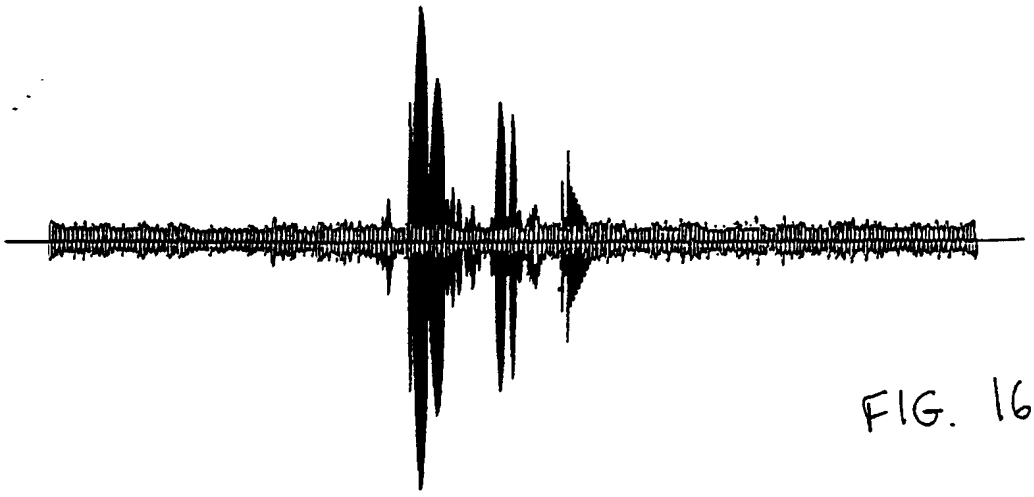


FIG. 16C

Beamformer Output

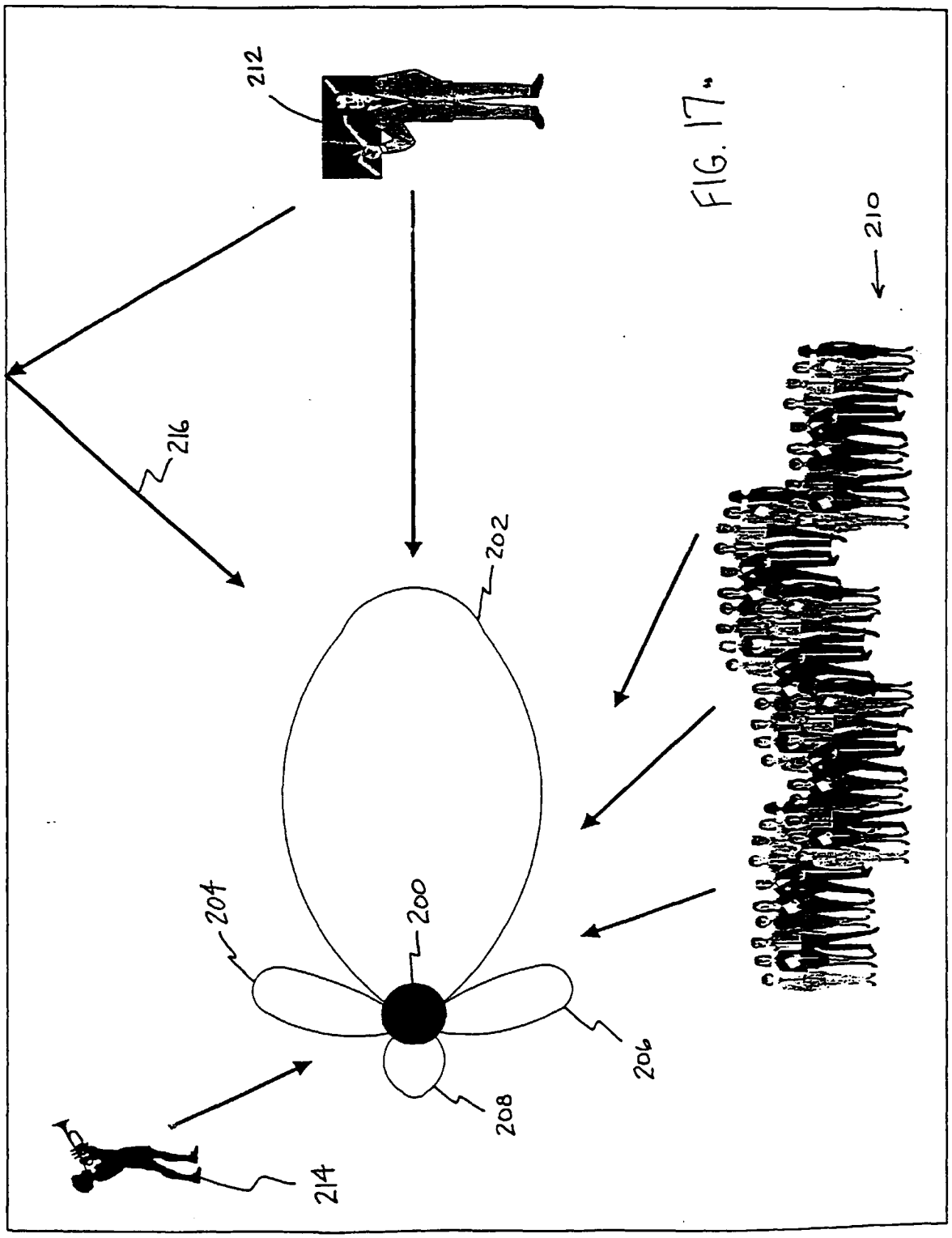


FIG. 17.



Uncorrupted Signal

FIG. 18A

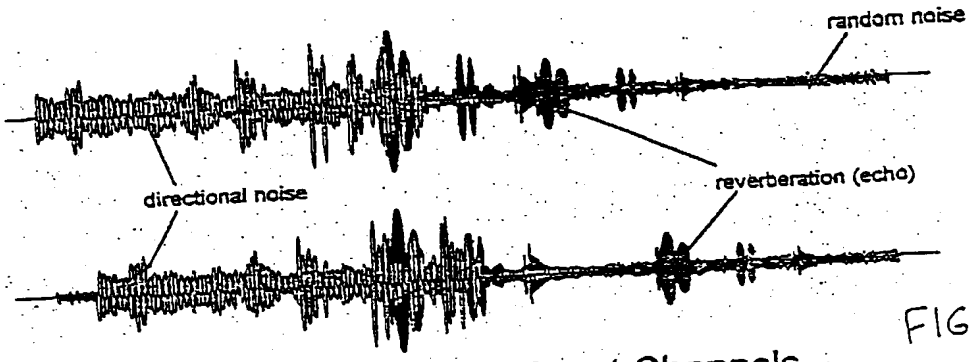


FIG. 18B

Left and Right Input Channels
(corrupted with random noise, directional noise and reverberation)

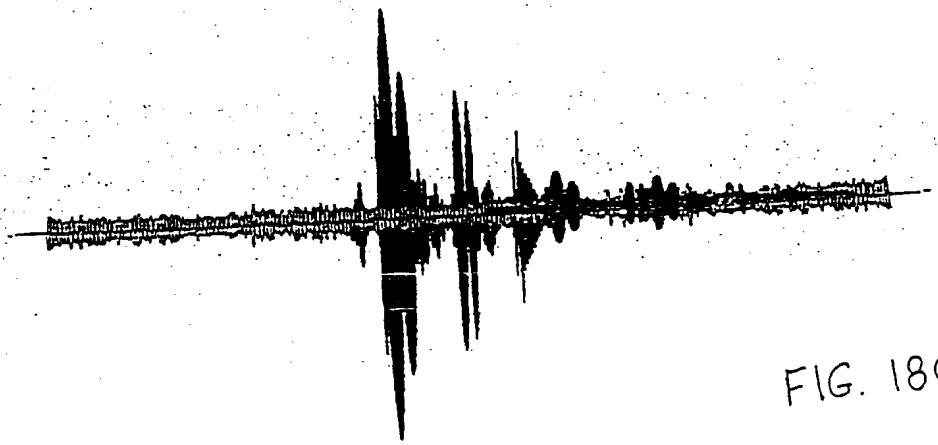


FIG. 18C

Beamformer Output

(12) UK Patent Application (19) GB (11) 2 074 817 A

(21) Application No **8112700**
(22) Date of filing **24 Apr 1981**
(30) Priority data
(31) **55/053563**
(32) **24 Apr 1980**
(33) **Japan (JP)**
(43) Application published
4 Nov 1981
(51) **INT CL³**
H04B 1/46
(52) Domestic classification
H4L SS
(56) Documents cited
GB 2021902A
GB 1532495
GB 1508750
GB 1497957
GB 1412386
(58) Field of search
H4L
(71) Applicants
Gen Engineering Inc.,
No. 10-15,
Koyama 7-Chome,
Shinagawa-Ku,
Tokyo,
Japan.
(72) Inventors
Hiroshi Ono
(74) Agents
Marks & Clerk,
57-60 Lincoln's Inn Fields,
London, WC2A 3LS.

(54) **A two-way communication device**

(57) A two-way communication device comprises an ear-insert member having a vibration pick up type microphone combined with a speaker. A housing unit contains an automatic Vox controlling circuit to control automatically the power levels of transmitted and received signals. The ear insert member and the housing unit are connected electrically through wires or through a wireless.

GB 2 074 817 A

FIG. 1

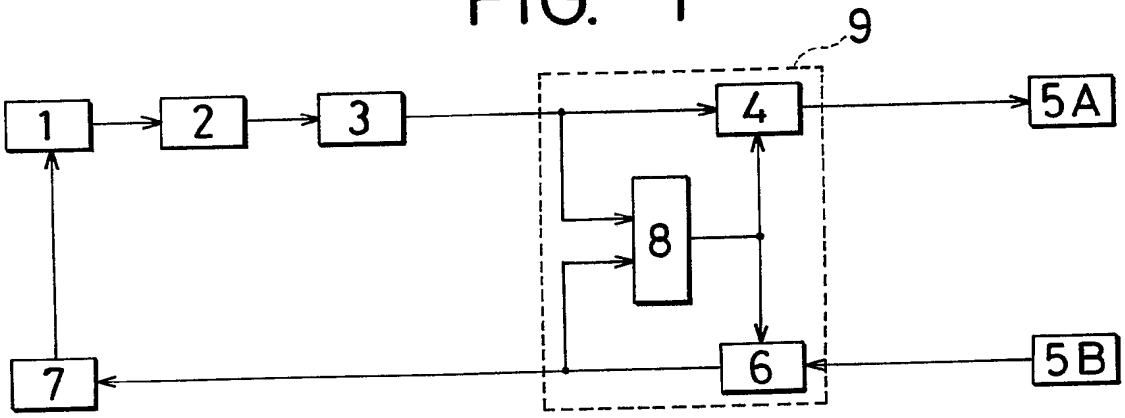


FIG. 2

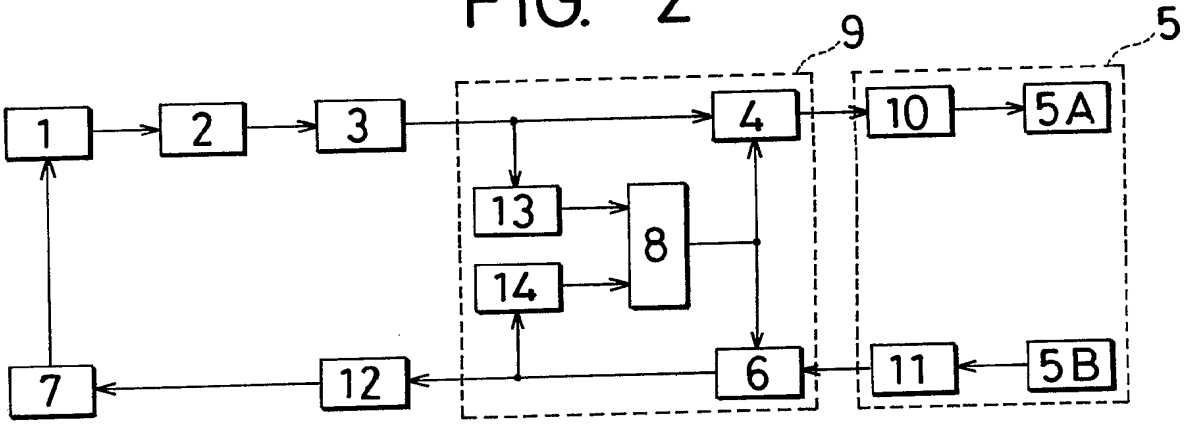


FIG. 3

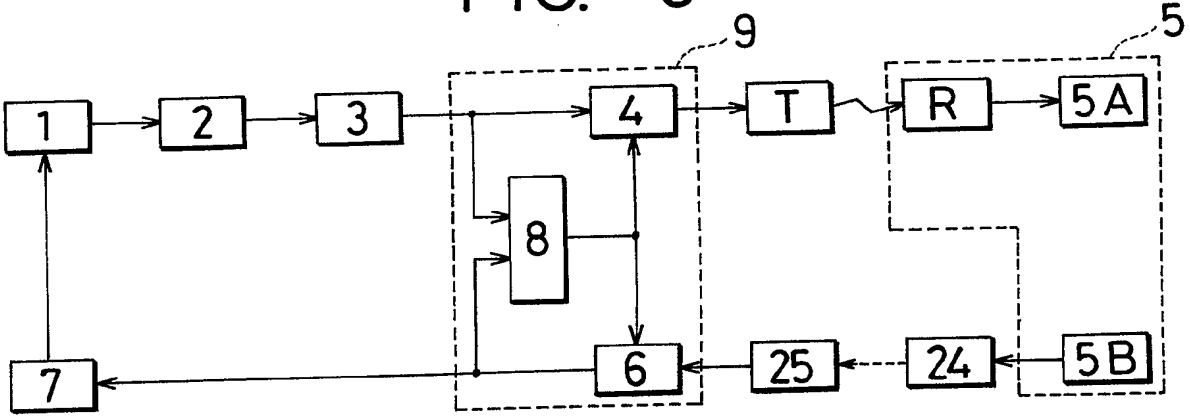


FIG. 4

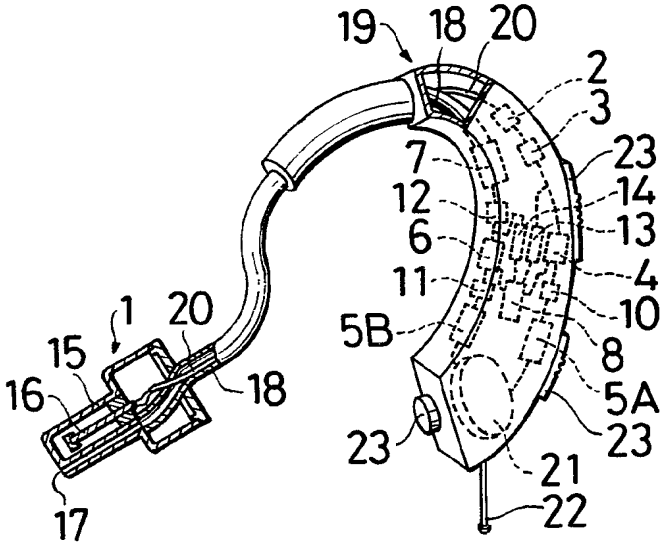


FIG. 5

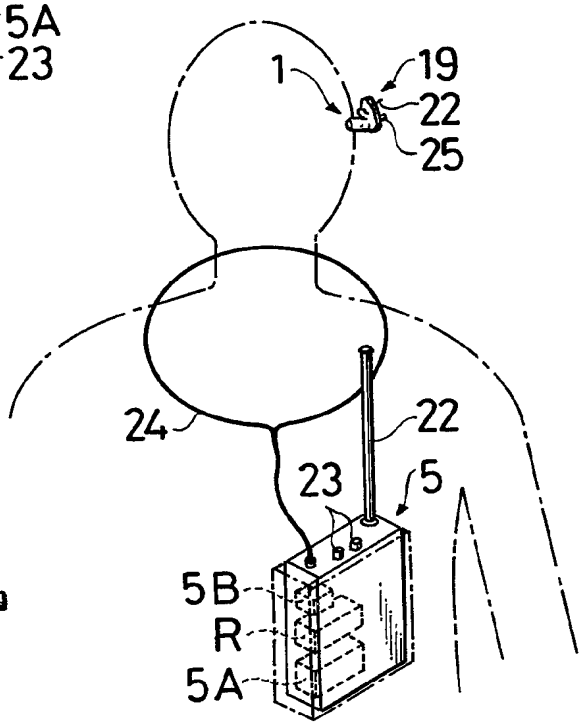
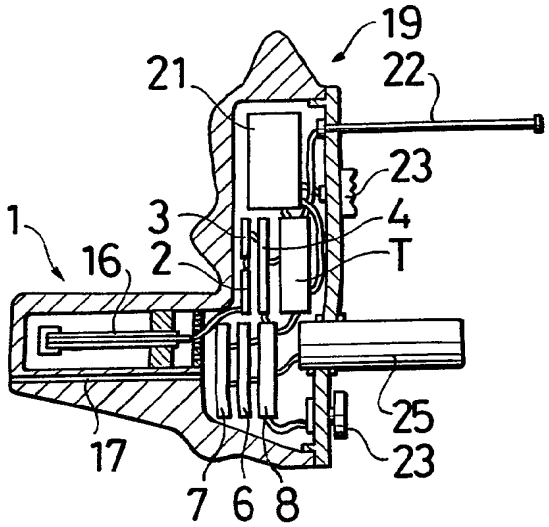


FIG. 6



SPECIFICATION

A two-way communication device

The present invention relates to a two-way communication device. Such a device allows simultaneous talking and listening and uses an ear-insert member, comprising a vibration pick-up type ear microphone combined with a sepaker which may be one of several types, inserted into one ear canal of the user to prevent the occurrence of feedback or "howl-round" when the sound level produced by the speaker is high to allow a user to listen clearly in a very noisy environment.

In a known arrangement, a vibration pick-up type ear microphone (which will hereinafter be referred to as an ear mic) is inserted into the external auditory canal of one ear of a user, and serves to pick up voice signals (vibrations) conducted through his temporal bones around the external auditory canal wall. Such a known ear mic can be combined with a speaker, for instance a conventional sound pressure type earphone or the like.

An arrangement has been tried comprises an ear-insert member comprising the ear mic and a sound pressure type speaker combined with a conventional FM transceiver in order to attempt to transmit and receive in a high noise level environment. However, the following disadvantages were found.

It had been thought that feedback phenomena or "howl-round" would not occur even if the speaker produced a relatively high sound level, because only vibrations conducted through the temporal bones should have been picked up by the ear mic. However, when the speaker sound level was increased, for example, to between 80 and 100 dB, to permit easy listening in a very noisy environment, it was found that the speaker sounds were being picked up by the ear mic, so that "howl-round" occurred.

Moreover, it was found that, if output level of the speaker was set to a relatively high level in order to allow communication in a very noisy environment, the contemplative faculty of the user was adversely influenced.

According to the invention, there is provided a two-way communication device comprising an ear-insert member and a housing unit having electrical circuits, the ear-insert member housing a vibration pick up type microphone combined with a speaker, and an automatic Vox controlling circuit to control automatically the power level of transmitted and received signals being provided in one of electrical circuits of the device.

It is thus possible to provide a two-way communication device which satisfies the following technical requirements (1) to (6):

(1) By using the ear mic in the transmitting system of the device, noises can be excluded so that clear voice sounds can be transmitted when used in a very noisy environment, for example at a sound level of 110 dB(A).

(2) By combining the ear mic with the speaker used in the receiving system of the device, communication, i.e. simultaneous talking and listening, can be achieved through at least one ear of the user leaving his hands free.

(3) The occurrence of howl round is substantially prevented, even when output level of the speaker is relatively high, for example 100 dB, thus permitting clear communication in a very noisy environment.

(4) While the user is talking, the output level of the speaker is reduced, whereas, during listening, the signal level from the ear mic is decreased and the output level of the speaker increased.

(5) When communication is performed by a wireless transmitting and receiving system, a conventional device such as a two-band transceiver can be used. If a wire system is used, a conventional wire transmitting and receiving device such as an interphone can be used.

(6) While the user is talking and listening, it is not necessary for both ears to be closed completely, so that he can listen to sounds around him to improve safety; in this case, an ear-insert member comprising the ear mic and speaker is inserted into one ear canal, which, however, is not closed up completely.

A preferred two-way communication device uses only one ear of a user into which an ear-insert member is placed comprising the ear mic and speaker and having an automatic Vox controlling circuit. The automatic Vox controlling circuit provides automatic gain controlling to make the output level of received signals in low and the input level of transmitted signals high when the user is talking, and in contrast with this, when the user is listening, to make the transmitted level low and the received level high.

The invention will be further described, by way of example, with reference to the accompanying drawings, in which:

Figures 1 to *3* are block diagrams of preferred embodiments of the present invention;

Figure 4 is an isometric view, partly cut away, of an ear hanging type embodiment of the present invention.

Figure 5 is an isometric view showing another embodiment of the present invention.

Figure 6 is a sectional view of an ear-insert member shown in Figure 5.

Figure 1 is a diagram of a first embodiment comprising a wireless system for two-way communication. The output signals of an ear mic 1, which picks up vibrations conducted through the temporal bones in the external auditory canal and converts them to electrical signals, are transmitted by a transmitting circuit 5A of a radio set 5 through amplifier 2, a band-pass filter 3, and a variable attenuator 4.

Signals received by a receiving circuit 5B of the radio set 5 are transduced to audible sounds pressure type speaker 7, which is combined with the ear mic 1, through a variable attenuator 6.

In the above transmitting and receiving system, the output and input signals are detected by a detector, and the detected signals are supplied to a comparator circuit 8 to control or correct the variable attenuator 4 and 6. Thus, an automatic Vox controlling circuit 9 is provided by the variable attenuator 4, 6 and the comparator circuit 8.

Another preferred embodiment of the present invention is illustrated in Figures 2 and 4. In a transmitting system of this embodiment, output signals of an ear mic 1 are amplified by a pre-amplifier 2 and supplied to a band-pass filter 3 having a frequency pass-band of 500 to 3,000 Hz. The signals are then supplied to an FM amplifier 10 of the wireless radio set 5 through the variable attenuator 4, and are broadcast by the transmitting circuit 5A in the form of an FM transmitter.

In a receiving system of this embodiment, input signals are received by the receiving circuit 5B, which for example comprises RX. ANT Filter and RF & LF amplifier are supplied to an AF amplifier 12 through the variable attenuator 6, to be transduced to audible sounds. In the above systems, the transmitting and receiving signals are each detected by detectors 13 and 14, and supplied to a comparator circuit 8, by which the variable attenuator 4 and 6 are controlled so as to reduce the level of the received signals when level of the transmitted signals is high, i.e. when the user is talking, and so as to reduce the level of the transmitted signals and simultaneously increase the level of the received signals when the user has finished talking.

The transmitting and receiving device is formed as a "one-ear-hanging" type, ear-insert type, or helmet type, or is housed in a spectable frame.

An embodiment of an ear hanging-type of device is shown in Figure 4. Numeral 1 represents the ear mic inserted into the external auditory canal of one ear of the user, the ear mic 1 comprising a case 15 having a sound path 17 and a vibration pick up member 16 such as a piezoelectric element. The ear mic 1 is connected to an ear hanging member 19 through a tube 18 in which leads 20 are housed to transmit output signals of the vibration pick up member 16 to electrical circuits housed in the ear hanging member 19.

In Figure 4, numeral 21 represents an electrical power source, 22 an antenna, 23 a switch, and the other numerals in this Figure represent the same parts as in Figure 2.

Although the above description relates to an embodiment using a wireless system, the invention can be used with a wire transmitting and receiving system.

The ear-insert member can be connect through a wireless system without using the tube and leads shown in Figure 4 to a portable housing unit, and such an embodiment is shown in Figures 3, 5 and 6.

In the transmitting system of this embodiment, the output signals of the ear mic 1 housed in the ear-insert member 19 are transmitted by a wireless transmitter T such as an FM transmitter housed in the ear-insert member 19, and the transmitted signals are received by a receiver R housed in a portable housing unit 5, from which the user's speech is transmitted to another user. In the receiving system, speech signals from the other user are received by a receiving circuit 5B included in the portable housing unit 5, and the received signals are transmitted to the ear-insert member 19 through an inductive system comprising a loop antenna 24 fixed to the portable housing unit 5 and an induction coil 25 fixed to the ear-insert member 19. The received signals are then transduced to audible signals by the sound pressure type speaker 7 and are passed into the external auditory canal of the user through the sound path 17. Although in this embodiment the Vox controlling circuit 9 is shown in the ear-insert member 19, it may alternatively be disposed in the portable housing unit 5.

This embodiment allows transmitting and receiving operations at high power levels to be used for remote communication, and permits greater freedom of movement to the user. Because there are no leads or the like to connect the ear-insert member to the portable housing unit, it is less likely that the ear mic would pick up electrical noise to which leads might be susceptible.

CLAIMS

1. A two-way communication device comprising an ear-insert member and a housing unit having electrical circuits, the ear-insert member housing a vibration pick up type microphone combined with a speaker, and an automatic Vox controlling circuit to control automatically the power level of transmitted and received signals being provided in one of electrical circuits of the device.

2. A two-way communication device as claimed in claim 1, wherein the ear-insert member and the housing unit are connected through a wire system which comprises a tube containing leads and defining a sound path through which audible sounds pass from the speaker into the external auditory canal of a user.

3. A two-way communication device as claimed in claim 1, wherein the ear-insert member and the housing unit are connected through a wireless system.

4. A two-way communication device substantially as hereinbefore described with eference to and as illustrated in the accompanying drawings.

Printed for Her Majesty's Stationery Office by Croydon Printing Company Limited, Croydon, Surrey, 1981.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

(19)日本国特許庁（ＪＰ）　(12)**公開特許公報**（Ａ）　(11)特許出願公開番号

特開平6－292195

(43)公開日　平成６年(1994)10月18日

(51)Int.Cl.[5]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ｈ０４Ｎ　7/14		7251－5C		
Ｈ０４Ｂ　7/26	１０９　Ｈ	7304－5K		
	Ｇ	7304－5K		

審査請求　未請求　請求項の数１　ＯＬ　（全　４　頁）

(21)出願番号　特願平5－73200

(22)出願日　平成５年(1993)３月31日

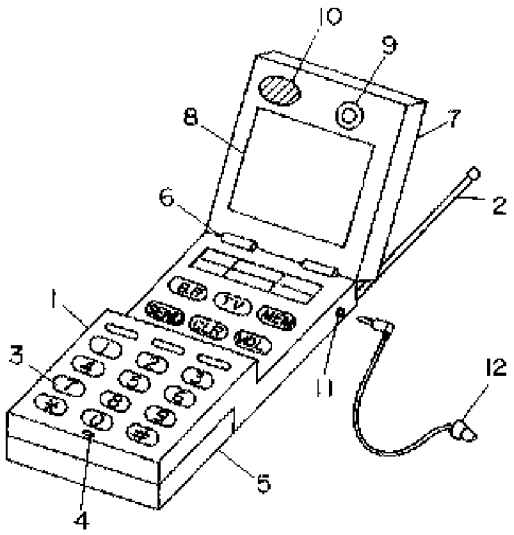
(71)出願人　000005821
松下電器産業株式会社
大阪府門真市大字門真1006番地

(72)発明者　喜多村　新一
大阪府門真市大字門真1006番地　松下電器産業株式会社内

(74)代理人　弁理士　小鍜治　明　（外２名）

(54)【発明の名称】　携帯無線式ＴＶ電話

(57)【要約】
【目的】　フリップ部を開いたとき、モニター、ＣＣＤカメラ、スピーカに向かって一定の距離を保ち、ＴＶモニターを視認しながらスピーカホンまたはイヤホンにより無線式ＴＶ電話として利用でき、またフリップ部を閉じ、装置本体側にＴＶモニターが格納された時、イヤピースに耳を当て、通常の携帯電話として利用することができるようにした携帯無線式ＴＶ電話を提供する。
【構成】　装置本体１に操作部と、マイク４を備え、また前記装置本体１にヒンジ６で連結されたフリップ部７を備えており、前記フリップ部７を閉じた時に装置本体１に格納されるフリップ部７の表面にモニターと、ＣＣＤカメラ９と、スピーカ１０を、フリップ部７を閉じたとき操作部と同一面側となるフリップ部７裏面にイヤピースを備えている。



Electronic Acknowledgement Receipt

EFS ID:	28813551
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Filer Authorized By:	John Darrell Goodhue
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	03-APR-2017
Filing Date:	12-NOV-2016
Time Stamp:	13:47:15
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	Foreign Reference	WO2014043179A2.pdf	5075239 37fb06bb2b37319ff83d17037e71504e185aaa09	no	8

Warnings:

Information:					
2	Foreign Reference	WO2015110577A1.pdf	5235775 17df57d10e8dcfd9a403651ce8c215204796 9676	no	11
Warnings:					
Information:					
3	Foreign Reference	WO2015110587A1.pdf	6268252 8c4b76e20c7995f4db102fe65fdb2c9f99ac 2c21	no	12
Warnings:					
Information:					
4	Foreign Reference	EP1017252A2.pdf	346783 05353d4dc7cb5af2380c0fe3092c7e0571d9 193b	no	25
Warnings:					
Information:					
5	Foreign Reference	GB2074817A.pdf	263833 55b0a2f45d141ba703606ada6939cf2c1e68 151a	no	5
Warnings:					
Information:					
6	Foreign Reference	20151030042456909.pdf	66008 db5018a3dd089f5ee2d1175bc5ab681c507 f3658	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	17255890		

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
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA

CONFIRMATION NO. 3412

133690
Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

PUBLICATION NOTICE

OC000000091454651

Title: Method and apparatus for interfacing with wireless earpieces

Publication No.US-2017-0139668-A1
Publication Date:05/18/2017

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 (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, 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

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.
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA	3412

133690 7590 03/07/2018

Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

EXAMINER	
ETESAM, AMIR HOSSEIN	

ART UNIT	PAPER NUMBER
2655	

NOTIFICATION DATE	DELIVERY MODE
03/07/2018	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):

docketing@goodhue.com
eofficeaction@appcoll.com
USPTO@dockettrak.com

Office Action Summary	Application No. 15/350,020	Applicant(s) STEINER, MARTIN	
	Examiner AMIR ETESAM	Art Unit 2655	AIA (First Inventor to File) Status Yes

-- 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 *11/12/2016*.

☐ 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) *1-17* 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) *1-17* 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 *11/12/2016* 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 *4/3/2017*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Claim Rejections - 35 USC § 102

2. 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.

3. The following is a quotation of the appropriate paragraphs of 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 –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

4. Claim(s) 1, 12, 13, 14 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Boesen (20130329051).

Regarding claims 1, 12-14, Boesen discloses a system comprising: at least one wireless ear piece comprising an ear piece housing and a wireless transceiver disposed within the ear piece housing (Fig 11, wireless ear pieces 102, 104, also paragraph 0038); a software application for executing on a computing device (Paragraph 0128, the cell phone is a computing device) having a display (Fig 11, display 726) associated therewith; wherein the software application provides a user interface for use by a user of the at least one wireless ear piece to interact with the at least one ear piece (Fig 11,

shows the user interface with a “confirm” button, and Paragraph 0097 discloses that after confirming by the user the audio, which is data associated with the user’s input of pressing the “confirm button, maybe transmitted to one or more of the earpieces (meaning the software send the audio to the earpiece so it makes a connection between the two and controls it) which is interpreted as interaction with the earpiece and the earpiece will inherently reproduce the audio data being transferred to it so performs an action .

Claim Rejections - 35 USC § 103

5. 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.

6. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-4, 16, 17 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051), And further in view of Morris (20080154098).

Regarding claim 2-4, 16, 17, Boesen discloses the limitations of claims 1 and 15. However, Boesen does not disclose that the wireless earpiece comprise a

physiological sensor and tracking a physiological activity, such as running, through the sensor by the software application.

Morris discloses an earpiece in communication with a computing device comprising a physiological sensor that tracks a physiologic activity of the user through the sensor (Abstract discloses that “The device includes a pulse oximeter unit to provide blood oxygenation level and beat-to-beat timing, a three-axis accelerometer to provide orientation and activity level” moreover, abstract discloses the device is to “monitor physiological, **activity** and environmental data”. Also paragraph 0031 discloses tracking physiologic data and monitoring activity.”).

Since both Boesen and Morris disclose an earpiece in wireless communication with a computing device, it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the sensors disclosed by Morris in the teachings by Boesen. The motivation for this would have been tracking user vital fluctuation and body orientation and providing him or her with feedbacks to prevent "falls", improve exercise outcome etc. Moreover, it would have been obvious to an ordinary skilled in the art that the sensors would be tracking the user in any activity of his or her choice which could include running.

Claims 5-8, 15 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051).

Regarding claims 5-8, Boesen discloses the limitations of claim 1. However, Boesen does not specifically disclose battery level of the wireless earpiece on the

display of the computing device, which is a lighting and visual representation of the activity level of the earpiece.

Examiner takes official notice that displaying battery level of wirelessly connected devices to cell phones on the cell phone display unit for the user comfort is well known and widely used in the art and it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the displaying battery life of earpiece on the cell phone screen for user comfort.

Regarding claim 15, Boesen discloses a method for communicating data from a set of wireless ear pieces (Paragraph 008 discloses “The user may then press a button or switch on the earpiece 10B to answer the call or **issue a voice command to answer the call** or ignore the call.”), the method comprising: providing a software application for communicating with the set of wireless ear pieces, the software application adapted to execute on a computing device (Fig 11); using the software application on the computing device to display one or more screen displays on a display of the computing device; communicating data received from one or more of the wireless ear pieces to the computing device; and updating the screen displays on the display of the computing device using the data (Paragraph 0103 discloses “The present invention contemplates that instead of using buy button 520, the user interface can provide for receipt of voice commands to purchase a recording of an audio event or other types of user interface can be used.”).

However, Boesen does not specifically disclose that the screen display is updated after receiving a command. Examiner takes official notice that updating a

screen after “confirming” a purchase in any electronic device is well known and widely used in the art and it would have been obvious that the screen would be updated once the user confirms a purchase via voice commands as no updates indicate that the command is not received or there is a problem with the execution of the command.

Claim 9 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Lee (20140189600).

Regarding claim 9, Boesen discloses the limitations of claim 5. However, Boesen does not specifically disclose that the user interface is configured to display available gestures associated with controlling the wireless earpiece.

Lee discloses a display for an electronic unit to display available motions or gestures for the user in controlling the electronic device.

Since both Boesen and Lee disclose an electronic device with motion capture mechanism, it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the guide as disclosed by Lee in the teachings by Boesen so that the user are informed and comfortable regarding the motions available for controlling the electronic device.

Claims 10, 11 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Goldstein (20080031475).

Regarding claims 10, 11, Boesen discloses the limitations of claim 1. However, Boesen does not specifically disclose a memory for the earpiece for storing audio data and a playlist.

Goldstein discloses an earpiece with an onboard memory capable of storing a playlist and audio data for the user (Fig 5b, memory storage 585, Paragraph 0010, and paragraph 0021).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMIR ETESAM whose telephone number is (571)270-1946. The examiner can normally be reached on Monday - Friday (9 AM - 5:00 PM).

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, Davetta Goins can be reached on (571)272-2957. 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.

/AMIR ETESAM/
Primary Examiner, Art Unit 2655

Notice of References Cited	Application/Control No. 15/350,020	Applicant(s)/Patent Under Reexamination STEINER, MARTIN	
	Examiner AMIR ETESAM	Art Unit 2655	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-2013/0329051 A1	12-2013	Boesen; Peter V.	H04M1/05	348/159
*	B	US-2008/0154098 A1	06-2008	Morris; Margaret	A61B5/02416	600/300
*	C	US-2014/0189600 A1	07-2014	LEE; Dong-heon	G06F3/017	715/856
*	D	US-2008/0031475 A1	02-2008	GOLDSTEIN; Steven Wayne	H04M1/05	381/151
	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.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15350020
Filing Date	2016-11-12
First Named Inventor	Martin Steiner
Art Unit	3765
Examiner Name	
Attorney Docket Number	BRAGI GmbH-P0075USA

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	3934100	A	1976-01-20	Harada	Entire Document
	2	4150262	A	1979-04-17	Ono	Entire Document
	3	4334315	A	1982-06-08	Ono et al.	Entire Document
	4	4375016	A	1983-02-22	Harada	Entire Document
	5	4588867	A	1986-05-13	Konomi	Entire Document
	6	4654883	A	1987-03-31	Iwata	Entire Document
	7	4682180	A	1987-07-21	Gans	Entire Document
	8	4791673	A	1988-12-13	Schreiber	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	9	4865044	A	1989-09-12	Wallace et al.	Entire Document
	10	5191602	A	1993-03-02	Regen et al.	Entire Document
	11	5201007	A	1993-04-06	Ward et al.	Entire Document
	12	5280524	A	1994-01-18	Norris	Entire Document
	13	5295193	A	1994-03-15	Ono; Hiroshi	Entire Document
	14	5298692	A	1994-03-29	Ikeda et al.	Entire Document
	15	5343532	A	1994-08-30	M. Wilbert Shugart	Entire Document
	16	5363444	A	1994-11-08	Norris	Entire Document
	17	5497339	A	1996-03-05	Bernard	Entire Document
	18	5606621	A	1997-02-25	Reiter et al.	Entire Document
	19	5613222	A	1997-03-18	Guenther	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	20	5692059	A	1997-11-25	Kruger	Entire Document
	21	5721783	A	1998-02-24	Anderson	Entire Document
	22	5749072	A	1998-05-05	Mazurkiewicz et al.	Entire Document
	23	5771438	A	1998-06-23	Palermo et al.	Entire Document
	24	5802167	A	1998-09-01	Hong	Entire Document
	25	5929774	A	1999-07-27	Charlton	Entire Document
	26	5933506	A	1999-08-03	Aoki et al.	Entire Document
	27	5949896	A	1999-09-07	Nageno et al.	Entire Document
	28	5987146	A	1999-11-16	Pluvinage et al.	Entire Document
	29	6339754	B1	2002-01-15	Flanagan et al.	Entire Document
	30	6021207	A	2000-02-01	Puthuff et al.	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	31	6054989	A	2000-04-25	Robertson et al.	Entire Document
	32	6081724	A	2000-06-27	Wilson	Entire Document
	33	6094492	A	2000-07-25	Boesen	Entire Document
	34	6111569	A	2000-08-29	Brusky et al.	Entire Document
	35	6112103	A	2000-08-29	Puthuff	Entire Document
	36	6157727	A	2000-12-05	Rueda; Valentin Chapero	Entire Document
	37	6167039	A	2000-12-26	Karlsson et al.	Entire Document
	38	6181801	B1	2001-01-30	Puthuff et al.	Entire Document
	39	6208372	B1	2001-03-27	Barraclough	Entire Document
	40	6230029	B1	2001-05-08	Yegiazaryan et al.	Entire Document
	41	6275789	B1	2001-08-14	Moser et al.	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	42	6408081	B1	2002-06-18	Boesen	Entire Document
	43	6424820	B1	2002-07-23	Burdick et al.	Entire Document
	44	6470893	B1	2002-10-29	Boesen	Entire Document
	45	6542721	B2	2003-04-01	Boesen	Entire Document
	46	6560468	B1	2003-05-06	Boesen	Entire Document
	47	6654721	B2	2003-11-25	Handelman	Entire Document
	48	6664713	B2	2003-12-16	Boesen	Entire Document
	49	6694180	B1	2004-02-17	Boesen	Entire Document
	50	6718043	B1	2004-04-06	Boesen	Entire Document
	51	6738485	B1	2004-05-18	Boesen	Entire Document
	52	6748095	B1	2004-06-08	Goss	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	53	6754358	B1	2004-06-22	Boesen et al.	Entire Document
	54	6784873	B1	2004-08-31	Boesen et al.	Entire Document
	55	6823195	B1	2004-11-23	Boesen	Entire Document
	56	6852084	B1	2005-02-08	Boesen	Entire Document
	57	6879698	B2	2005-04-12	Boesen	Entire Document
	58	6892082	B2	2005-05-10	Boesen	Entire Document
	59	6920229	B2	2005-07-19	Boesen	Entire Document
	60	6952483	B2	2005-10-04	Boesen et al.	Entire Document
	61	6987986	B2	2006-01-17	Boesen	Entire Document
	62	7136282	B1	2006-11-14	Rebeske	Entire Document
	63	7203331	B2	2007-04-10	Boesen	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	64	7209569	B2	2007-04-24	Boesen	Entire Document
	65	7215790	B2	2007-05-08	Boesen et al.	Entire Document
	66	7463902	B2	2008-12-09	Boesen	Entire Document
	67	7508411	B2	2009-03-24	Boesen	Entire Document
	68	7979035	B2	2011-07-12	Griffin et al.	Entire Document
	69	7983628	B2	2011-07-19	Boesen	Entire Document
	70	8095188	B2	2012-01-10	Shi	Entire Document
	71	8140357	B1	2012-03-20	Boesen	Entire Document
	72	8300864	B2	2012-10-30	Müllenborn et al.	Entire Document
	73	8436780	B2	2013-05-07	Schantz et al.	Entire Document
	74	8719877	B2	2014-05-06	VonDoenhoff et al.	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15350020
Filing Date	2016-11-12
First Named Inventor	Martin Steiner
Art Unit	3765
Examiner Name	
Attorney Docket Number	BRAGI GmbH-P0075USA

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	20010005197	A1	2001-06-28	Mishra et al.	Entire Document
	2	20010027121	A1	2001-10-04	Boesen	Entire Document
	3	20010056350	A1	2001-12-27	Calderone et al.	Entire Document
	4	20020002413	A1	2002-01-03	Tokue	Entire Document
	5	20020007510	A1	2002-01-24	Mann	Entire Document
	6	20020010590	A1	2002-01-24	Lee	Entire Document
	7	20020030637	A1	2002-03-14	Mann	Entire Document
	8	20020046035	A1	2002-04-18	Kitahara et al.	Entire Document
	9	20020057810	A1	2002-05-16	Boesen	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	10	20020076073	A1	2002-06-20	Taenzer et al.	Entire Document
	11	20020118852	A1	2002-08-29	Boesen	Entire Document
	12	20030065504	A1	2003-04-03	Kraemer et al.	Entire Document
	13	20030100331	A1	2003-05-29	Dress et al.	Entire Document
	14	20030104806	A1	2003-06-05	Ruef et al.	Entire Document
	15	20030115068	A1	2003-06-19	Boesen	Entire Document
	16	20030125096	A1	2003-07-03	Boesen	Entire Document
	17	20030218064	A1	2003-11-27	Conner et al.	Entire Document
	18	20040070564	A1	2004-04-15	Dawson et al.	Entire Document
	19	20040160511	A1	2004-08-19	Boesen	Entire Document
	20	20050043056	A1	2005-02-24	Boesen	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	21	20050125320	A1	2005-06-09	Boesen	Entire Document
	22	20050148883	A1	2005-07-07	Boesen	Entire Document
	23	20050165663	A1	2005-07-28	Razumov	Entire Document
	24	20050196009	A1	2005-09-08	Boesen	Entire Document
	25	20050251455	A1	2005-11-10	Boesen	Entire Document
	26	20050266876	A1	2005-12-01	Boesen	Entire Document
	27	20060029246	A1	2006-02-09	Boesen	Entire Document
	28	20060074671	A1	2006-04-06	Farmaner et al.	Entire Document
	29	20060074808	A1	2006-04-06	Boesen	Entire Document
	30	20080254780	A1	2008-10-16	Kuhl et al.	Entire Document
	31	2009073070	A1	2009-03-19	ROFOUGARAN, Ahmadreza	Entire Document

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	32	2010172522	A1	2010-07-08	Mooring et al.	Entire Document	
	33	2010203831	A1	2010-08-12	MUTH, James Michael	Entire Document	
	34	2015131814	A1	2015-05-14	Usher et al.	Entire Document	
	35	2015234187	A1	2015-08-20	Lee Vincent	Entire Document	

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	1017252	EP	A2	2000-07-05	Bybee et al.	Entire Document	☒
	2	2074817	GB		1981-04-11	GEN ENGINEERING	Entire Document	☒
	3	06292195	JP		1998-10-18	Matsushita Electric Industrial Co. LTD	Entire Document	☒
	4	2014043179	WO	A2	2014-03-20	RUWE et al.	Entire Document	☒
	5	2015110577	WO	A1	2015-07-30	HVIID	Entire Document	☒

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	6	2015110587	WO	A1	2015-07-30	HVIID	Entire Document	☒

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.	T5
	1	Announcing the $3,333,333 Stretch Goal (02/24/2014)	
	2	BRAGI Is On Facebook (2014)	
	3	BRAGI UPDATE - Arrival Of Prototype Chassis Parts - More People - Awesomeness (5/13/2014)	
	4	BRAGI UPDATE - Chinese New Year, Design Verification, Charging Case, More People, Timeline(3/6/2015)	
	5	BRAGI UPDATE - First Sleeves From Prototype Tool - Software Development Kit (6/5/2014)	
	6	BRAGI UPDATE - Let's Get Ready To Rumble, A Lot To Be Done Over Christmas (12/22/2014)	
	7	BRAGI UPDATE - Memories From April - Update On Progress (9/16/2014)	
	8	BRAGI UPDATE - Memories from May - Update On Progress - Sweet (10/13/2014)	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	9	BRAGI UPDATE - Memories From One Month Before Kickstarter - Update On Progress (7/10/2014)
	10	BRAGI UPDATE - Memories From The First Month of Kickstarter - Update on Progress (8/1/2014)
	11	BRAGI UPDATE - Memories From The Second Month of Kickstarter - Update On Progress (8/22/2014)
	12	BRAGI UPDATE - New People @BRAGI- Prototypes (6/26/2014)
	13	BRAGI UPDATE - Office Tour, Tour To China, Tour to CES (12/11/2014)
	14	BRAGI UPDATE - Status On Wireless, Bits and Pieces, Testing-Oh Yeah, Timeline(4/24/2015)
	15	BRAGI UPDATE - The App Preview, The Charger, The SDK, BRAGI Funding and Chinese New Year (02/11/2015)
	16	BRAGI UPDATE - What We Did Over Christmas, Las Vegas & CES (01/19/2014)
	17	BRAGI UPDATE - Years of Development, Moments of Utter Joy and Finishing What We Started(6/5/2015)
	18	BRAGI UPDATE-Alpha 5 and Back To China, Backer Day, On Track(5/16/2015)
	19	BRAGI UPDATE-Beta2 Production and Factory Line(8/20/2015)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15350020
	Filing Date	2016-11-12
	First Named Inventor	Martin Steiner
	Art Unit	3765
	Examiner Name	
	Attorney Docket Number	BRAGI GmbH-P0075USA

	20	BRAGI UPDATE-Certifications, Production, Ramping Up	
	21	BRAGI UPDATE-Developer Units Shipping and Status(10/05/2015)	
	22	BRAGI UPDATE-Developer Units Started Shipping and Status (10/19/2015)	
	23	BRAGI UPDATE-Developer Units, Investment, Story and Status(11/2/2015)	
	24	BRAGI UPDATE-Getting Close(8/6/2014)	
	25	BRAGI UPDATE-On Track, Design Verification, How It Works and What's Next(7/15/2015)	
	26	BRAGI UPDATE-On Track, On Track and Gems Overview	
	27	BRAGI UPDATE-Status On Wireless, Supply, Timeline and Open House@BRAGI(4/1/2015)	
	28	BRAGI UPDATE-Unpacking Video, Reviews On Audio Perform and Boy Are We Getting Close(9/10/2015)	
	29	Last Push Before The Kickstarter Campaign Ends on Monday 4pm CET (3/28/2014)	
	30	STAAB, Wayne J., et al., "A One-Size Disposable Hearing Aid is Introduced", The Hearing Journal 53(4):36-41) April 2000	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15350020
Filing Date	2016-11-12
First Named Inventor	Martin Steiner
Art Unit	3765
Examiner Name	
Attorney Docket Number	BRAGI GmbH-P0075USA

	31	Stretchgoal - It's Your Dash (02/14/2014)	
	32	Stretchgoal - The Carrying Case for The Dash (02/12/2014)	
	33	Stretchgoal - Windows Phone Support (02/17/2014)	
	34	The Dash + The Charging Case & The BRAGI News (2/21/14)	
	35	The Dash-A Word From Our Software, Mechanical and Acoustics Team + An Update (3/11/2014)	
	36	Update From BRAGI - $3,000,000 - Yipee (3/22/2014)	
	37	WEISIGER, "Conjugated Hyperbilirubinemia", (1/5/2016)	

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

EXAMINER SIGNATURE

Examiner Signature	/AMIR H ETESAM/	Date Considered	03/04/2018

*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.

[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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15350020
Filing Date	2016-11-12
First Named Inventor	Martin Steiner
Art Unit	3765
Examiner Name	
Attorney Docket Number	BRAGI GmbH-P0075USA

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	/JOHN D. GOODHUE/	Date (YYYY-MM-DD)	2017-04-03
Name/Print	John D. Goodhue	Registration Number	47603

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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.H.E/

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15350020	STEINER, MARTIN
	Examiner	**Art Unit**
	AMIR ETESAM	2655

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	03/04/2018								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								
	16	✓								
	17	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15350020	STEINER, MARTIN
	Examiner	Art Unit
	AMIR ETESAM	2655

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
H04R 1/1016	3/4/2018	AE

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* 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
East search performed. Search history is attached.	3/4/2018	AE

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	38	(("STEINER") near3 ("Martin")).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/04 15:17
L2	201	(("STEINER") near3 ("Martin")).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:17
L3	0	2 and etesam	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:17
L4	372	("20010005197" | "20010027121" | "20010056350" | "20020002413" | "20020007510" | "20020010590" | "20020030637" | "20020046035" | "20020057810" | "20020076073" | "20020118852" | "20030065504" | "20030100331" | "20030104806" | "20030115068" | "20030125096" | "20030218064" | "20040070564" | "20040160511" | "20050043056" | "20050125320" | "20050148883" | "20050165663" | "20050196009" | "20050251455" | "20050266876" | "20060029246" | "20060074671" | "20060074808" | "20080254780" | "9073070" | "0172522" | "0203831" | "5131814" | "5234187" | "3934100" | "4150262" | "4334315" | "4375016" | "4588867" | "4654883" | "4682180" | "4791673" | "4865044" | "5191602" | "5201007" | "5280524" | "5295193" | "5298692" | "5343532" | "5363444" | "5497339" | "5606621" | "5613222" | "5692059" | "5721783" | "5749072" | "5771438" | "5802167" | "5929774" | "5933506" | "5949896" | "5987146" | "6021207" | "6054989" | "6081724" | "6094492" | "6111569" | "6112103" | "6157727" | "6167039" | "6181801" | "6208372" | "6230029" | "6275789" | "6339754" | "6408081" | "6424820" | "6470893" | "6542721" | "6560468" | "6654721" | "6664713" | "6694180" | "6718043" | "6738485" | "6748095" | "6754358" | "6784873" | "6823195" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:20

		"6852084" | "6879698" | "6892082" | "6920229" | "6952483" | "6987986" | "7136282" | "7203331" | "7209569" | "7215790" | "7463902" | "7508411" | "7979035" | "7983628" | "8095188" | "8140357" | "8300864" | "8436780" | "8719877").PN.				
L5	7	1 and (wireless and (user adj interface))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:21
L6	4769	boesen	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:22
L7	788	boesen.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:22
L8	70	7 and ((user adj interface) and wireless and display$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:23
L9	0	("13967415").PN.	USPAT; USOCR	OR	OFF	2018/03/04 15:24
L10	8	"13967415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:24
L11	51	7 and (heart adj rate)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:27
L12	7145	track$4 near4 (heartrate heart oxygen physiologic)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:47
L13	3	7 and 12	US-PGPUB; USPAT; USOCR;	OR	OFF	2018/03/04 15:47

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
L14	1509	track$4 near4 (heartrate oxygen physiologic)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:48
L15	10489	earpiece.ab.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:48
L16	1	14 and 15	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 15:48
L17	9	display$4 near3 (available possible) near3 (gestures motions) near4 control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 16:19
L18	0	earpiece near3 (saves stores) near3 playlist	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 16:29
L19	0	earpiece near5 (saves stores) near5 playlist	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/03/04 16:29
L20	0	earpiece near5 (save store) near5 playlist	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/03/04 16:29
L21	3	earpiece near5 (save store) near5 list	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/03/04 16:30
L22	45	earpiece near5 (save store) near5 audio	US-PGPUB;	OR	ON	2018/03/04

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			16:33

3/4/2018 4:58:12 PM
C:\Users\aetesam\Desktop\East search history\15350020.wsp

Bibliographic Data

Application No: 15350020

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: _____ _____

Examiner's Signature | Initials

Title: Method and apparatus for interfacing with wireless earpieces

---

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/12/2016	381	2655	BRAGI GmbH-P0075USA
RULE			

APPLICANTS

BRAGI GmbH, Munchen, GERMANY

INVENTORS

Martin Steiner, München, GERMANY

CONTINUING DATA

This application has PRO of 62255309 11/13/2015

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

11/21/2016

STATE OR COUNTRY

GERMANY

ADDRESS

Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325
UNITED STATES

FILING FEE RECEIVED

$800

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application of: Steiner **Application No.** 15/350,020 **Filing Date:** November 12, 2016 **For:** Method and apparatus for interfacing with wireless earpieces	**Confirmation No.** 3412 **Group Art Unit:** 3765 **Examiner:** Amir Hossein ETESAM

AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

VIA EFS-WEB

Commissioner:

In reply to the Office Action mailed March 7, 2018, the period for response to June 7, 2018 which extends through September 7, 2018, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims in this paper.

Remarks follow the amendments section of this paper.

AMENDMENTS TO THE CLAIMS:

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

Claim 1 (Currently Amended): A system comprising:

at least one wireless ear piece comprising an ear piece housing and a wireless transceiver disposed within the ear piece housing;

a software application for executing on a computing device having a display associated therewith;

wherein the software application configured to display one or more screen displays on a display of the computing device;

wherein the software application provides a user interface for use by a user of the at least one wireless ear piece to interact with the at least one wireless ear piece; and

wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays, the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device.

Claim 2 (Original): The system of claim 1 wherein the at least one wireless earpiece comprises a physiological sensor.

Claim 3 (Original): The system of claim 2 wherein the software application provides for

tracking one or more physical activities using the physiological sensor.

Claim 4 (Original): The system of claim 3 wherein the physical activities are selected from a set consisting of running, biking, and swimming.

Claim 5 (Cancelled):

Claim 6 (Currently amended): The system of claim ~~5~~ 1 wherein the representation visual representation includes lighting of the at least one wireless ear piece.

Claim 7 (Currently amended): The system of claim 6 wherein the lighting is associated with ~~a~~ the function or property of the at least one wireless ear piece.

Claim 8 (Original): The system of claim 7 wherein the property is remaining battery life.

Claim 9 (Currently Amended): The system of claim ~~5~~ 1 wherein the user interface is further configured to display available gestures associated with controlling the at least one wireless ear piece.

Claim 10 (Original): The system of claim 1 wherein the at least one wireless ear piece comprises onboard storage for storing audio files.

Claim 11 (Original): The system of claim 1 wherein the at least one wireless ear piece is configured to store at least one playlist of audio files.

Claim 12 (Original): The system of claim 1 wherein the software application provides for connecting the at least one wireless ear piece with the computing device.

Claim 13 (Original): The system of claim 12 wherein the computing device is a mobile device.

Claim 14 (Currently Amended): A method for controlling a set of wireless ear pieces, the method comprising:

providing a software application for controlling the set of wireless ear pieces, the software application adapted to execute on a computing device;

using the software application on the computing device to display one or more screen displays on a display of the computing device and to receive input from the user into the mobile device, wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces;

communicating data associated with the input between the software application and at least one of the wireless ear pieces;

performing an action using at least one of the wireless ear pieces in response to receiving the data.

Claim 15 (Currently Amended): A method for communicating data from a set of wireless ear pieces, the method comprising:

providing a software application for communicating with the set of wireless ear pieces, the software application adapted to execute on a computing device;

using the software application on the computing device to display one or more screen displays on a display of the computing device, wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces;

communicating data received from one or more of the wireless ear pieces to the computing device; and

updating the screen displays on the display of the computing device using the data.

Claim 16 (Original): The method of claim 15 wherein the data comprises physiological data.

Claim 17 (Currently Amended): The method of claim 16 wherein the physiological data is ~~heat~~ heart rate data.

REMARKS

In the Office Action, the Examiner took the following actions:

I. Claim(s) 1, 12, 13, 14 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Boesen (20130329051);

II. Claims 2-4, 16, 17 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051), And further in view of Morris (20080154098);

III. Claims 5-8, 15 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and Official Notice.

IV. Claim 9 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Lee (20140189600); and

V. Claims 10, 11 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Goldstein (20080031475).

The Office Action may contain statements characterizing the related art and/or the claims. Regardless of whether any such statement is expressly identified and/or discussed herein, Applicant reserves the right to disagree with any such statement or characterization in the Office Action.

Applicant amends claims 1, 6, 7, 9, 14, 15 and 17 and cancels claim 5 without prejudice or disclaimer of its subject matter. Specifically, independent claim 1 is

amended to incorporate claim 5. Claim 1 is further amended to include wherein the software application displays one or more screen displays on a display of the computing device and that the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device. Support for wherein the software application display one or more screen displays on a display of the computing device can be found in the specification on page 2, lines 19-21. Support for the function or property is apparent at least from original claim 7. Claims 6 and 9 have been amended to change dependency. Claim 7 has been amended as antecedent basis for the function or property is now provided in claim 1.

Independent claim 14 has been amended to include wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces. Support for wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces can be found in the Specification on page 7 lines 15-16.

Independent claim 15 has been amended to recite wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces. Support for wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces can be found in the specification on page 7 lines 15-16. Claim 17 has been amended to recite wherein the physiological data is heart rate data. Support for wherein the physiological data is heart rate data can be found in the specification on page 9, lines 8-10.

Claims 1-4 and 6-17remain pending and under examination. For at least the following reasons, Applicant respectfully requests reconsideration and withdrawal of the rejections.

ISSUES UNDER 35 USC 102

Claim(s) 1, 12, 13, 14 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Boesen (20130329051). Applicant respectfully traverses Examiner's rejection.

Claim 1 has been amended to recite in part "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays". It is respectfully submitted that Boesen does not disclose wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays as claimed.

In addition, claim 1 was amended in part to incorporate claim 5. The Examiner contends that claim 5 is rejected in view of Boesen and official notice. Applicants respectfully argues that Examiner's Official Notice is improper. Consequently, a necessary element of a prima facie case is absent.

The Examiner alleges wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays as claimed is well known and widely used. If wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays is well known, then it should be easy to find a reference that suggests modifying the cited references to wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays as recited in claim 1. Examiner is kindly reminded that "assertions of technical fact in areas of esoteric technology must always be supported by citation of some reference work" and "allegations concerning specific

knowledge of the prior art, which might be peculiar to a particular art should also be supported." MPEP § 2144.03. The Applicant notes that a reference that merely discloses or suggests the general concept of displaying a visual representation of the at least one wireless earpiece on at least one of the one or more screen displays is well known does not establish a prima facie case of obviousness. Rather, the reference or references must disclose or suggest wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays.

Therefore, because Boesen does not disclose all the limitations of Applicant's claim 1 and the Official Notice is improper, Applicant respectfully requests that the rejection of claim 1 under 35 USC 102 be withdrawn.

In addition, claim 1 now recites that "the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device." It is respectfully submitted that this language further distinguishes Boesen and therefore the rejection should be withdrawn for this reason as well. In addition, since claims 12 and 13 depend on claim 1 and claim 1 is believed to be allowed, Applicant respectfully requests that the rejections of claims 12 and 13 under 35 USC 102 be withdrawn as well.

Claim 14 has been amended to recite in part "wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces". It is respectfully submitted that Boesen does not disclose wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces as claimed. Therefore, Applicant respectfully requests that the rejection of claim 14 under 35 USC 102 be withdrawn.

ISSUES UNDER 35 USC 103

Claims 2-4, 16, 17 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051), and further in view of Morris (20080154098). Applicant respectfully traverses the Examiners rejection.

Claims 2-4 depend on claim 1. Claim 1 has been amended to include "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays". Morris does not teach wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on the one or more screen displays as claimed. Morris specifically is directed towards monitoring physiological, activity and environmental data. Abstract. Therefore, the addition of Morris does not remedy the deficiencies of Boesen with respect to claim 1. As claims 2-4 depend on claim 1, the rejections of claims 2-3 under 35 USC 103 should be withdrawn.

Claims 16-17 depend on claim 15. Claim 15 has been amended to include wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces. Morris does not teach wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces as claimed. Morris specifically is directed towards monitoring physiological, activity and environmental data. Abstract. Therefore, the addition of Morris does not remedy the deficiencies of Boesen with respect to claim 15. As claims 16-17 depend on claim 15, the rejections of claims 16-17 under 35 USC 103 should be withdrawn.

Claims 5-8, 15 is/are rejected under 35 U.S.C. 103 as being unpatentable over

Boesen (20130329051) and Official Notice. Applicant respectfully traverses the Examiners rejection. Claim 5 has been cancelled this rejection is moot.

Claims 6-8 depend on claim 1. Claim 1 has been amended to recite in part "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays". It is respectfully submitted that Boesen does not disclose wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays" as claimed.

With respect to Official Notice of claims 6-8, the MPEP states that "such rejections should be judiciously applied" (see MPEP § 2144.03). Applicant notes that contrary to the caution advised by the MPEP, in this case, the Office Action liberally applied Official Notice to claims 6-8 for various conclusory reasons that are not supported by the record. The MPEP goes on to mandate that "Official notice without documentary evidence to support an [E]xaminer's conclusion is permissible only in some circumstances" (see MPEP § 2144.03(A)). "It would not be appropriate for the [E]xaminer to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of *instant and unquestionable* demonstration as being well-known" (see *Id.*, emphasis added). "For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must *always* be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21" (*Id.*, emphasis added). Applicant notes that no such support has been provided in this case. The Examiner argument is recited below for convenience.

Regarding claims 5-8, Boesen discloses the limitations of claim 1.

> However, Boesen does not specifically disclose battery level of the wireless earpiece on the display of the computing device, which is a lighting and visual representation of the activity level of the earpiece.
>
> Examiner takes official notice that displaying battery level of wirelessly connected devices to cell phones on the cell phone display unit for the user comfort is well known and widely used in the art and it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the displaying battery life of earpiece on the cell phone screen for user comfort. Non-Final Office Action of March 7, 2018, pp. 4-5.

Reviewing courts must rely on the record, and the Federal Circuit has always required that absent the case where Official Notice is "*instant and unquestionable*", the Office Action must provide support and reasoning for Official Notice to be proper. Applicants respectfully argues that Examiners official notice is improper. Consequently, a necessary element of a prima facie case is absent.

Applicant respectfully argues that wherein the representation visual representation includes lighting of the at least one wireless ear piece as claimed by Applicant's claim 6 is not well known or widely used in the prior art. If wherein the representation visual representation includes lighting of the at least one wireless ear piece as claimed is well known, then it should be easy to find a reference that suggests modifying the cited references to wherein the representation visual representation includes lighting of the at least one wireless ear piece as recited in claim 6.

Applicant further argues that wherein the lighting is associated with a function or property of the at least one wireless ear piece as claimed by Applicant's claim 7 is not well known or widely used. If wherein the lighting is associated with a function or property of the at least one wireless ear piece as claimed is well known, then it should be easy to find a reference that suggests modifying the cited references to wherein the lighting is associated with a function or property of the at least one wireless ear piece as recited in

claim 7. Lastly, Applicant argues that claim 8 which recites [t]he system of claim 7 wherein the property is remaining battery life is not well known or widely used. If wherein the property is remaining battery life is well known, then it should be easy to find a reference that suggests modifying the cited references to [t]he system of claim 7 wherein the property is remaining battery life as recited in claim 8.

If the Examiner continues to believe that the above-recited features are well known in the art, Applicant respectfully requests that the Examiner provide a reference or references in the next Office Action allegedly offering evidence that this is the case. Therefore, because Boesen does not disclose all the limitations of Applicant's claim 1 and claims 6-8 depend on claim 1 and the Official Notice is improper, Applicant respectfully requests that the rejections of claims 6-8 under 35 USC 103 be withdrawn.

Claim 15 has been amended to recite in part wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces. It is respectfully submitted that Boesen does not disclose wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces as claimed.

With respect to Official Notice of claims 15, the MPEP states that "such rejections should be judiciously applied" (see MPEP § 2144.03). The MPEP goes on to mandate that "Official notice without documentary evidence to support an [E]xaminer's conclusion is permissible only in some circumstances" (see MPEP § 2144.03(A)). "It would not be appropriate for the [E]xaminer to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of *instant and unquestionable* demonstration as being well-known" (see *Id.*, emphasis added). "For example, assertions of technical facts in the areas of esoteric technology or specific

knowledge of the prior art must *always* be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21" (*Id.*, emphasis added). Applicant notes that no such support has been provided in this case. The Examiner contends that "updating a screen after "confirming" a purchase in any electronic device is well known and widely used in the art and it would have been obvious that the screen would be updated once the user confirms a purchase via voice commands as no updates indicate that the command is not received or there is a problem with the execution of the command". Non-Final Office Action of March 7, 2018, pp. 5-6. The Examiners entire argument is recited below for convenience.

> **Regarding claim 15,** Boesen discloses a method for communicating data from a set of wireless ear pieces (Paragraph 008 discloses "The user may then press a button or switch on the earpiece 1OB to answer the call or **issue a voice command to answer the call** or ignore the call."), the method comprising: providing a software application for communicating with the set of wireless ear pieces, the software application adapted to execute on a computing device (Fig 11); using the software application on the computing device to display one or more screen displays on a display of the computing device; communicating data received from one or more of the wireless ear pieces to the computing device; and updating the screen displays on the display of the computing device using the data (Paragraph 0103 discloses "The present invention contemplates that instead of using buy button 520, the user interface can provide for receipt of voice commands to purchase a recording of an audio event or other types of user interface can be used.").
> However, Boesen does not specifically disclose that the screen display is updated after receiving a command. Examiner takes official notice that updating a screen after "confirming" a purchase in any electronic device is well known and widely used in the art and it would have been obvious that the screen would be updated once the user confirms a purchase via voice commands as no updates indicate that the command is not received or there is a problem with the execution of the command. *Id.*

Reviewing courts must rely on the record, and the Federal Circuit has always

required that absent the case where Official Notice is "instant and unquestionable", the Office Action must provide support and reasoning for Official Notice to be proper. Applicants respectfully argues that Examiners official notice is improper. Consequently, a necessary element of a prima facie case is absent.

Applicant respectfully argues that the updating the screen displays on the display of the computing device using the data as claimed by Applicant's claim 15 is not well known or widely used in the prior art. If updating the screen displays on the display of the computing device using the data as claimed is well known, then it should be easy to find a reference that suggests modifying the cited references to wherein the representation visual representation includes lighting of the at least one wireless ear piece as recited in claim 15.

Therefore, because Boesen does not disclose all the limitations of Applicant's claim 15 and the Official Notice is improper, Applicant respectfully requests that the rejections of claim 15 under 35 USC 103 be withdrawn.

Claim 9 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Lee (20140189600).

Claim 9 depends on claim 1. Claim 1 has been amended to include "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays". Lee does not teach wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on one or more of the one or more screen displays as claimed. Lee is specifically directed towards a "method for controlling a display apparatus by displaying a pointer to perform a motion task mode according to a

predetermined event. Abstract. Therefore, the addition of Lee does not remedy the deficiencies of Boesen with respect to claim 1. As claim 9 depends on claim 1, the rejection of claim 9 under 35 USC 103 should be withdrawn.

Claims 10, 11 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Goldstein (20080031475).

Claims 10 and 11 depend on claim 1. Claim 1 has been amended to include "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays". Goldstein does not teach wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays as claimed. Goldstein is specifically directed towards a "a user interaction element configured to send a play command to the logic circuit when activated by a user where the logic circuit reads registration parameters stored on the memory storage unit and sends audio content to the ear canal receiver according to the registration parameters." Abstract. Therefore, the addition of Goldstein does not remedy the deficiencies of Boesen with respect to claim 1. As claims 10 and 11 depend on claim 1, the rejection of claims 10 and 11 under 35 USC 103 should be withdrawn.

CONCLUSION

In view of the foregoing, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 506801.

Respectfully submitted,

Goodhue, Coleman & Owens, P.C.

Dated: May 14, 2018

By: /JOHN D. GOODHUE/
John D. Goodhue
Reg. No. 47603
(515) 218-7888

Electronic Acknowledgement Receipt

EFS ID:	32612870
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Filer Authorized By:	John Darrell Goodhue
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	14-MAY-2018
Filing Date:	12-NOV-2016
Time Stamp:	13:27:21
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		BRAGIGmbH-P0075USA_Response_Nonfinal_20180418.pdf	174916 ae0111762dd0dc66f75a90c4fe6ccdb7d5bb1dcd	yes	17

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	17
Warnings:			
Information:			
	Total Files Size (in bytes):	174916	

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 15/350,020	Filing Date 11/12/2016	☐ 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 $40 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $210 =	
☐ 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)			
AMENDMENT	05/14/2018	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $230 =	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)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $ 0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $ 0 =	
	☐ 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.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	shanda E ross
*** 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.	

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.
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA	3412

133690 7590 09/19/2018

Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

EXAMINER
ETESAM, AMIR HOSSEIN

ART UNIT	PAPER NUMBER
2655	

NOTIFICATION DATE	DELIVERY MODE
09/19/2018	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):

docketing@goodhue.com
eofficeaction@appcoll.com
USPTO@dockettrak.com

Office Action Summary	Application No. 15/350,020	Applicant(s) STEINER, MARTIN	
	Examiner AMIR ETESAM	Art Unit 2655	AIA (First Inventor to File) Status Yes

-- 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 *5/14/2018*.

☐ 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) *1-4 and 6-17* 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) *1-4 and 6-17* 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 *11/12/2016* 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: _____.

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Response to Arguments

2. Applicant's arguments with respect to claims 1-4, 6-17 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

3. Regarding official notice for claim 6-8, as stated the battery life display is well known in the art and it is shown by references such as Yamamato (20040132511) in paragraph 0024.

4. Regarding official notice for claim 15, as stated updating screen after an electronic purchase is well known in the art and it is shown by references such as Ijichi (20080021577) in paragraph 0441.

Claim Rejections - 35 USC § 103

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 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have

> been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1, 12, 13, 14 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Georges (7022906).

Regarding claims 1, 12-14, Boesen discloses a system comprising: at least one wireless ear piece comprising an ear piece housing and a wireless transceiver disposed within the ear piece housing (Fig 11, wireless ear pieces 102, 104, also paragraph 0038); a software application for executing on a computing device (Paragraph 0128, the cell phone is a computing device) having a display (Fig 11, display 726) associated therewith; wherein the software application provides a user interface for use by a user of the at least one wireless ear piece to interact with the at least one ear piece and inherently the software application is configured to display one or more screen displays on a display of the computing device; (Fig 11, shows the user interface with a “confirm” button, and Paragraph 0097 discloses that after confirming by the user the audio, which is data associated with the user’s input of pressing the “confirm button, maybe transmitted to one or more of the earpieces (meaning the software send the audio to the earpiece so it makes a connection between the two and controls it) which is interpreted as interaction with the earpiece and the earpiece will inherently reproduce the audio data being transferred to it so performs an action.

3. However, Boesen does not disclose that the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays, the visual representation indicative of a function or

property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device.

4. Georges discloses a user interface for an electronic controllable device wherein the interface is configured to display a visual representation of the device on at least a screen display, the visual representation indicative of a function or property of the device (Fig 4, visual representation of the joy stick with instructions to control a software as explained in column 8, lines 64-67 and column 9).

5. Since both Boesen and Georges disclose a controllable unit with a display system, it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize using a visual representation of the controllable device suggested by Georges in the teachings by Boesen to display the controllable hearing device. The motivation for this would have been facilitating the process of changing of settings for the user by exactly showing which buttons needs to be touched in order to perform a specific function.

6. Claims 2-4, 16, 17 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051), And further in view of Georges (7022906) and Morris (20080154098).

Regarding claim 2-4, 16, 17, Boesen and Georges disclose the limitations of claims 1 and 15. However, the combiantion does not disclose that the wireless earpiece comprise a physiological sensor and tracking a physiological activity, such as running, through the sensor by the software application.

Morris discloses an earpiece in communication with a computing device comprising a physiological sensor that tracks a physiologic activity of the user through the sensor (Abstract discloses that “The device includes a pulse oximeter unit to provide blood oxygenation level and beat-to-beat timing, a three-axis accelerometer to provide orientation and activity level” moreover, abstract discloses the device is to “monitor physiological, **activity** and environmental data”. Also paragraph 0031 discloses tracking physiologic data and monitoring activity.”).

Since both Boesen and Georges, and Morris disclose an earpiece in wireless communication with a computing device, it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the sensors disclosed by Morris in the teachings by Boesen and Georges. The motivation for this would have been tracking user vital fluctuation and body orientation and providing him or her with feedbacks to prevent "falls", improve exercise outcome etc. Moreover, it would have been obvious to an ordinary skilled in the art that the sensors would be tracking the user in any activity of his or her choice which could include running.

Claims 6-8, 15 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Georges (7022906).

Regarding claims 6-8, Boesen and Georges disclose the limitations of claim 1. However, the combiantion does not specifically disclose battery level of the wireless earpiece on the display of the computing device, which is a lighting and visual representation of the activity level of the earpiece.

Examiner takes official notice that displaying battery level of wirelessly connected devices to cell phones on the cell phone display unit for the user comfort is well known and widely used in the art and it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the displaying battery life of earpiece on the cell phone screen for user comfort.

Regarding claim 15, Boesen discloses a method for communicating data from a set of wireless ear pieces (Paragraph 008 discloses “The user may then press a button or switch on the earpiece 10B to answer the call or **issue a voice command to answer the call** or ignore the call.”), the method comprising: providing a software application for communicating with the set of wireless ear pieces, the software application adapted to execute on a computing device (Fig 11); using the software application on the computing device to display one or more screen displays on a display of the computing device; communicating data received from one or more of the wireless ear pieces to the computing device; and updating the screen displays on the display of the computing device using the data (Paragraph 0103 discloses “The present invention contemplates that instead of using buy button 520, the user interface can provide for receipt of voice commands to purchase a recording of an audio event or other types of user interface can be used.”).

However, Boesen does not specifically disclose that the screen display is updated after receiving a command. Examiner takes official notice that updating a screen after “confirming” a purchase in any electronic device is well known and widely used in the art and it would have been obvious that the screen would be updated once

the user confirms a purchase via voice commands as no updates indicate that the command is not received or there is a problem with the execution of the command.

7. However, Boesen does not disclose that the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays, the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device.

8. Georges discloses a user interface for an electronic controllable device wherein the interface is configured to display a visual representation of the device on at least a screen display, the visual representation indicative of a function or property of the device (Fig 4, visual representation of the joy stick with instructions to control a software as explained in column 8, lines 64-67 and column 9).

9. Since both Boesen and Georges disclose a controllable unit with a display system, it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize using a visual representation of the controllable device suggested by Georges in the teachings by Boesen to display the controllable hearing device. The motivation for this would have been facilitating the process of changing of settings for the user by exactly showing which buttons needs to be touched in order to perform a specific function.

Claim 9 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Georges (7022906) and Lee (20140189600).

Regarding claim 9, Boesen and Georges disclose the limitations of claim 1. However, the combination does not specifically disclose that the user interface is configured to display available gestures associated with controlling the wireless earpiece.

Lee discloses a display for an electronic unit to display available motions or gestures for the user in controlling the electronic device.

Since both Boesen and Georges, and Lee disclose an electronic device with motion capture mechanism, it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the guide as disclosed by Lee in the teachings by Boesen so that the user are informed and comfortable regarding the motions available for controlling the electronic device.

Claims 10, 11 is/are rejected under 35 U.S.C. 103 as being unpatentable over Boesen (20130329051) and further in view of Georges (7022906) and Goldstein (20080031475).

Regarding claims 10, 11, Boesen and Georges disclose the limitations of claim 1. However, the combination does not specifically disclose a memory for the earpiece for storing audio data and a playlist.

Goldstein discloses an earpiece with an onboard memory capable of storing a playlist and audio data for the user (Fig 5b, memory storage 585, Paragraph 0010, and paragraph 0021).

Since both Boesen and Georges, and Goldstein disclose an earpiece, it would have been obvious to one of ordinary skilled in the art before the effective filling date of

the claimed invention to utilize the board of Goldstein in the teachings by Boesen and Georges. The motivation for this would have been providing the user with multiple options to playback songs.

Conclusion

6. 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 AMIR ETESAM whose telephone number is (571)270-1946. The examiner can normally be reached on Monday - Friday (9 AM - 5:00 PM).

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, Davetta Goins can be reached on (571)272-2957. 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.

/AMIR ETESAM/
Primary Examiner, Art Unit 2655

Notice of References Cited	Application/Control No. 15/350,020	Applicant(s)/Patent Under Reexamination STEINER, MARTIN	
	Examiner AMIR ETESAM	Art Unit 2655	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-2004/0132511 A1	07-2004	Yamamoto, Koichi	H04M1/0214	455/575.3
*	B	US-2008/0021577 A1	01-2008	Ijichi; Susumu	G11B27/034	700/94
*	C	US-2013/0329051 A1	12-2013	Boesen; Peter V.	H04M1/05	348/159
*	D	US-7,022,906 B2	04-2006	Georges; Alain	G10H1/0025	84/609
*	E	US-2008/0154098 A1	06-2008	Morris; Margaret	A61B5/02416	600/300
*	F	US-2014/0189600 A1	07-2014	LEE; Dong-heon	G06F3/017	715/856
	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.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	35	((("BRAGI") near3 ("GmbH"))).AS,AANM.	USPAT	OR	OFF	2018/09/15 11:49
L2	42	((("Steiner") near3 ("Martin"))).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/09/15 11:50
L3	1	"20130329051"	US-PGPUB; USPAT; USOCR	OR	OFF	2018/09/15 11:54
L4	7	visual near3 representation near3 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 11:57
L5	1	("2018/0063629").URPN.	USPAT	OR	OFF	2018/09/15 12:18
L6	37	visual near8 representation near8 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:18
L7	30	6 not 4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:18
L8	0	image near4 "of" near4 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) near6 display$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:20
L9	995	image near4 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) near6 display$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:20
L10	13708	(visual near3 representation).clm.	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:22
L11	77	1 2	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:22
L12	2	10 and 11	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:22
L13	536	image near3 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) near3 display$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:26

L14	97	13 and (cellphone (cell adj phone))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:27
L15	25	display$4 adj image adj (headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:28
L16	2	display$4 adj (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) adj image	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:30
L17	41	display$4 adj3 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) adj3 image	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:30
L18	0	image adj3 "of" adj3 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:31
L19	153	(headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) adj image	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:31
L20	0	visual near3 representaion near3 device	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:33
L21	1	visual near3 representaion	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
L22	85382	visual near3 representation	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
L23	8181	visual near3 representation near3 device	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
L24	231848	(headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) \	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
L25	231848	(headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
L26	696	23 and 25	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:35
L27	695	26 and (display screen)	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:35
L28	5645	visual near representation near2 device	US-PGPUB; USPAT;	OR	ON	2018/09/15 12:36

			USOCR			
L29	399	25 and 28	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:36
L30	398	29 and (display screen)	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:36
L31	361	displaying near3 battery near3 level	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:31
L32	27	31 and (cellphone (cell adj phone))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:31
L33	36	updat$4 near4 screen near4 after near4 purchas$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:36
L34	0	33 and (cellphone (cell adj phone))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:36
L35	38	updat$4 near6 screen near6 after near6 purchas$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:37
L36	2	35 not 33	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:37
L37	11	updat$4 near6 screen near6 complet$4 near6 purchas$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:38

9/15/2018 1:40:44 PM
C:\Users\aetesam\Desktop\East search history\15350020.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15350020	STEINER, MARTIN
	Examiner	Art Unit
	AMIR ETESAM	2655

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
H04R 1/1016	3/4/2018	AE

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* 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
East search performed. Search history is attached.	3/4/2018	AE
East search updated. Search history is attached.	9/15/2018	AE

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15350020	STEINER, MARTIN
	Examiner	**Art Unit**
	AMIR ETESAM	2655

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	03/04/2018	09/15/2018							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	-							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	✓							
	11	✓	✓							
	12	✓	✓							
	13	✓	✓							
	14	✓	✓							
	15	✓	✓							
	16	✓	✓							
	17	✓	✓							

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.
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA	3412

133690 7590 04/17/2019

Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

EXAMINER
ETESAM, AMIR HOSSEIN

ART UNIT	PAPER NUMBER
2655	

NOTIFICATION DATE	DELIVERY MODE
04/17/2019	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):

USPTO@dockettrak.com
docketing@goodhue.com
eofficeaction@appcoll.com

Notice of Abandonment	Application No.	Applicant(s)
	15/350,020	Steiner, Martin
	Examiner	Art Unit
	AMIR H ETESAM	2655

-- 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 19 September 2018.
   (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 _____, 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 37CFR 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:

_____

/AMIR H ETESAM/
Primary Examiner, Art Unit 2655

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.

PTO/AIA/31 (03-14)
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.

NOTICE OF APPEAL FROM THE EXAMINER TO THE PATENT TRIAL AND APPEAL BOARD

Docket Number (Optional): BRAGI GmbH-P0075USA

I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, on Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on May 20, 2019.

Signature /JOHN D. GOODHUE/

Typed or printed name JOHN D. GOODHUE

In re Application of: STEINER, Martin

Application Number	Filed
15/350,020	2016-11-12

For: Method and apparatus for interfacing with wireless earpieces

Art Unit	Examiner
2655	ETESAM, Amir Hossein

Applicant hereby **appeals** to the Patent Trial and Appeal Board from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1)) $ _____

☑ Applicant asserts small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by 50%, and the resulting fee is: $ 400

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Therefore, the fee shown above is reduced by 75%, and the resulting fee is: $ _____
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 506801.

☑ Payment made via EFS-Web.

☐ A petition for an extension of time under 37 CFR 1.136(a) (PTO/AIA/22 or equivalent) is enclosed.
For extensions of time in reexamination proceedings, see 37 CFR 1.550.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant

☑ attorney or agent of record
Registration number 47,603

☐ attorney or agent acting under 37 CFR 1.34
Registration number _____

Signature /JOHN D. GOODHUE/

Typed or printed name JOHN D. GOODHUE

Telephone Number 515-218-7888

Date May 20, 2019

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 41.20(b)(1) and 41.31. 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 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.

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:	15350020
Filing Date:	12-Nov-2016
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Attorney Docket Number:	BRAGI GmbH-P0075USA

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
PET. REVIVE ABANDON APP, DELAY PYMT-RESP	2453	1	1000	1000
NOTICE OF APPEAL	2401	1	400	400
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1400**

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date May 20, 2019

In re Application of Martin Steiner

Application No. 15350020

Filed: 12-Nov-2016

Attorney Docket No. BRAGI GmbH-P0

DECISION ON PETITION

UNDER CFR 1.137(a)

This is an electronic decision on the petition under 37 CFR 1.137(a), May 20, 2019 , to revive the above-identified application.

The petition is GRANTED.

The above-identified application became abandoned for failure to reply in a timely manner to the outstanding final Office action. The date of abandonment is the day after the last day of the period set for reply in the Office action plus any applicable extensions of time properly requested.

The electronic petition satisfies the conditions for revival pursuant to the provisions of 37 CFR 1.137(a) in that (1) the reply in the form of a Notice of Appeal, and the appeal fee required by 37 CFR 41.20(b)(1); (2) the petition fee as set forth in 37 CFR 1.17 (m); and (3) the required statement of unintentional delay have been received. Accordingly, the Notice of Appeal is accepted as having been unintentionally delayed.

The statement of unintentional delay is being treated as having been made as the result of a reasonable inquiry into the facts and circumstances of such delay and by a person having firsthand or direct knowledge of the facts and circumstances of the delay at issue. See 37 CFR 10.18(b) and Changes to Patent Practice and Procedure; Final Rule Notice, 62 Fed. Reg. 53131, 53178 (October 10, 1997), 1203 Off. Gaz. Pat. Office 63, 103 (October 21, 1997). In the event that such an inquiry has not been made, petitioner must make such an inquiry. If such inquiry results in the discovery that it is not correct that the entire delay in filing the required reply from the due date for the reply until the filing of a grantable petition pursuant to 37 CFR 1.137(a) was unintentional, petitioner must notify the Office.

The two-month period for filing an appeal brief under 37 CFR 41.37(a)(1), accompanied by the fee required by 37 CFR 41.20(b)(2) runs from the date of this decision.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being directed to the Technology Center.

Office of Petitions

Electronic Acknowledgement Receipt

EFS ID:	36059640
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Filer Authorized By:	John Darrell Goodhue
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	20-MAY-2019
Filing Date:	12-NOV-2016
Time Stamp:	15:29:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1400
RAM confirmation Number	052119INTEFSW00001990506801
Deposit Account	506801
Authorized User	Ashlyn Nguyen

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

37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition automatically granted by EFS	petition-request.pdf	33663 d9f51a28154ad4ccb17d7bef69a79d59f37d1d2c	no	2
Warnings:					
Information:					
2	Notice of Appeal Filed	BRAGIGmbH-P0075USA_15350020_FILED-NOAP.pdf	237976 371b227f59230dfc37354b29aa533684ee3a451e	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32274 ae93ed63fbb60f0e1770571c0c7782cad76ca466	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	303913		

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.

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web	PTO/SB/64 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)**
Application Number	15350020
Filing Date	12-Nov-2016
First Named Inventor	Martin Steiner
Attorney Docket Number	BRAGI GmbH-P0075USA
Title	Method and apparatus for interfacing with wireless earpieces

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

Petition Fee

- (◉) Small Entity
- ( ) Micro Entity
- ( ) Regular Undiscounted

2. Reply and/or fee

( ) I certify, in accordance with 37 CFR 1.4(d)(4) that the amendment and response have already been filed in the above-identified application on

( ) Amendment and response are attached

RCE request,submission, and fee.

( ) I certify, in accordance with 37 CFR 1.4(d)(4) that the RCE Request, Submission, and Fee have already been filed in the above-identified application on

( ) RCE Request, Submission, and Fee are attached

Notice of Appeal

( ) I certify, in accordance with 37 CFR 1.4(d)(4) that the Notice of Appeal and Fee have already been filed in the above-identified application on

◉ Notice of Appeal and Fee are attached

3. Terminal Disclaimer is not required, since the Electronic Petition format is not support for Design applications and applications filed before June 8, 1995. Please file using regular petition format for review by the Office of Petitions.

☒ 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.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

○ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application.

◉ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity.

○ A sole inventor

○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

○ A joint inventor; all of whom are signing this e-petition

Signature	/JOHN D. GOODHUE/
Name	JOHN D. GOODHUE
Registration Number	47603

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	Method and apparatus for interfacing with wireless earpieces

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 15/350,020 filed on 2016-11-12.

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: Martin Steiner Date (Optional) :

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.

Electronic Acknowledgement Receipt

EFS ID:	36573191
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Filer Authorized By:	John Darrell Goodhue
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	12-JUL-2019
Filing Date:	12-NOV-2016
Time Stamp:	16:57:34
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	Oath or Declaration filed	STEINER_BRAGIGmbH-P0075USA_15350020_FILED-DEC.pdf	138145 87d4c14596b043e21b5740bf2671692be7a3919a	no	1

Warnings:

Information:	
Total Files Size (in bytes):	138145

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
BEFORE THE PATENT TRIAL AND APPEAL BOARD

IN RE:	Steiner	)	
		)	Appeal No._____
SERIAL NO:	15/350,020	)	
		)	
FOR: Method and apparatus for interfacing with wireless earpieces		)	
		)	
FILED:	2016-11-12	)	**BRIEF ON APPEAL**
		)	
GROUP ART UNIT:	2655	)	
		)	
ATTORNEY DKT. NO.:	BRAGI GmbH-P0075USA	)	
		)	
CONF. NO.:	3412	)	

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Kindly enter the following Appeal Brief.

TABLE OF CONTENTS

I. REAL PARTY IN INTEREST 4

II. RELATED APPEALS AND INTERFERENCES 5

III. STATUS OF CLAIMS 6

IV. STATUS OF AMENDMENTS 7

V. SUMMARY OF CLAIMED SUBJECT MATTER 8

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL 11

VII. ARGUMENT 12

1. In regards to claims 1 and 14, Boesen in view of Georges does not teach a visual representation of the at least one wireless earpiece, therefore the rejection should be reversed. 14

2. In regards to claim 1, Boesen in view of Georges does not teach the visual representation indicative of a function or property of the at least one wireless earpiece, therefore the rejection should be reversed. 21

3. In regards to claims 1 and 14, one ordinarily skilled in the art would not combine Boesen and Georges, therefore the rejections should be reversed. 25

1. In regards to claim 4, Boesen in view of Georges and Morris does not teach wherein the physical activities are selected form a set consisting of running, biking and swimming, therefore the rejection should be reversed. 28

1. In regards to claim 15, Boesen in view of Georges and Official Notice does not teach updating the screen displays on the display of the computing device using the data received from the one or more wireless ear pieces, therefore the rejection should be reversed. 31

2. In regards to claim 15, Boesen in view of Georges does not teach a visual representation of the at least one wireless earpiece, therefore the rejection should be reversed. 35

3. In regards to claim 15, one of ordinary skill would not combine Boesen with Georges, therefore the rejection should be reversed. 36

4. In regards to claim 6, Boesen in view of Georges does not teach wherein the visual representation includes lighting of the at least one wireless ear piece, therefore the rejection should be reversed. 37

5. In regards to claim 7, Boesen in view of Georges does not teach wherein the lighting of the at least one wireless earpiece is associated with the function or property of the at least one wireless earpiece, therefore the rejection should be reversed. 42

6. In regards to claim 8, Boesen in view of Georges does not teach wherein the property associated with the lighting of the visual representation of the at least one

wireless earpiece is remaining battery life, therefore the rejection should be reversed. 46
VIII. CONCLUSION 53
IX. APPENDIX – CLAIMS 54
X. EVIDENCE APPENDIX 58
XI. RELATED PROCEEDING APPENDIX 59

I. REAL PARTY IN INTEREST

The real party in interest for this application is BRAGI GmbH, the Assignee of record for this application.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF CLAIMS

Claims 1-4 and 6-17 are pending. Claims 1-4 and 6-17 are rejected. The rejections to claims 1-4 and 6-17 are appealed.

IV. STATUS OF AMENDMENTS

No amendments have been made since the May 14, 2018 response to non-final rejection. The claims as present in this current appeal are in the same condition as presented in the amendments made on May 14, 2018.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed towards a system comprising: at least one wireless ear piece 12A (FIG. 1; Specification page 4, line 4) comprising an ear piece housing 14A (FIG. 2; Specification page 4, lines 9-10) and a wireless transceiver 35 disposed within the ear piece housing (FIG. 3; Specification page 5, lines 15-16); a software application (Specification page 6, lines 16-17) for executing on a computing device 4 (FIG. 1; Specification page 4, lines 5-6) having a display 6 associated therewith (FIG. 1; Specification page 4, lines 5-6); wherein the software application is configured to display one or more screen displays 100 on a display of the computing device (FIG. 4; Specification page 6, lines 16-18); wherein the software application provides a user interface 100 for use by a user of the at least one wireless ear piece 102 to interact with the at least one wireless ear piece 102 (FIG. 4; Specification page 2, lines 16-17); and wherein the user interface is configured to display a visual representation of the at least one wireless ear piece 102 on at least one of the one or more screen displays 100 (FIG. 4; Specification page 6, lines 17-18), the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device (Specification page 8, lines 16-17).

Dependent claim 2 is directed towards the system of claim 1 wherein the at least one wireless earpiece comprises a physiological sensor (Specification page 5, line 2). Dependent claim 3 is directed towards the system of claim 2 wherein the software application provides for tracking one or more physical activities using the physiological sensor (Specification page 9, lines 7-10). Dependent claim 4 is directed towards the system of claim 3 wherein the physical activities 140 are selected from a set consisting of running, biking, and swimming (FIG. 7; Specification page 9, lines 5-6). Dependent

claim 6 is directed towards the system of claim 1 wherein the representation visual representation includes lighting of the at least one wireless ear piece (Specification page 6, lines 19-20). Dependent claim 7 is directed towards the system of claim 6 wherein the lighting is associated with the function or property of the at least one wireless ear piece (Specification page 6, lines 19-28). Dependent claim 8 is directed towards the system of claim 7 wherein the property is remaining battery life 124 (FIG. 6; Specification page 8, lines 19-20).

Independent claim 14 is directed towards a method for controlling a set of wireless ear pieces, the method comprising: providing a software application for controlling the set of wireless ear pieces 10 (FIG. 1; Specification page 2, line 19) the software application adapted to execute on a computing device 4 (FIG. 1; Specification page 4, lines 5-6); using the software application on the computing device 4 to display one or more screen displays 100 on a display 6 of the computing device (FIG. 1; FIG. 4; Specification page 6, lines 16-17) and to receive input from the user into the mobile device (Specification page 2, lines 16-17), wherein at least one of the one or more screen displays 100 display a visual representation of the set of wireless ear pieces 102 104 (FIG. 4; Specification page 2, lines 16-17); communicating data associated with the input between the software application and at least one of the wireless ear pieces (Specification page 4, lines 22-23); performing an action using at least one of the wireless ear pieces in response to receiving the data (Specification page 2, lines 24-25).

Independent claim 15 is directed towards a method for communicating data from a set of wireless ear pieces, the method comprising: providing a software application for communicating with the set of wireless ear pieces 10 (FIG. 1; Specification page 2, lines

26-27), the software application adapted to execute on a computing device 4 (FIG. 1; Specification page 6, lines 16-17); using the software application on the computing device to display one or more screen displays 100 on a display 6 of the computing device (FIG 1; FIG. 4; Specification page 2 line 28 through page 3 line 1), wherein at least one of the one or more screen displays 100 display a visual representation of the set of wireless ear pieces 102 104 (FIG. 4; Specification page 6, lines 17-18); communicating data received from one or more of the wireless ear pieces to the computing device (Specification page 3, lines 1-2); and updating the screen displays on the display of the computing device using the data (Specification page 3, lines 2-3).

Dependent 16 is directed towards the method of claim 15 wherein the data comprises physiological data (Specification page 9, lines 7-10). Dependent claim 17 is directed towards the method of claim 16 wherein the physiological data is heart rate data (Specification page 9, lines 7-10).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 1, 12, 13, 14 are unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906).

B. Whether claims 2-4, 16, 17 are unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906) and Morris (US 2008/0154098).

C. Whether claims 6-8, 15 are unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906).

D. Whether claim 9 is unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906) and Lee (US 2014/0189600).

E. Whether claims 10, 11 are unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906) and Goldstein (US 2008/0031475).

VII. ARGUMENT

The claimed invention relates to interfacing with wireless ear pieces wherein the at least one wireless ear piece is visually represented on the display of the computing device. The rejections serve to eviscerate the invention character and nature of the invention by parsing the claim language and comparing it to the prior art refences without fully appreciating the fundamental differences. For example, with respect to independent claim 15 and dependent claims 6-8 the Examiner admits that the cited references do not teach key limitations or the entire dependent claims themselves. The Examiner attempts to overcome these deficiencies by using Official Notice. However, the Examiner did not provide any evidentiary support describing Applicant's claim limitations that support the Official Notice. Instead the Examiner relies on vague portions of the evidence discussing unrelated inventions to argue that Applicant's claim limitations are well known.

In addition, the Examiner further mischaracterizes Applicant's claim limitations, parsing out specific language and applying the specific language to the prior art instead of interpreting the claim as a whole. For example, the Examiner characterizes Applicant's requirement for a visual representation of at least one wireless earpiece displayed on the display of the computing device devices as a visual representation of joystick on the display of the computing device. Applicant's claim language clearly requires at least one wireless earpiece and a visual representation of the at least one wireless earpiece displayed on the display of the computing device. The joystick cited by the Examiner is a display element only on the computer wherein there is no separate joystick communicating with the device.

Furthermore, the Examiner mischaracterizes Applicant's claim language wherein the visual representation is indicative of a function or property of the at least one wireless

ear piece communicated from the at least one wireless ear piece to the computing device. The Examiner relies on vague disclosures in the prior art references, taking them out of context without proper consideration of fundamental differences in the references. In short, Applicant's claimed invention is non-obvious over the cited prior art.

A. Whether claims 1, 12, 13, 14 are <u>not</u> unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906).

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. MPEP § 2142. In order to establish a *prima facie* case for obviousness, the Examiner must first (1) determine the scope and content of the prior art, (2) ascertain the differences between the claimed invention and the prior art, and (3) resolve the level of ordinary skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Ascertaining the differences between the claimed invention and the prior art requires interpreting the claim language of the invention and considering the invention and prior art as a whole. MPEP § 2141. Second, in light of the *Graham* fact findings, the Examiner must provide a suitable rationale to support a finding of obviousness. MPEP § 2141. The Examiner contends that Boesen in view of Georges teaches all the limitations of Applicant's independent claims 1 and 14. Final Office Action of September 19, 2018, pp. 3-4. However, Boesen in view of Georges does not teach all the limitations of Applicant's claim language. Therefore, the claim rejections should be reversed and the claims allowed. Claims 12 and 13 depend from claim 1. Claim 1 is believed to be

allowable. Applicant requests that the rejections of claims 12 and 13 under 35 U.S.C. § 103 be reversed and the claims allowed.

1. **In regards to claims 1 and 14, Boesen in view of Georges does not teach a visual representation of the at least one wireless earpiece, therefore the rejection should be reversed.**

Independent claim 1 requires in part "at least one wireless earpiece" and "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one or more of the screen display" of the computing device. The Examiner admits that Boesen does not teach that the "user interface is configured to display a visual representation of the at least one ear piece on at least one of the one or more screen displays". Final Office Action of September 19, 2018, p. 3.

The Examiner alleges that "Georges discloses a user interface for an electronic controllable device wherein the interface is configured to display a visual representation of the device on at least a screen display, the visual representation indicative of a function or property of the device (Fig 4, visual representation of the joy stick with instructions to control a software as explained in column 8, lines 64-67 and column 9)." *Id.* at 4. Figure 4, column 8, lines 64-67, and column 9 are reproduced below for convenience.



Figure 4
Home Screen

In accordance with preferred embodiments, a Home mode is provided. Home mode is a default mode that can be automatically entered when Player 10 is turned on. As the example of FIG. 4 shows, Home mode preferably displays an animated Screen prompting the user to select a mode by pressing a direct access mode key 16 or entering help mode by pressing the joystick (FIG. 4 depicts the moment of the animation that prompts for the Radio direct access key). In preferred embodiments, a user can define the graphics displayed on the display 20 using, for example, a companion PC software program (discussed in greater detail below) to select graphics (animated or otherwise) to be automatically substituted (if available) for the default graphics during the different modes of operation. In this example of custom screens, data files corresponding to the customized screen graphics for each section of a song, and/or each mode of operation, preferably can be stored as part of the Song data structure (discussed below) in a storage location of a removable memory means such as the Flash memory in a Smart Media Card (SMC). In preferred embodiments, in Home mode the screen scrolls through various modes that are available in the system, Such as modes associated with mode/direct access keys 16 (see, again, FIG. 1). Additionally, Player 10 preferably is configured to return to Home mode from the main menu of any other mode (i.e., from the user pressing the Stop key). When the joystick is pressed in Home mode, preferably a help Screen is displayed prompting the user to press any key for help. An example help screen is shown in FIG. 5. In accordance with this example, when a key is pressed while Player 10 is displaying this screen, helpful text relating to that key is displayed. Play can be used when in Home mode to enter a particularly important visual interface mode referred to herein as the I-Way mode (discussed in greater detail below). As shown in the example of FIG. 6, the preferably LCD screen

> can display a message regarding other possible modes. Such as 'e.DJ Style', in the status line and propose a selection of music Styles/SubStyles (e.g.: Techno Mix, House, Garage, etc.). At this type of Screen, to select a desired Style, a user. Emphasis added.

However, Applicant's claim language requires a visual representation of the at least one wireless earpiece not the computing device. The system of claim one requires both at least one wireless earpiece and a computing device wherein the computing devices user interface is "configured to display a visual representation of the at least one wireless earpiece on at least one of the one or more screen displays". Examples of embodiments of Applicant's claim language is in FIG. 5 and FIG. 7, reproduced below.

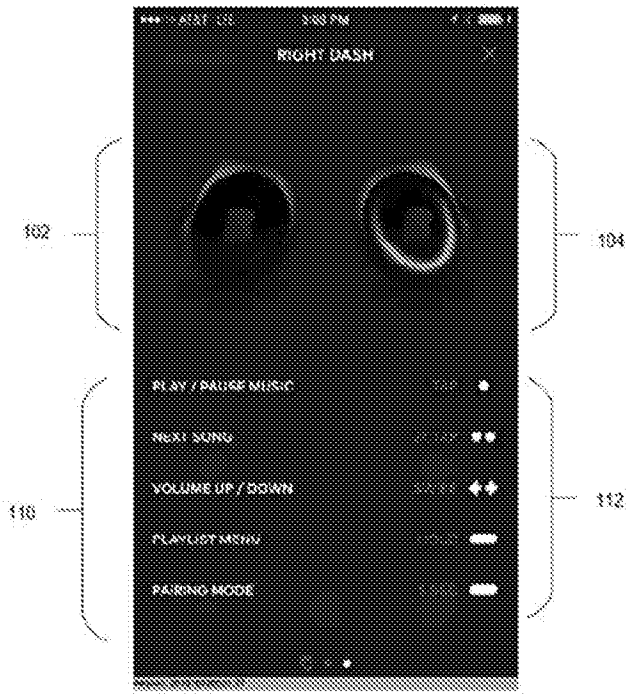


FIG. 5

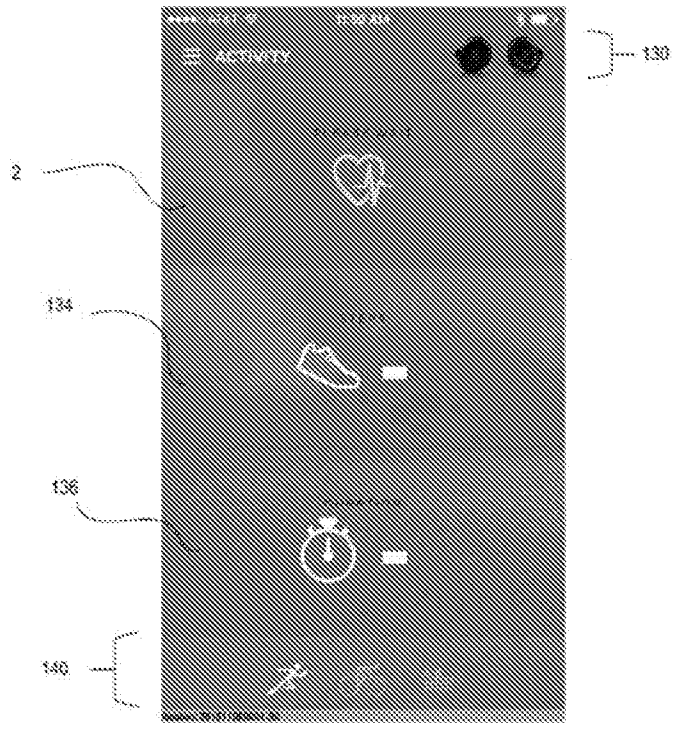


FIG. 7

First the graphical interface taught in Georges is not a visual representation of at least one wireless earpiece as required by Applicant's claim language and or shown above in FIGs 5 and 7, examples of the claimed inventions embodiments. Applicant's specification further describes one embodiment of the claim limitation. "FIG. 5 illustrates another example of a screen display associated with a software application or mobile app executing on a processor of a mobile device. The screen display illustrates both a left ear piece 102 and a right ear piece 104. Note that as shown in FIG. 5, the corona of the right earpiece 104 is lit. The screen display includes a caption or label indicating the right ear piece". Specification page 7, lines 14-18. It is submitted that the visual representation of FIG. 4 of Georges (reproduced below) does not teach the visual representation required by Applicant's claim language, reproduced below.



Figure 4
Home Screen

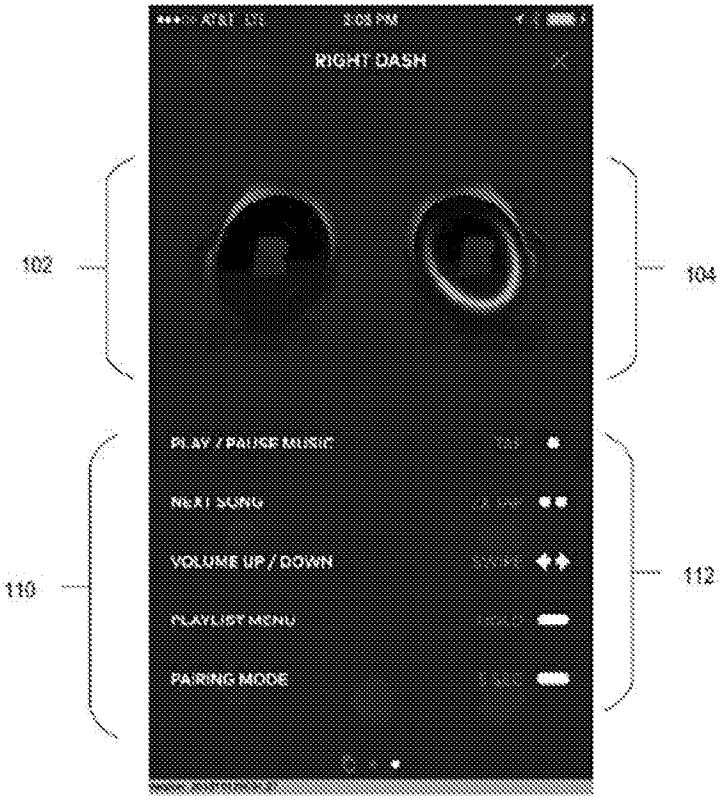


FIG. 5

Second the graphical representation of a joystick taught in Georges is not a visual representation of a joystick separate from the player in the system as required by Applicant's claim language. The joystick in Georges is present on the player, allowing a user to control the graphical interface also on the player. Whereas Applicant's claim language requires a display on the computing device to show a visual representation of at least one wireless earpiece wherein the system also requires at least one wireless earpiece separate from the computing device.

The Specification explains why this is advantageous. "Thus, a user using the mobile app may quickly and easily make the association between the right ear piece which they are wearing and what is shown on the screen display. Under the representation of the ear pieces 102, 104 which may be a photo or photo-realistic representation of the ear pieces is information relating to the gestures or controls associated with the ear piece." Specification page 7, lines 19-23. Emphasis added.

Georges teaches "Generally, the goal of the user interface is to allow intuitive, simple operation of the system and interaction with various parameters with a minimum number of buttons, while at the same time preserving the power of the system. FIG. 1 illustrates an exemplary system configuration for Player 10. Display 20 provides visual information to the user, as will hereinafter be described. Various mode keys 16 provide buttons that enable a user to directly access, or initiation, modes of operation of the system as will be hereinafter described. Joystick 15 is provided to enable the user to select or interact with various musical or system parameters or the like, as will be hereinafter described." Col. 8, lines 18-29. Georges does not teach a visual representation of the joystick wherein the visual representation is of a joystick

separate from the display device. Furthermore, Georges does not teach wherein the visual representation is at least one wireless earpiece, wherein the visual representation is of an earpiece contained in the system separate from the computing device as required by the claim language.

One ordinarily skilled in the art would not modify the invention in Boesen with the joystick display in Georges to teach "a visual representation of the at least one earpiece" as required by Applicant's claim language. Therefore, Applicant requests that the rejection of claim 1 under 35 U.S.C. § 103 be reversed and the claim allowed. In addition, since claims 12 and 13 depend from claim 1 and claim 1 is believed to be allowable, Applicant requests that the rejections of claims 12 and 13 under 35 U.S.C. § 103 be reversed and the claims allowed.

Independent claim 14 requires "a set of wireless earpieces" and "wherein at least one of the one or more screen displays display a visual representation of the set of wireless earpieces". The Examiner alleges that Boesen in view of Georges teaches "a set of wireless earpieces" and "wherein at least one of the one or more screen displays display a visual representation of the set of wireless earpieces" as claimed. Final Office Action of September 19, 2018, p. 3-4. However, it is respectfully submitted that Boesen in view of Georges does not teach "a set of wireless earpieces" and "wherein at least one of the one or more screen displays display a visual representation of the set of wireless earpieces" as claimed and argued above with respect to claim 1. Therefore, the rejection of claim 14 under 35 U.S.C. § 103 should be reversed and the claim allowed.

2. **In regards to claim 1, Boesen in view of Georges does not teach the visual representation indicative of a function or property of the at least one wireless earpiece, therefore the rejection should be reversed.**

Independent claim 1 requires in part "the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device." The Examiner admits that Boesen does not teach "the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device" as claimed. Final Office Action of September 19, 2019 pp. 3-4.

The Examiner alleges that "Georges discloses a user interface for an electronic controllable device wherein the interface is configured to display a visual representation of the device on at least a screen display, the visual representation indicative of a function or property of the device (Fig 4, visual representation of the joy stick with instructions to control a software as explained in column 8, lines 64-67 and column 9)." *Id.* at 4. Figure 4, column 8, lines 64-67, and column 9 are reproduced below for convenience.



Figure 4
Home Screen

In accordance with preferred embodiments, a Home mode is provided. Home mode is a default mode that can be automatically entered when Player 10 is turned on. As the example of FIG. 4 shows, Home mode preferably displays an animated Screen prompting the user to select a mode by pressing a direct access mode key 16 or entering help mode by pressing the joystick (FIG. 4 depicts the moment of the animation that prompts for the Radio direct access key). In preferred embodiments, a user can define the graphics displayed on the display 20 using, for example, a companion PC software program (discussed in greater detail below) to select graphics (animated or otherwise) to be automatically substituted (if available) for the default graphics during the different modes of operation. In this example of custom screens, data files corresponding to the customized screen graphics for each section of a song, and/or each mode of operation, preferably can be stored as part of the Song data structure (discussed below) in a storage location of a removable memory means such as the Flash memory in a Smart Media Card (SMC). In preferred embodiments, in Home mode the screen scrolls through various modes that are available in the system, Such as modes associated with mode/direct access keys 16 (see, again, FIG. 1). Additionally, Player 10 preferably is configured to return to Home mode from the main menu of any other mode (i.e., from the user pressing the Stop key). When the joystick is pressed in Home mode, preferably a help Screen is displayed prompting the user to press any key for help. An example help screen is shown in FIG. 5. In accordance with this example, when a key is pressed while Player 10 is displaying this screen, helpful text relating to that key is displayed. Play can be used when in Home mode to enter a particularly important visual interface mode referred to herein as the I-Way mode (discussed in greater detail below). As shown in the example of FIG. 6, the preferably LCD screen

> can display a message regarding other possible modes. Such as "e.DJ Style', in the status line and propose a selection of music Styles/SubStyles (e.g.: Techno Mix, House, Garage, etc.). At this type of Screen, to select a desired Style, a user. Emphasis added.

First, as argued above in section VII(A)(1), Georges does not teach a visual representation of the at least one wireless earpiece.

Second, Georges does not teach "the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device." FIG. 4, does not illustrate a visual representation of an ear piece, nor does it show wherein the visual representation is indicative or a property or function of the at least one wireless earpiece as required by Applicants claim language. Column 8, lines 64-67 are silent regarding the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device as claimed. Column 8, lines 64-67 and column 9 teach using the joystick on the device to control aspects of the graphical interface on the same device to create music. However, there is no communication from a separate joystick or player, not physically connected to the graphical interface regarding a function or property associated with the visual representation of the joystick. Instead Georges teaches "a handheld form factor, and a graphical display is provided to display status information, graphical representations of musical lanes or components". Abstract.

Applicants specification describing one embodiment of the claim limitation states:

> FIG. 6 illustrates another example of a screen display associated with a software application or mobile app executing on a processor of a mobile device. In this screen display a left earpiece 120 and a right earpiece 122

> are shown. Underneath the left ear piece 120 is an "L" indicating that this is the left ear piece. Underneath the "L" is textural information in the form of a numerical representation 124 of remaining battery life for the left ear piece, in this instance, "48 %." Underneath the right ear piece is an "R" indicating that this is the right ear piece. Underneath the "R" is textual information in the form of a numerical representation 126 of remaining battery life for the right ear piece, in this instance, "48 %." Although the battery charge level or remaining battery life is the same for both the left ear piece and the right ear piece in this example, it is to be understood that the left ear piece and the right ear piece may be different and that charge levels may be independently determined for each ear piece. Specification page 8, lines 13-23.

It is respectfully submitted that Boesen in view of Georges does not teach "the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless ear piece to the computing device" as claimed. Georges teaches using the joystick on the display to control aspects of the graphical interface to create music. Furthermore, the system taught in Georges comprises one device. Applicant's claim language requires 2 devices, the computing device and the at least one wireless earpiece.

One ordinarily skilled in the art would not modify the invention in Boesen with Georges to include "the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless ear piece to the computing device. Therefore, it is respectfully submitted that the rejection of claim 1 under 35 U.S.C. § 103 should be reversed and the claim allowed. In addition, since claims 12 and 13 depend from claim 1 and claim 1 is believed to be allowable, the rejections of claims 12 and 13 under 35 U.S.C. § 103 should be reversed and the claims allowed.

3. In regards to claims 1 and 14, one ordinarily skilled in the art would not combine Boesen and Georges, therefore the rejections should be reversed.

It would not be obvious to one skilled in the art to incorporate Georges teaching into Boesen's teaching because the combination ignores the invention as a whole. In determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.,* 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983).

The Examiner alleges that one ordinarily skilled in the art would combine Boesen with Georges. "Since both Boesen and Georges disclose a controllable unit with a display system, it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize using a visual representation of the controllable device suggested by Georges in the teachings by Boesen to display the controllable hearing device. The motivation for this would have been facilitating the process of changing of settings for the user by exactly showing which buttons needs to be touched in order to perform a specific function." Final Office Action of September 19, 2018, p. 4.

Boesen is directed towards a wireless earpiece with "binaural and/or stereophonic sensing and reproduction of sound by sensing sounds within the external auditory canal of a user and/or reproducing sounds, such as, but not limited to, stereophonic sounds within both external auditory canals of a user." Paragraph 71. The invention provides a

device for "transmitting identifying information about an audio or video event and to initiate a purchase of an audio or video recording of the audio or video event." Paragraph 98.

Georges is directed towards "stems and methods for creating, modifying, interacting with and playing music, and more particularly to systems and methods employing a top-down and interactive auto-composition process, where the systems/methods provide the user with a musical composition that may be modified and interacted with and played and/or stored (for later play) in order to create music that is desired by the particular user." Column 1, lines 9-16. Georges is silent regarding wireless earpieces. Georges teaches "This output signal is then preferably fed to a digital to analog converter (DAC), from which is preferably output an analog audio signal suitable for use with headphones, etc." Col. 48, lines 51-54.

It is respectfully submitted that the motivation to combine given by the Examiner does not make sense. Boesen is directed towards communicating between the earpiece and different devices such as a phone, wherein the device is used to purchase an audio or video recording. Georges teaches away from using a device for purchasing audio or video recordings of the audio or video event. One would not purchase a musical composition they created to be stored on the same device. Furthermore, the display in Georges, does not display an image of a wireless earpiece. Georges does not even mention the use of wireless earpieces in communication with the device or joystick, or the joystick controlling a remote device separate from the player. Instead Georges teaches the joystick device/player, wherein the device has a graphical interface wherein the user uses the joystick on the device to control the graphical interface.

Therefore, it would not be obvious to one ordinarily skilled in the art to modify the teaching in Boesen with the teaching in Georges. Applicant respectfully requests the rejection of claims 1 and 14 under 35 U.S.C. § 103 be reversed and the claims allowed. In addition, since claims 12 and 13 depend from claim 1 and claim 1 is believed to be allowable, Applicant requests that the rejections of claims 12 and 13 be reversed and the claims allowed.

B. Whether claims 2-4, 16, 17 are <u>not</u> unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906) and Morris (US 2008/0154098).

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. MPEP § 2142. In order to establish a *prima facie* case for obviousness, the Examiner must first (1) determine the scope and content of the prior art, (2) ascertain the differences between the claimed invention and the prior art, and (3) resolve the level of ordinary skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Ascertaining the differences between the claimed invention and the prior art requires interpreting the claim language of the invention and considering the invention and prior art as a whole. MPEP § 2141. Second, in light of the *Graham* fact findings, the Examiner must provide a suitable rationale to support a finding of obviousness. MPEP § 2141.

Claims 2-4 depend on claim 1. Claim 1 recites in part "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays". Morris does not teach wherein the user interface is configured to display a visual representation of the at least one wireless

ear piece on the one or more screen displays as claimed. Morris specifically is directed towards monitoring physiological, activity and environmental data. Abstract. Therefore, the addition of Morris does not remedy the deficiencies of Boesen and Georges with respect to claim 1. As claims 2-4 depend on claim 1, the rejections of claims 2-4 under 35 U.S.C. § 103 should be reversed and the claims allowed.

Claims 16-17 depend on claim 15. Claim 15 recites in part wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces. Morris does not teach wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces as claimed. Morris specifically is directed towards monitoring physiological, activity and environmental data. Abstract. Therefore, the addition of Morris does not remedy the deficiencies of Boesen and Georges with respect to claim 15. As claims 16-17 depend on claim 15, the rejections of claims 16-17 under 35 U.S.C. § 103 should be reversed and the claims allowed.

1. **In regards to claim 4, Boesen in view of Georges and Morris does not teach wherein the physical activities are selected form a set consisting of running, biking and swimming, therefore the rejection should be reversed.**

Claim 4 is allowable for an independent reason. Claim 4 requires in part "wherein the physical activities are selected from a set consisting of running, biking and swimming". The Examiner admits that the combination of Boesen and Georges "does not disclose that the wireless earpiece comprise a physiological sensor and tracking a physiological

activity, such as running, through the sensor by the software application." Final Office Action of September 19, 2018, p. 4.

The Examiner alleges that "Morris discloses an earpiece in communication with a computing device comprising a physiological sensor that tracks a physiologic activity of the user through the sensor (Abstract discloses that 'The device includes a pulse oximeter unit to provide blood oxygenation level and beat-to-beat timing, a three-axis accelerometer to provide orientation and activity level' moreover, abstract discloses the device is to 'monitor physiological, activity and environmental data'. Also paragraph 0031 discloses tracking physiologic data and monitoring activity.')." *Id*. at 5.

It is respectfully submitted that Boesen in view of Georges and Morris does not teach "wherein the physical activities are selected from a set consisting of running, biking and swimming" as claimed. The transitional phrase "consisting of" excludes any element, step, or ingredient not specified in the claim. *In re Gray,* 53 F.2d 520, 11 USPQ 255 (CCPA 1931); *Ex parte Davis,* 80 USPQ 448, 450 (Bd. App. 1948) ("consisting of" defined as "closing the claim to the inclusion of materials other than those recited except for impurities ordinarily associated therewith").

Morris teach using sensors to monitor a user's overall activity. "[T]he earpiece is capable of monitoring the user to record physiological, activity and environmental information, and transmit or send such information to a mobile device worn by the user, for example via Bluetooth technology." Paragraph 28. "Essentially, the invention provides integration of the devices into a commonly used wearable platform to obtain pulse oximetry, heart rate, and temperature from one device to monitor for conditions such as:

medication adherence, glycemic shock, and heart rate variability." Paragraph 31. Morris is silent regarding tracking the type of activity or even a way of differentiating between types of activities.

Morris does not teach tracking a selected activity as required by Applicant's claim language. Applicant's specification describing the claim language states: "on the bottom of the screen display are three different icons or visual representations of different activities 140. The activities shown are running or jogging (left), biking (middle), and swimming (right). The selected activity as shown in FIG. 7 is running or jogging. Various information associated with this activity is also shown. This may include heart rate 132 as measured by one or more of the ear pieces such as through use of a pulse oximeter, steps 134, as measured by one or more of the ear pieces such as through use of an inertial sensor, and duration 136." Specification page 9, lines 4-10.

The Examiner further argues that "it would have been obvious to an ordinary skilled in the art that the sensors would be tracking the user in any activity of his or her choice which could include running." Final Office Action of September 19, 2018, p. 5. However, does not provide evidence of a software application capable of selecting an activity from a set of activities. Applicant submits that this would not be obvious to one ordinarily skilled in the art, the prior art is silent regarding the claim language.

It would not be obvious to one ordinarily skilled in the art to modify the teachings of Boesen and Georges with the teachings of Morris to include "wherein the physical activities are selected from a set consisting of running, biking and swimming" as required by Applicant's claim language. Therefore, Applicant respectfully requests that the rejection of claim 4 under 35 U.S.C. § 103 be reversed and the claim allowed.

1. **In regards to claim 15, Boesen in view of Georges and Official Notice does not teach updating the screen displays on the display of the computing device using the data received from the one or more wireless ear pieces, therefore the rejection should be reversed.**

Independent claim 15 requires in part "updating the screen displays on the display of the computing device using the data". The Examiner admits that the references are missing key claim limitations. The Examiner states "Boesen does not specifically disclose that the screen display is updated after receiving a command". Final Office Action of September 19, 2018, p. 6. Furthermore, Georges is silent regarding "updating the screen displays on the display of the computing device using the data" as claimed.

The Examiner attempts to overcome these deficiencies by using Official notice. The "Examiner takes official notice that updating a screen after 'confirming' a purchase in any electronic device is well known and widely used in the art and it would have been obvious that the screen would be updated once the user confirms a purchase via voice commands as no updates indicate that the command is not received or there is a problem with the execution of the command." Final Office Action of September 19, 2018, pp. 6-7.

With respect to Official Notice of claims 15, the MPEP states that "such rejections should be judiciously applied" (see MPEP § 2144.03). The MPEP goes on to mandate that "Official notice without documentary evidence to support an [E]xaminer's conclusion is permissible only in some circumstances" (see MPEP § 2144.03(A)). "It would not be appropriate for the [E]xaminer to take official notice of facts without citing a prior art

reference where the facts asserted to be well known are not capable of *instant and unquestionable* demonstration as being well-known" (see *Id.*, emphasis added). "For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must *always* be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21" (*Id.*, emphasis added).

In Applicant's Non-Final Office Action response filed May 14, 2018, Applicant argued that updating the screen displays on the display of the computing device using the data received from the one or more wireless ear pieces is not well known in the art and requested the Examiner supply a reference which suggests modifying the cited references to wherein the visual representation displayed on the computing device display is a visual representation that includes lighting of the at least one wireless ear piece as recited by claim 6. In the Final Office Action, the Examiner stated, "Regarding official notice for claim 15, as stated updating a screen after an electronic purchase is well known in the art and it is shown by references such as Ijichi (20080021577) in paragraph 0441." Final Office Action of September 19, 2018, p. 2.

Ijichi discloses

> "When the user presses the decision button RM**1**J of the remote control RM**2**, for example, in a state of the purchase completion notifying screen **140** being displayed on the display unit **118** by the display controlling unit **117**, the selecting unit **112** recognizes an instruction input at this time as a screen closing instruction to close the purchase completion notifying screen **140**, and notifies the display controlling unit **117** that the closing of the purchase completion notifying screen **140** is requested. The display controlling unit **117** thus closes the purchase completion notifying screen **140** and displays a selection screen **145** as shown in FIG. 40 (or a reproduction screen **146** as shown in FIG. 41) on the display unit **118**." Paragraph 440

"That is, while the purchasing process for purchasing the music data D**1** of the music being listened to on trial is performed, the reproducing unit **113** reproduces the music data D**1** as music data for trial listening, and therefore the display controlling unit **117** continues displaying the selection screen **130** (or the reproduction screen **132**) on the display unit **118**. When the purchase of the music data D**1** is completed, the display controlling unit **117** updates a part of the display contents of the selection screen **130** (or the reproduction screen **132**). Thus, when the reproduction of the music data D**1** (that is, the music data D**1** obtained by lifting the reproduction limitation on the music data for trial listening) is continued after the completion of the purchase of the music data D**1**, the display controlling unit **117** shows the selection screen **145** (or the reproduction screen **146**) having display contents partly updated to the user to allow the user to check the music data D**1** being reproduced by a music title **30**, an artist name **31**, and the like even after the purchase." Paragraph 441.

Furthermore, Paragraph 81, FIG 3 and FIG 30 describe the remote control device:

An operating unit **12** of the reproducing apparatus **10** in this case has a remote control RM**1** having the shape of a rectangular parallelepiped as shown in FIG. 3, for example. Arranged on a side of one end of a front surface of the remote control RM**1** are a toggle type power button RM**1**A for turning on/off power to the reproducing apparatus **10**, sound volume adjusting buttons RM**1**B for adjusting the sound volume of music being reproduced, and a reconstruction requesting button RM**1**C for requesting the reconstruction of a play list to be described later.

FIG.3

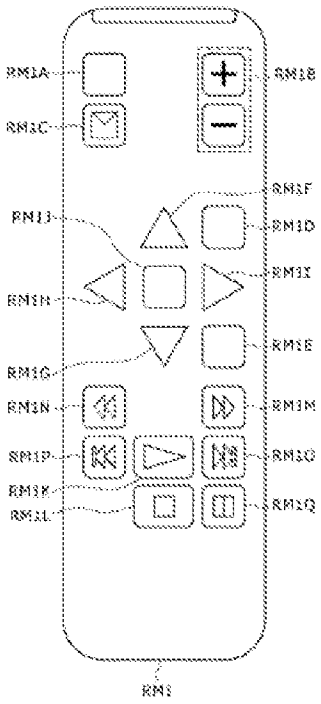
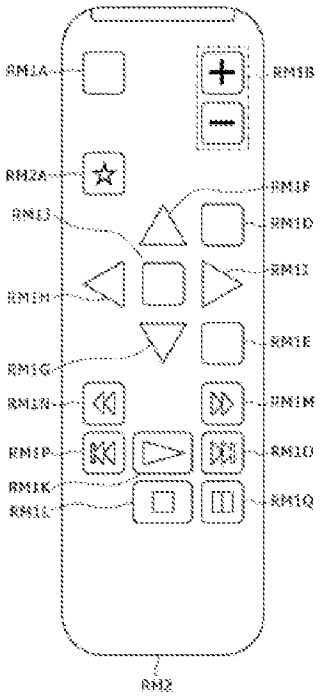


FIG.30



However, Applicant's claim language requires the display on the computing device be updated with *data received from the one or more wireless ear pieces,* not a remote control. Applicant's claim language states: "communicating data received from one or more of the wireless ear pieces to the computing device; and updating the screen displays on the display of the computing device using the data.

Applicant's claim invention does not involve purchasing items with a remote control, such as a remote control for a tv. It is not being disputed whether an item can be purchased using the remote control described above, wherein the screen display of the reproducing unit is updated following the purchase. However, it is submitted using a remote control to purchase an item and updated the display following the purchase is separate from "communicating data received from one or

more of the wireless ear pieces to the computing device; and updating the screen displays on the display of the computing device using the data" as required by Applicant's claim language.

The Examiner has provided no evidence regarding updating a screen with information received by a wireless earpiece to a separate computing device, wherein the screen of the computing device is updated with the data. The prior art cited by the Examiner discusses purchasing music using a remote, not a wireless earpiece.

Applicant respectfully argues that the updating the screen displays on the display of the computing device using the data as claimed by Applicant's claim 15 is not well known or widely used in the prior art. If updating the screen displays on the display of the computing device using the data from the at least one wireless ear piece as claimed is well known, then it should have been easy to find a reference that suggests modifying the cited references to wherein the representation visual representation includes lighting of the at least one wireless ear piece as recited in claim 15.

Therefore, it is respectfully submitted that updating a screen with information received by a wireless earpiece to a separate computing device, wherein the screen of the computing device is updated with the data is not well known and widely used in the art, otherwise the Examiner would have provided evidence of a wireless earpiece. Applicant respectfully requests the rejection of claim 15 under 35 U.S.C. § 103 be reversed and the claim allowed.

2. **In regards to claim 15, Boesen in view of Georges does not teach a visual representation of the at least one wireless earpiece, therefore the rejection should be reversed.**

Independent claim 15 requires in part "set of wireless ear pieces" and "wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces". The Examiner alleges that Boesen in view of Georges teaches "set of wireless ear pieces" and "wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces" as claimed. It is respectfully submitted that Boesen in view of Georges does not teach "set of wireless ear pieces" and "wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces" as claimed and argued in section VII(A)(1). Therefore, Applicant respectfully request the rejection of claim 15 under 35 U.S.C. § 103 be reversed and the claim allowed.

3. In regards to claim 15, one of ordinary skill would not combine Boesen with Georges, therefore the rejection should be reversed.

It would not be obvious to one ordinarily skilled in the art to modify the teaching in Boesen with the teaching in Georges. The Examiner alleges that one ordinarily skilled in the art would combine Boesen with Georges. "Since both Boesen and Georges disclose a controllable unit with a display system, it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize using a visual representation of the controllable device suggested by Georges in the teachings by Boesen to display the controllable hearing device. The motivation for this would have been facilitating the process of changing of settings for the user by exactly showing which

buttons needs to be touched in order to perform a specific function." Final Office Action of September 19, 2018, p. 4.

However, as argued above in section VII(A)(3) Georges teaches away from Boesen and one ordinarily skilled in the art would not combine Boesen with Georges. Therefore Applicant respectfully requests that the rejection of claim 15 under 35 U.S.C. § 103 be reversed and the claim allowed.

4. **In regards to claim 6, Boesen in view of Georges does not teach wherein the visual representation includes lighting of the at least one wireless ear piece, therefore the rejection should be reversed.**

Claim 6 is allowable for an independent reason. As argued above in section VII(A)(1), Boesen and Georges do not teach a visual representation of the at least one ear piece. Claim 6 requires "wherein the visual representation includes lighting of the at least one ear piece." The Examiner admits that the cited references do not teach the claim limitation and attempts to overcome this deficiency by using Official Notice.

The Examiner states "Regarding claims 6-8, Boesen and Georges disclose the limitations of claim 1. However, the combiantion does not specifically disclose battery level of the wireless earpiece on the display of the computing device, which is a lighting and visual representation of the activity level of the earpiece. Examiner takes official notice that displaying battery level of wirelessly connected devices to cell phones on the cell phone display unit for the user comfort is well known and widely used in the art and it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the displaying

battery life of earpiece on the cell phone screen for user comfort." Final Office Action of September 19, 2019, pp. 5-6.

With respect to Official Notice of claims 6-8, the MPEP states that "such rejections should be judiciously applied" (see MPEP § 2144.03). Applicant notes that contrary to the caution advised by the MPEP, in this case, the Office Action liberally applied Official Notice to claim for various conclusory reasons that are not supported by the record. The MPEP goes on to mandate that "Official notice without documentary evidence to support an [E]xaminer's conclusion is permissible only in some circumstances" (see MPEP § 2144.03(A)). "It would not be appropriate for the [E]xaminer to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of *instant and unquestionable* demonstration as being well-known" (see *Id.*, emphasis added). "For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must *always* be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21" (*Id.*, emphasis added).

The Examiner takes Official Notice that "that displaying battery level of wirelessly connected devices to cell phones on the cell phone display unit for the user comfort is well known and widely used in the art and it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the displaying battery life of earpiece on the cell phone screen for user comfort." Final Office Action of September 19, 2018, pp. 5-6. The display of the cellphone constituting lighting of the visual representation. *Id.*

In Applicant's Non-Final Office Action response filed May 14, 2018, Applicant argued that wherein the visual representation includes lighting of the at least one wireless ear piece is not well known in the art and requested the Examiner supply a reference which suggests modifying the cited references to wherein the visual representation displayed on the computing device display is a visual representation that includes lighting of the at least one wireless ear piece as recited by claim 6. In the Final Office Action, the Examiner stated "Regarding official notice for claim 6-8, as stated the battery life display is well known in the art and it is shown by references such as Yamamato (20040132511) in paragraph 0024." Final Office Action of September 19, 2018, p. 2.

However, in the reference cited by the Examiner, there is no discussion or official notice taken of wherein the visual representation includes lighting of the at least one ear-piece as claimed. An example of one embodiment of the claim is shown by FIG. 5.

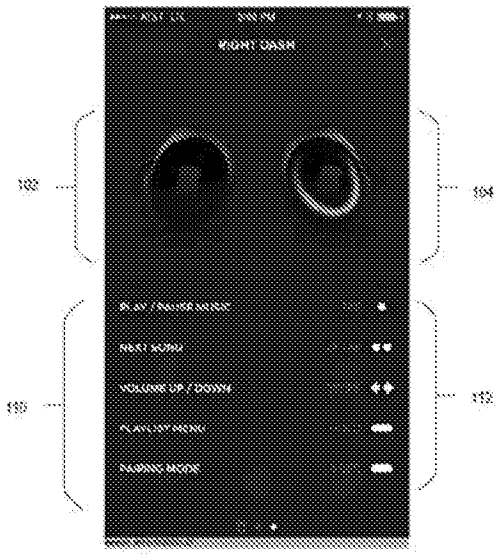


FIG. 5

The reference provided by the Examiner discusses:

"Upper chassis 100 is provided with main display section 14 and sub display section 18 for display sections. Main display 14 functions as a display section when the folding mobile phone apparatus is open, and sub display 18 functions as a display section when the folding mobile phone apparatus is closed. Main display 14 and sub display 18 are both electrically connected to flexible board 17 and held by means of holder 15." Paragraph 23.

"Incidentally, sub display 18 has the functions of displaying the battery level, the signal condition, and the time, and displaying the number and the name of the caller upon an incoming call, thereby realizing a folding mobile phone apparatus that is highly convenient even while it is closed. Additionally, receiver 16 is also held by holder 15." Paragraph 24.

Furthermore, the drawings of the cited patent disclose displaying battery level of the cell phones on the cell phone display unit for the user comfort. There is no wirelessly connected device or evidence showing the battery life of the wirelessly connected device on the display as argued by the Examiner.

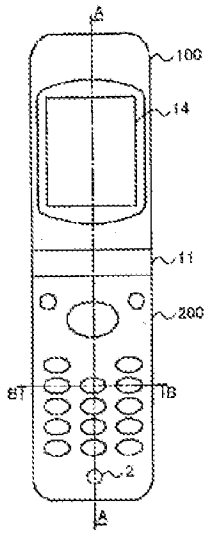


FIG. 2

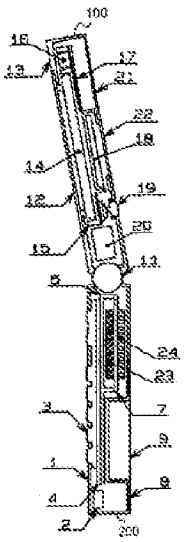


FIG. 3

However, Applicant's claim invention does not involve visual representations of a cellphone, nor does the claim 6 require visual representation of a battery. It is not being disputed whether the display of the remaining battery life of the cellphone on the cellphone screen is well known. However, it is submitted that displaying the battery life of the device on the device screen is not related to a system wherein the computing device is separate from the at least one wireless earpiece, and the computing device displays a visual representation of the wireless earpiece wherein the visual representation includes lighting of the at least one wireless earpiece.

It is respectfully submitted that folding a cellphone with an outer display that shows the battery life of said cellphone is not wherein the visual representation includes lighting of the at least one wireless ear piece as claimed by Applicant's claim language. Therefore, the taking of Official Notice was improper, the Examiner has not provided a reference showing wherein the visual representation on the computing device includes *lighting of the at least one wireless ear piece.*

Furthermore, Boesen and Georges are silent regarding "a visual representation of the at least one wireless ear piece "wherein the visual representation includes lighting of the at least one wireless ear piece" as claimed. One ordinarily skilled in the art would not modify the invention in Boesen with Georges to display a visual representation of a wireless earpiece "wherein the visual representation of the at least one ear piece includes lighting of the at least one ear piece.

It is respectfully submitted that displaying a visual representation of the at least one wireless earpiece on a screen of the computing device, wherein the visual representation includes lighting the at least one wireless earpiece is not well known in the art. The Examiner has not cited to any evidence regarding the display of a visual representation of at least one wireless earpiece wherein the visual representation includes lighting of the at least one wireless earpiece. If displaying a visual representation of the at least one wireless earpiece on a screen of the computing device, wherein the visual representation includes lighting the at least one wireless earpiece it should have been easy for the Examiner to find a piece of prior art that suggests modifying the cited prior art to include displaying a visual representation of the at least one wireless earpiece on a screen of the computing device, wherein the visual representation includes lighting the at least one wireless earpiece. Therefore, Applicant respectfully requests that the rejection of claim 6 under 35 U.S.C. § 103 be reversed and the claim allowed.

5. **In regards to claim 7, Boesen in view of Georges does not teach wherein the lighting of the at least one wireless earpiece is**

associated with the function or property of the at least one wireless earpiece, therefore the rejection should be reversed.

Claim 7 is allowable for an independent reason. Claim 7 requires "the system of claim 6 wherein the lighting is associated with the function or property of the at least one earpiece." As argued above in section VII(A)(1), Boesen and Georges do not teach a visual representation of the at least one ear piece. Claim 7 requires "the system of claim 6 wherein the lighting is associated with the function or property of the at least one earpiece.

The Examiner states "Regarding claims 6-8, Boesen and Georges disclose the limitations of claim 1. However, the combiantion does not specifically disclose battery level of the wireless earpiece on the display of the computing device, which is a lighting and visual representation of the activity level of the earpiece. Examiner takes official notice that displaying battery level of wirelessly connected devices to cell phones on the cell phone display unit for the user comfort is well known and widely used in the art and it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the displaying battery life of earpiece on the cell phone screen for user comfort." Final Office Action of September 19, 2019, pp. 5-6. The display constituting lighting associated with the function or property of the at least one wireless earpiece. *Id.* The Examiner admits that the cited references do not teach the claim limitation and attempts to overcome this deficiency by using Official Notice.

With respect to Official Notice of claims 6-8, the MPEP states that "such rejections should be judiciously applied" (see MPEP § 2144.03). Applicant notes that contrary to the

caution advised by the MPEP, in this case, the Office Action liberally applied Official Notice to claim for various conclusory reasons that are not supported by the record. The MPEP goes on to mandate that "Official notice without documentary evidence to support an [E]xaminer's conclusion is permissible only in some circumstances" (see MPEP § 2144.03(A)). "It would not be appropriate for the [E]xaminer to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of *instant and unquestionable* demonstration as being well-known" (see *Id.*, emphasis added). "For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must *always* be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21" (*Id.*, emphasis added).

In Applicant's Non-Final Office Action response filed May 14, 2018, Applicant argued wherein the lighting of the at least one wireless earpiece is associated with the function or property of the at least one wireless earpiece is not well known in the art and requested the Examiner supply a reference which suggests modifying the cited references to wherein the lighting of the at least one wireless earpiece is associated with the function or property of the at least one wireless earpiece as recited by claim 7. In the Final Office Action, the Examiner stated, "regarding official notice for claim 6-8, as stated the battery life display is well known in the art and it is shown by references such as Yamamato (20040132511) in paragraph 0024." Final Office Action of September 19, 2018, p. 2.

The reference discusses:

"Upper chassis 100 is provided with main display section 14 and sub display section 18 for display sections. Main display 14 functions as a display section when the folding mobile phone apparatus is open, and sub display 18 functions as a display section when the folding mobile phone apparatus is closed. Main display 14 and sub display 18 are both electrically connected to flexible board 17 and held by means of holder 15." Paragraph 23.

"Incidentally, sub display 18 has the functions of displaying the battery level, the signal condition, and the time, and displaying the number and the name of the caller upon an incoming call, thereby realizing a folding mobile phone apparatus that is highly convenient even while it is closed. Additionally, receiver 16 is also held by holder 15." Paragraph 24.

Furthermore, the drawings of the cited patent disclose displaying battery level of the cell phones on the cell phone display unit for the user comfort. There is no wirelessly connected device or evidence showing the battery life of the wirelessly connected device on the display as argued by the Examiner.

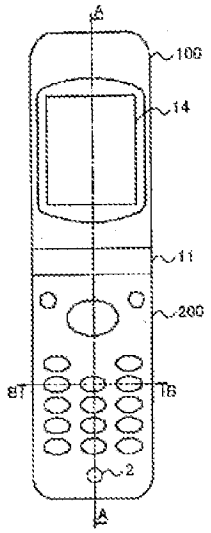


FIG. 2

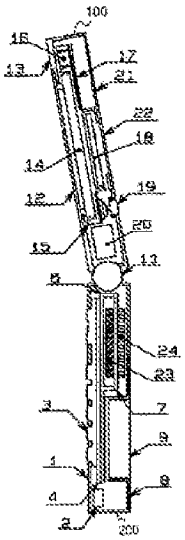


FIG. 3

However, Applicant's claim invention does not involve visual representations of a cellphone, nor does claim 7 require visual representation of a battery of said cellphone on a display screen of the cellphone. It is not being disputed whether the display of the remaining battery life of the cellphone on the cellphone screen is well

known. It is submitted that displaying the battery life of the device on the device screen is not related to a system wherein the computing device is separate from the at least one wireless earpiece, and the computing device displays a visual representation of the wireless earpiece wherein the visual representation includes lighting associated with the function or property of the at least one wireless earpiece. If wherein the lighting is associated with a function or property of the at least one wireless ear piece as claimed is well known, then it should have been easy to find a reference that suggests modifying the cited references to wherein the lighting is associated with a function or property of the at least one wireless ear piece as recited in claim 7. Therefore, Applicant submits that Official Notice is improper as a necessary element of a prima facie case is absent.

It is respectfully submitted that displaying a visual representation of the at least one wireless earpiece on a screen of the computing device, wherein the visual representation includes lighting associated with the function or property of the at least one wireless earpiece is not well known in the art nor is it taught by Boesen, Georges or a combination thereof. Therefore, Applicant respectfully requests that the rejection of claim 7 under 35 U.S.C. § 103 be reversed and the claim allowed.

6. **In regards to claim 8, Boesen in view of Georges does not teach wherein the property associated with the lighting of the visual representation of the at least one wireless earpiece is remaining battery life, therefore the rejection should be reversed.**

Claim 8 is allowable for an independent reason. Claim 8 requires "the system of claim 7 wherein the property is remaining battery life." As argued above in section

VII(A)(1), Boesen and Georges do not teach a visual representation of the at least one ear piece. Claim 8 requires "the system of claim 7 wherein the property is remaining battery life."

Applicant's specification describing one embodiment of the claim limitation states:

> FIG. 6 illustrates another example of a screen display associated with a software application or mobile app executing on a processor of a mobile device. In this screen display a left earpiece 120 and a right earpiece 122 are shown. Underneath the left ear piece 120 is an "L" indicating that this is the left ear piece. Underneath the "L" is textural information in the form of a numerical representation 124 of remaining battery life for the left ear piece, in this instance, "48 %." Underneath the right ear piece is an "R" indicating that this is the right ear piece. Underneath the "R" is textual information in the form of a numerical representation 126 of remaining battery life for the right ear piece, in this instance, "48 %." Although the battery charge level or remaining battery life is the same for both the left ear piece and the right ear piece in this example, it is to be understood that the left ear piece and the right ear piece may be different and that charge levels may be independently determined for each ear piece. Specification, page 8, lines 13-23.

The Examiner admits that the cited references do not teach the claim limitation and attempts to overcome this deficiency by using Official Notice. The Examiner takes Official Notice that "that displaying battery level of wirelessly connected devices to cell phones on the cell phone display unit for the user comfort is well known and widely used in the art and it would have been obvious to one of ordinary skilled in the art before the effective filling date of the claimed invention to utilize the displaying battery life of earpiece on the cell phone screen for user comfort." Final Office Action of September 19, 2018, pp. 5-6. The display constituting wherein the property is the remaining battery life.

With respect to Official Notice of claims 6-8, the MPEP states that "such rejections should be judiciously applied" (see MPEP § 2144.03). Applicant notes that contrary to the caution advised by the MPEP, in this case, the Office Action liberally applied Official Notice to claim for various conclusory reasons that are not supported by the record. The MPEP goes on to mandate that "Official notice without documentary evidence to support an [E]xaminer's conclusion is permissible only in some circumstances" (see MPEP § 2144.03(A)). "It would not be appropriate for the [E]xaminer to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of *instant and unquestionable* demonstration as being well-known" (see *Id.*, emphasis added). "For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must *always* be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21" (*Id.*, emphasis added).

In Applicant's Non-Final Office Action response filed May 14, 2018, Applicant argued that wherein the property associated with the lighting of the visual representation of the at least one wireless earpiece is remaining battery life is not well known in the prior art and requested the Examiner supply a reference which suggests modifying the cited references wherein the property associated with the lighting of the visual representation of the at least one wireless earpiece is remaining battery life as recited by claim 8. In the Final Office Action, the Examiner stated "Regarding official notice for claim 6-8, as stated the battery life display is well known in the art and it is shown by references such as Yamamato (20040132511) in paragraph 0024." Final Office Action of September 19, 2018, p. 2.

The reference discusses:

> "Upper chassis 100 is provided with main display section 14 and sub display section 18 for display sections. Main display 14 functions as a display section when the folding mobile phone apparatus is open, and sub display 18 functions as a display section when the folding mobile phone apparatus is closed. Main display 14 and sub display 18 are both electrically connected to flexible board 17 and held by means of holder 15." Paragraph 23.
>
> "Incidentally, sub display 18 has the functions of displaying the battery level, the signal condition, and the time, and displaying the number and the name of the caller upon an incoming call, thereby realizing a folding mobile phone apparatus that is highly convenient even while it is closed. Additionally, receiver 16 is also held by holder 15." Paragraph 24.

Furthermore, the drawings of the cited patent disclose displaying battery level of the cell phones on the cell phone display unit for the user comfort. There is no wirelessly connected device or evidence showing the battery life of the wirelessly connected device on the display as argued by the Examiner.

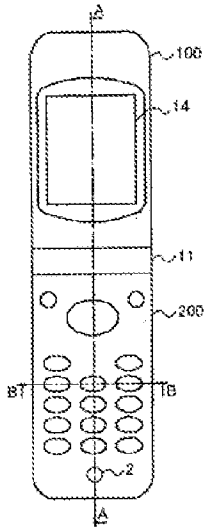


FIG. 2

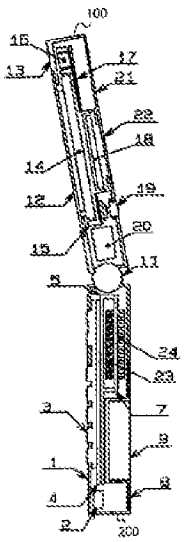


FIG. 3

However, Applicant's claim invention does not involve visual representations of a cellphone, nor does the claim 8 require visual representation of a battery of said cellphone on a display screen of the cellphone. It is not being disputed whether the

display of the remaining battery life of the cellphone on the cellphone screen is well known. It is submitted that displaying the battery life of the device on the device screen is not related to a system wherein the computing device is separate from the at least one wireless earpiece, and the computing device displays a visual representation of the wireless earpiece wherein the visual representation includes lighting associated with the function or property of the at least one wireless earpiece. The property being the remaining battery life.

It is respectfully submitted that displaying a visual representation of the at least one wireless earpiece on a screen of the computing device, wherein the visual representation includes lighting associated with the function or property of the at least one wireless earpiece and wherein the property is the remaining battery life is not well known in the art nor is it taught by Boesen, Georges or a combination thereof. Therefore, Applicant respectfully requests that the rejection of claim 8 under 35 U.S.C. § 103 be reversed and the claim allowed.

C. Whether claim 9 is <u>not</u> unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906) and Lee (US 2014/0189600).

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. MPEP § 2142. In order to establish a *prima facie* case for obviousness, the Examiner must first (1) determine the scope and content of the prior art, (2) ascertain the differences between the claimed invention and the prior art, and (3) resolve the level of ordinary skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Ascertaining the differences between the claimed invention and the prior art

requires interpreting the claim language of the invention and considering the invention and prior art as a whole. MPEP § 2141. Second, in light of the *Graham* fact findings, the Examiner must provide a suitable rationale to support a finding of obviousness. MPEP § 2141.

Claim 9 depends on claim 1. Claim 1 recites in part "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays". Lee does not teach wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on the one or more screen displays as claimed. Lee is specifically directed towards a "method for controlling a display apparatus by displaying a pointer to perform a motion task mode according to a predetermined event. Abstract. Therefore, the addition of Lee does not remedy the deficiencies of Boesen and Georges with respect to claim 1. As claim 9 depends on claim 1, the rejection of claim 9 under 35 U.S.C. § 103 should be reversed and the claims allowed.

D. Whether claims 10, 11 are <u>not</u> unpatentable under 35 U.S.C. § 103 over Boesen (US 2013/0329051) and further in view of Georges (USPN 7022906) and Goldstein (US 2008/0031475).

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. MPEP § 2142. In order to establish a *prima facie* case for obviousness, the Examiner must first (1) determine the scope and content of the prior art, (2) ascertain the differences between the claimed invention and the prior art, and (3) resolve the level of ordinary skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Ascertaining the differences between the claimed invention and the prior art

requires interpreting the claim language of the invention and considering the invention and prior art as a whole. MPEP § 2141. Second, in light of the *Graham* fact findings, the Examiner must provide a suitable rationale to support a finding of obviousness. MPEP § 2141.

Claims 10 and 11 depend on claim 1. Claim 1 recites in part "wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays". Goldstein does not teach wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays as claimed. Goldstein is specifically directed towards a "a user interaction element configured to send a play command to the logic circuit when activated by a user where the logic circuit reads registration parameters stored on the memory storage unit and sends audio content to the ear canal receiver according to the registration parameters." Abstract. Therefore, the addition of Goldstein does not remedy the deficiencies of Boesen and Georges with respect to claim 1. As claims 10 and 11 depend on claim 1, the rejection of claims 10 and 11 under 35 U.S.C. § 103 should be reversed and the claims allowed.

VIII. CONCLUSION

For the above-stated reasons, it is submitted that the claims are in a condition for allowance. The decision of the Examiner, therefore, should be reversed and the case allowed.

This is a request for a two month extension of time, the fee for which is being paid at the time of filing. No fees or extensions of time are believed to be due in connection with this brief; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 506801.

Respectfully submitted,

/ALEXANDRIA R. MUNRO/

ALEXANDRIA R. MUNRO, Reg. No. 77,554
Goodhue, Coleman, & Owens P.C.
CUSTOMER NO. 133690

12951 University Avenue, Suite 201
Clive, Iowa 50325
515-218-7888

IX. APPENDIX – CLAIMS

1. A system comprising:

at least one wireless ear piece comprising an ear piece housing and a wireless transceiver disposed within the ear piece housing;

a software application for executing on a computing device having a display associated therewith;

wherein the software application configured to display one or more screen displays on a display of the computing device;

wherein the software application provides a user interface for use by a user of the at least one wireless ear piece to interact with the at least one wireless ear piece; and

wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays, the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device.

2. The system of claim 1 wherein the at least one wireless earpiece comprises a physiological sensor.

3. The system of claim 2 wherein the software application provides for tracking one or more physical activities using the physiological sensor.

4. The system of claim 3 wherein the physical activities are selected from a set consisting of running, biking, and swimming.

5. (Cancelled):

6. The system of claim 1 wherein the representation visual representation includes lighting of the at least one wireless ear piece.

7. The system of claim 6 wherein the lighting is associated with the function or property of the at least one wireless ear piece.

8. The system of claim 7 wherein the property is remaining battery life.

9. The system of claim 1 wherein the user interface is further configured to display available gestures associated with controlling the at least one wireless ear piece.

10. The system of claim 1 wherein the at least one wireless ear piece comprises onboard storage for storing audio files.

11. The system of claim 1 wherein the at least one wireless ear piece is configured to store at least one playlist of audio files.

12. The system of claim 1 wherein the software application provides for connecting the at least one wireless ear piece with the computing device.

13. The system of claim 12 wherein the computing device is a mobile device.

14. A method for controlling a set of wireless ear pieces, the method comprising:

providing a software application for controlling the set of wireless ear pieces, the software application adapted to execute on a computing device;

using the software application on the computing device to display one or more screen displays on a display of the computing device and to receive input from the user into the mobile device, wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces;

communicating data associated with the input between the software application and at least one of the wireless ear pieces;

performing an action using at least one of the wireless ear pieces in response to receiving the data.

15. A method for communicating data from a set of wireless ear pieces, the method comprising:

providing a software application for communicating with the set of wireless ear pieces, the software application adapted to execute on a computing device;

using the software application on the computing device to display one or more screen displays on a display of the computing device, wherein at least one of the one or more screen displays display a visual representation of the set of wireless ear pieces;

communicating data received from one or more of the wireless ear pieces to the computing device; and

updating the screen displays on the display of the computing device using the data.

16. The method of claim 15 wherein the data comprises physiological data.

17. The method of claim 16 wherein the physiological data is heart rate data.

X. EVIDENCE APPENDIX

None.

XI. RELATED PROCEEDING APPENDIX

None.

Electronic Patent Application Fee Transmittal

Application Number:	15350020
Filing Date:	12-Nov-2016
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Filer:	Alexandria Rose Munro/Ashlyn Nguyen
Attorney Docket Number:	BRAGI GmbH-P0075USA

Filed as Small 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:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 2 months with $0 paid	2252	1	300	300
Miscellaneous:				
			Total in USD ($)	**300**

Electronic Acknowledgement Receipt

EFS ID:	37218641
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	Alexandria Rose Munro/Ashlyn Nguyen
Filer Authorized By:	Alexandria Rose Munro
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	19-SEP-2019
Filing Date:	12-NOV-2016
Time Stamp:	17:13:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$300
RAM confirmation Number	E20199IH14093549
Deposit Account	506801
Authorized User	Ashlyn Nguyen

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

37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Appeal Brief Filed	BRAGIGmbH-P0075USA_15350020_FILED-APPEAL-BRIEF_9-19-19.pdf	453566 fe259cdba1d25dc5363e7027956de20650706f57	no	59
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30402 31d9faa1843c0f9575e0793e109fd876cef2ca2f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	483968		

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

133690 7590 01/10/2020
Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

EXAMINER
ETESAM, AMIR HOSSEIN

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 01/10/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA	3412

TITLE OF INVENTION: Method and apparatus for interfacing with wireless earpieces

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0.00	$0.00	$500	04/10/2020

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.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

133690 7590 01/10/2020
Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA	3412

TITLE OF INVENTION: Method and apparatus for interfacing with wireless earpieces

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0.00	$0.00	$500	04/10/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
ETESAM, AMIR HOSSEIN	2655	381-370000

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 03-09 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

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.
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.
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. _____

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.
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA	3412

133690 7590 01/10/2020

Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

EXAMINER	
ETESAM, AMIR HOSSEIN	
ART UNIT	**PAPER NUMBER**
2655	

DATE MAILED: 01/10/2020

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.

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 30 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.

Notice of Allowability	Application No. 15/350,020	Applicant(s) Steiner, Martin	
	Examiner AMIR H ETESAM	Art Unit 2655	AIA (FITF) Status Yes

-- 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 arguments presented on 9/19/2019.
   ☐ 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 1-4 and 6-17 . 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 _____.

/AMIR H ETESAM/
Primary Examiner, Art Unit 2655

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Allowable Subject Matter

Claims 1-4, 6-17 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of record does not disclose a system comprising: at least one wireless ear piece comprising an ear piece housing and a wireless transceiver disposed within the ear piece housing; a software application for executing on a computing device having a display associated therewith; wherein the software application configured to display one or more screen displays on a display of the computing device; wherein the software application provides a user interface for use by a user of the at least one wireless ear piece to interact with the at least one wireless ear piece and wherein the user interface is configured to display a visual representation of the at least one wireless ear piece on at least one of the one or more screen displays, the visual representation indicative of a function or property of the at least one wireless ear piece communicated from the at least one wireless earpiece to the computing device.

The examiner does not see any motivations in combining the prior art of record to achieve the claimed limitations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMIR H ETESAM whose telephone number is (571)270-1946. The examiner can normally be reached on M-F 6-8 AM, 6-10PM. Saturdays 8-6PM.

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, Davetta Goins can be reached on 5712722957. 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 https://ppair-my.uspto.gov/pair/PrivatePair. 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.

/AMIR H ETESAM/
Primary Examiner, Art Unit 2655

Notice of References Cited	Application/Control No. 15/350,020	Applicant(s)/Patent Under Reexamination Steiner, Martin	
	Examiner AMIR H ETESAM	Art Unit 2655	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-20080021577-A1	01-2008	Ijichi; Susumu	G11B27/034	700/94
*	B	US-7022906-B2	04-2006	Georges; Alain	G10H1/0025	84/609
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/350,020	Steiner, Martin
	Examiner	Art Unit
	AMIR H ETESAM	2655

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	12/19/2019	12/19/2019	12/19/2019						
	1	✓	✓	=						
	2	✓	✓	=						
	3	✓	✓	=						
	4	✓	✓	=						
	5	✓	-	-						
	6	✓	✓	=						
	7	✓	✓	=						
	8	✓	✓	=						
	9	✓	✓	=						
	10	✓	✓	=						
	11	✓	✓	=						
	12	✓	✓	=						
	13	✓	✓	=						
	14	✓	✓	=						
	15	✓	✓	=						
	16	✓	✓	=						
	17	✓	✓	=						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/350,020	Steiner, Martin
	Examiner	Art Unit
	AMIR H ETESAM	2655

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner
H04R 1/1016	3/4/2018	AE
H04N 21/84 21/8113 21/854	12/19/2019	AE
G10H 1/383 1/0025 1/38	12/19/2019	AE

US Classification - Searched*			
Class	Subclass	Date	Examiner

* 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
East search performed. Search history is attached.	3/4/2018	AE
East search updated. Search history is attached.	9/15/2018	AE

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
H04N	21/84 21/8113 21/854	12/19/2019	AE
G10H	1/383 1/0025 1/38	12/19/2019	AE

/AMIR H ETESAM/ Primary Examiner, Art Unit 2655	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/350,020	Steiner, Martin
	Examiner	**Art Unit**
	AMIR H ETESAM	2655

CPC							
Symbol						**Type**	**Version**
G06F	/	3	/	165		F	2013-01-01
H04R	/	1	/	1091		I	2013-01-01
H04R	/	1	/	1016		A	2013-01-01
H04R	/	2420	/	07		A	2013-01-01
H04R	/	2201	/	103		A	2013-01-01

CPC Combination Sets								
Symbol						**Type**	**Set**	**Ranking**	**Version**
	/		/						

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	16	
/AMIR H ETESAM/ Primary Examiner, Art Unit 2655	19 December 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

U.S. Patent and Trademark Office — Part of Paper No.: 20191219

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/350,020	Steiner, Martin
	Examiner	**Art Unit**
	AMIR H ETESAM	2655

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G10H	/	7	/	00

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	16	
/AMIR H ETESAM/ Primary Examiner, Art Unit 2655	19 December 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

U.S. Patent and Trademark Office — Part of Paper No.: 20191219

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/350,020	Steiner, Martin
	Examiner	**Art Unit**
	AMIR H ETESAM	2655

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	11												
2	2	11	12												
3	3	12	13												
4	4	13	14												
5	6	14	15												
6	7	15	16												
7	8	16	17												
8	9														
9	10														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	16	
/AMIR H ETESAM/ Primary Examiner, Art Unit 2655	19 December 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

U.S. Patent and Trademark Office Part of Paper No.: 20191219

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	99	((("BRAGI") near3 ("GmbH"))).AS,AANM.	USPAT	OR	OFF	2019/12/19 10:07
L2	48	((("Steiner") near3 ("Martin"))).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2019/12/19 10:07
L3	142	L1 L2	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/19 10:07
L4	39	updat$4 near4 screen near4 after near4 purchas$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/19 10:07
L5	41	updat$4 near6 screen near6 after near6 purchas$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/19 10:07
L6	2	L5 not L4	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/19 10:07
L7	269108	(headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/19 10:07
L8	6460	visual near representation near2 device	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/19 10:07
L9	512	L7 and L8	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/19 10:07
L10	511	L9 and (display screen)	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/19 10:07
L11	2	("7022906").URPN.	USPAT	OR	OFF	2019/12/19 10:07
L15	253	G10H adj (1/383 1/0025 1/38)	USPAT	OR	OFF	2019/12/19 10:09
L16	5	("2004/0132511").URPN.	USPAT	OR	OFF	2019/12/19 10:09
L17	7	("2008/0021577").URPN.	USPAT	OR	OFF	2019/12/19 10:09
L18	937	H04N adj (21/84 21/8113 21/854)	USPAT	OR	OFF	2019/12/19 10:10

S1	35	((("BRAGI") near3 ("GmbH"))).AS,AANM.	USPAT	OR	OFF	2018/09/15 11:49
S2	42	((("Steiner") near3 ("Martin"))).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/09/15 11:50
S3	1	"20130329051"	US-PGPUB; USPAT; USOCR	OR	OFF	2018/09/15 11:54
S4	7	visual near3 representation near3 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 11:57
S5	1	("2018/0063629").URPN.	USPAT	OR	OFF	2018/09/15 12:18
S6	37	visual near8 representation near8 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:18
S7	30	S6 not S4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:18
S8	0	image near4 "of" near4 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) near6 display$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:20
S9	995	image near4 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) near6 display$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:20
S10	13708	(visual near3 representation).clm.	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:22
S11	77	S1 S2	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:22
S12	2	S10 and S11	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:22
S13	536	image near3 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) near3 display$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:26
S14	97	S13 and (cellphone (cell adj phone))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:27
S15	25	display$4 adj image adj (headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:28
S16	2	display$4 adj (headphone headset earphone earset earpiece ((head ear) adj	US-PGPUB;	OR	ON	2018/09/15 12:30

		(set phone piece))) adj image	USPAT; USOCR			
S17	41	display$4 adj3 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) adj3 image	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:30
S18	0	image adj3 "of" adj3 (headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:31
S19	153	(headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) adj image	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:31
S20	0	visual near3 representaion near3 device	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:33
S21	1	visual near3 representaion	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
S22	85382	visual near3 representation	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
S23	8181	visual near3 representation near3 device	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
S24	231848	(headphone headset earphone earset earpiece ((head ear) adj (set phone piece))) \	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
S25	231848	(headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:34
S26	696	S23 and S25	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:35
S27	695	S26 and (display screen)	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:35
S28	5645	visual near representation near2 device	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:36
S29	399	S25 and S28	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:36
S30	398	S29 and (display screen)	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 12:36

S31	361	displaying near3 battery near3 level	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:31
S32	27	S31 and (cellphone (cell adj phone))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:31
S33	36	updat$4 near4 screen near4 after near4 purchas$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:36
S34	0	S33 and (cellphone (cell adj phone))	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:36
S35	38	updat$4 near6 screen near6 after near6 purchas$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:37
S36	2	S35 not S33	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:37
S37	11	updat$4 near6 screen near6 complet$4 near6 purchas$4	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/15 13:38

12/19/2019 10:11:48 AM
C:\Users\aetesam\Desktop\East search history\15350020.wsp

Bibliographic Data

Application No: 15/350,020

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: _____ _____

Examiner's Signature | Initials

Title: Method and apparatus for interfacing with wireless earpieces

---

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/12/2016	381	2655	BRAGI GmbH-P0075USA
RULE			

APPLICANTS

BRAGI GmbH, Munchen, GERMANY

INVENTORS

Martin Steiner München, GERMANY

CONTINUING DATA

This application has PRO of 62255309 11/13/2015

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

11/21/2016

**** SMALL ENTITY ****

STATE OR COUNTRY

GERMANY

ADDRESS

Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325
UNITED STATES

FILING FEE RECEIVED

$800

EAST Search History

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L19	937	H04N adj (21/84 21/8113 21/854)	US-PGPUB; USPAT	OR	OFF	2019/12/19 10:10
L20	253	G10H adj (1/383 1/0025 1/38)	US-PGPUB; USPAT	OR	OFF	2019/12/19 10:11
L21	1186	19 20	US-PGPUB; USPAT	OR	OFF	2019/12/19 10:11
L22	1055	21 and (display screen)	US-PGPUB; USPAT	OR	OFF	2019/12/19 10:11
L23	258318	(headphone headset earphone earset earpiece ((head ear) adj (set phone piece)))	US-PGPUB; USPAT	OR	ON	2019/12/19 10:11
L24	178	22 and 23	US-PGPUB; USPAT	OR	ON	2019/12/19 10:11

12/19/2019 10:11:57 AM
C:\Users\aetesam\Desktop\East search history\15350020.wsp

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	REQUEST ID
15/350,020	11/12/2016	BRAGI GmbH	BRAGI GmbH-P0075USA	108042

Acknowledgement of Loss of Entitlement to Entity Status Discount

The entity status change request below filed through Private PAIR on 03/20/2020 has been accepted.

CERTIFICATIONS:

Change of Entity Status:

X Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be notification of loss of entitlement to small or micro entity status, as applicable.

This portion must be completed by the signatory or signatories making the entity status change in accordance with 37 CFR 1.4(d)(4).

Signature:	/JOHN D. GOODHUE/
Name:	John D. Goodhue
Registration Number:	47603

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	15/350,020
Filing Date	2016-11-12
First Named Inventor	Martin Steiner
Title	Method and apparatus for interfacing with wireless earpieces
Art Unit	2655
Examiner Name	Amir Hossein ETESAM
Attorney Docket Number	BRAGI GmbH-P0075USA

SIGNATURE of Applicant or Patent Practitioner

Signature	/JOHN D. GOODHUE/	Date (Optional)	2020-03-20
Name	John D. Goodhue	Registration Number	47603
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

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.

PTO/AIA/82B (07-13)
Approved for use through 01/31/2018. 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: 133690

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):

BRAGI GmbH

☐ Inventor or Joint Inventor (title not required below)

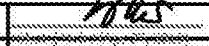
☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ 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)	
Name	Nikolaj Hviid		
Title	CEO, BRAGI GmbH		

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.

Electronic Patent Application Fee Transmittal

Application Number:	15350020
Filing Date:	12-Nov-2016
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Attorney Docket Number:	BRAGI GmbH-P0075USA

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

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1000**

Electronic Acknowledgement Receipt

EFS ID:	38926723
Application Number:	15350020
International Application Number:	
Confirmation Number:	3412
Title of Invention:	Method and apparatus for interfacing with wireless earpieces
First Named Inventor/Applicant Name:	Martin Steiner
Customer Number:	133690
Filer:	John Darrell Goodhue/Ashlyn Nguyen
Filer Authorized By:	John Darrell Goodhue
Attorney Docket Number:	BRAGI GmbH-P0075USA
Receipt Date:	20-MAR-2020
Filing Date:	12-NOV-2016
Time Stamp:	14:59:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1000
RAM confirmation Number	E20203JE59577952
Deposit Account	506801
Authorized User	Ashlyn Nguyen

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

37 CFR 1.20 (Post Issuance fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	BRAGIGmbH-P0075USA_15350020_FILED-ISSUE-FEE-TRANSMITTAL_3-20-20.pdf	339449 ee2034978c883002b020cbb12c154fc92e74379d	no	1
Warnings:					
Information:					
2	Power of Attorney	BRAGIGmbH-P0075USA_15350020_FILED-POA_3-20-20.pdf	1341573 566f313008a8b9e3bd6c40031aed5c25e3db5ace	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30389 1da810c0f54a71bbad9b1ad0ab2f9ea6246d822b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1711411		

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.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

133680 7590 01/10/2020
Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

JOHN D. GOODHUE	(Typed or printed name)
/JOHN D. GOODHUE/	(Signature)
March 20, 2020	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA	3412

TITLE OF INVENTION: Method and apparatus for interfacing with wireless earpieces

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0.00	$0.00	$500	04/10/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
ETESAM, AMIR HOSSEIN	2655	381-370000

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 03-09 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 Goodhue, Coleman & Owens, P.C.
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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: BRAGI GmbH

(B) RESIDENCE: (CITY and STATE OR COUNTRY): MUCHEN, GERMANY

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 506801

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☒ Applicant changing to regular undiscounted fee status.

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.
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.
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 /JOHN D. GOODHUE/ Date March 20, 2020

Typed or printed name JOHN D. GOODHUE Registration No. 47603

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
15/350,020	11/12/2016	Martin Steiner	BRAGI GmbH-P0075USA

CONFIRMATION NO. 3412

133690
Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

POA ACCEPTANCE LETTER

OC000000115662092

Date Mailed: 03/25/2020

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/20/2020.

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**.

/dtdinh/

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.
15/350,020	04/28/2020	10635385	BRAGI GmbH-P0075USA	3412

133690 7590 04/08/2020

Goodhue, Coleman & Owens, P.C.
12951 University Ave
Suite 201
Clive, IA 50325

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 44 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):

BRAGI GmbH, Munchen, GERMANY;
Martin Steiner, M¿nchen, GERMANY;

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.