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(54) **ELECTRONIC DEVICE**

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USPC **600/586**; 600/300

(57) **ABSTRACT**

To easily perform replacement of a fixing member for fixing an object on a skin of a human body.

An electronic device includes a biological signal acquisition device, a first sheet, and a second sheet. The biological signal acquisition device acquires a biological signal of the human body in a state of being fixed to the skin of the human body. The first sheet has one surface to be bonded to the biological signal acquisition device and another surface to be bonded to another sheet. Furthermore, a bonding strength per unit area between the other surface of the first sheet and the other sheet is larger than a bonding strength per unit area between the one surface of the first sheet and the biological signal acquisition device. The second sheet includes one surface to be bonded to the other surface of the first sheet and another surface to be bonded to the skin of the human body. Furthermore, the bonding strength per unit area between the one surface of the first sheet and the biological signal acquisition device is larger than a bonding strength per unit area between the other surface of the second sheet and the skin of the human body.

USAGE EXAMPLE OF BIOLOGICAL SIGNAL ACQUISITION UNIT

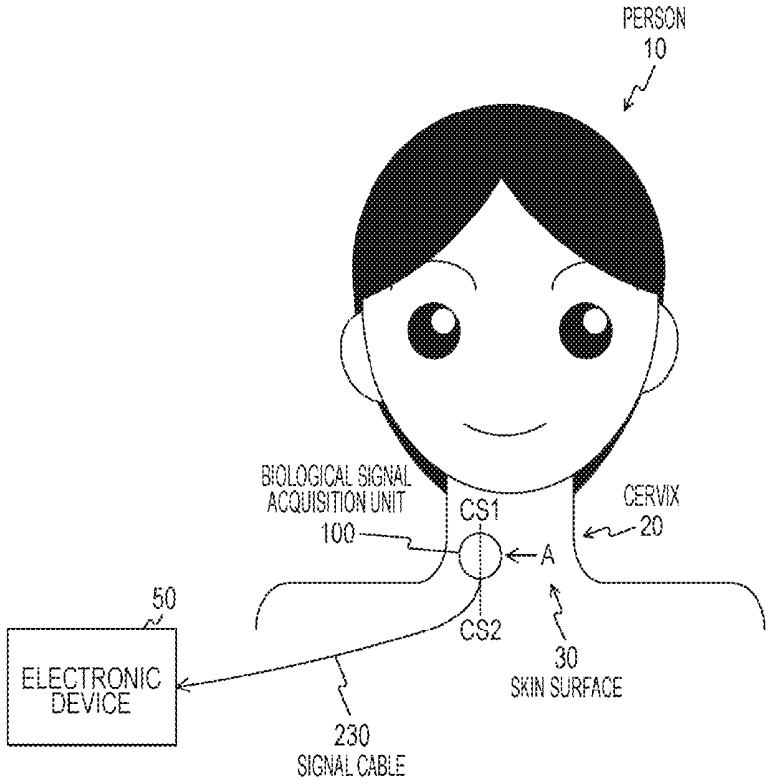


FIG. 1

USAGE EXAMPLE OF BIOLOGICAL SIGNAL ACQUISITION UNIT

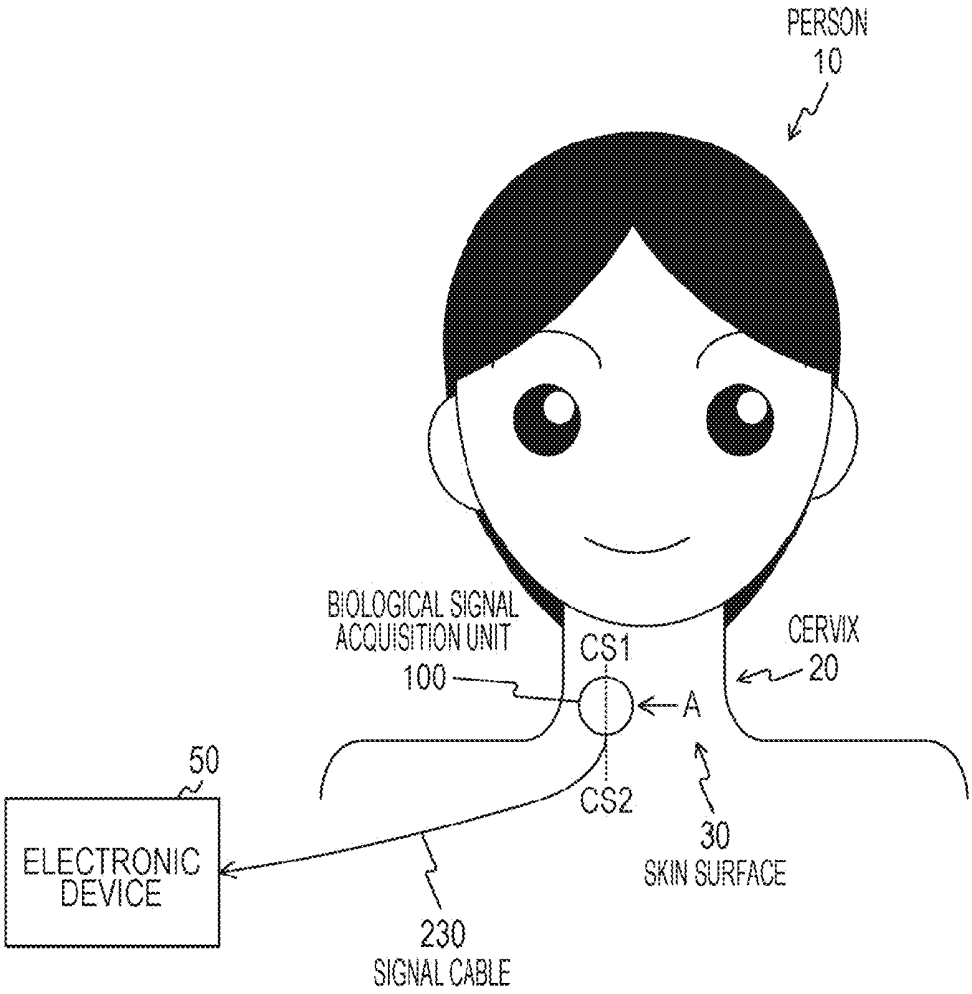


FIG. 2

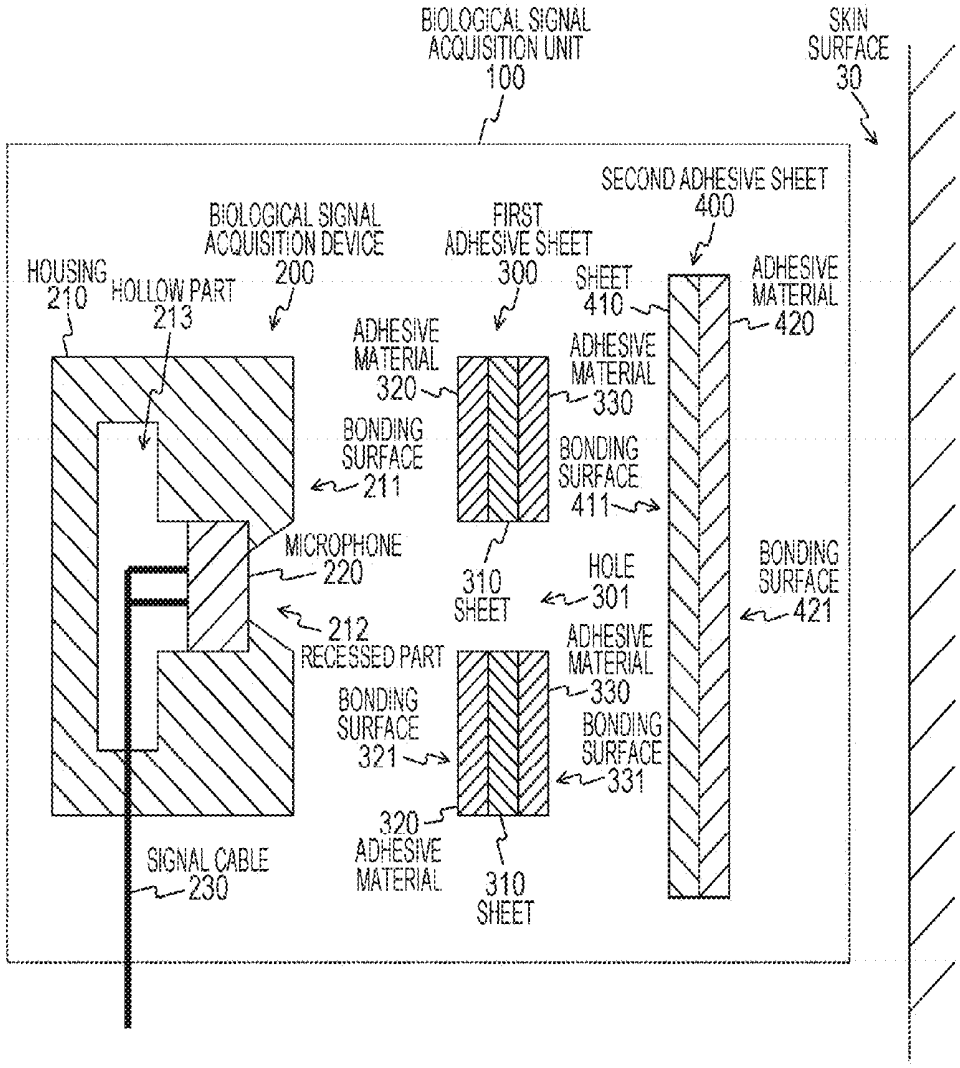

BIOLOGICAL SIGNAL ACQUISITION UNIT 100
SKIN SURFACE 30
SECOND ADHESIVE SHEET 400
BIOLOGICAL SIGNAL ACQUISITION DEVICE 200
FIRST ADHESIVE SHEET 300
HOUSING 210
HOLLOW PART 213
SHEET 410
ADHESIVE MATERIAL 420
ADHESIVE MATERIAL 320
ADHESIVE MATERIAL 330
BONDING SURFACE 211
BONDING SURFACE 411
MICROPHONE 220
310 SHEET
HOLE 301
BONDING SURFACE 421
212 RECESSED PART
ADHESIVE MATERIAL 330
BONDING SURFACE 321
BONDING SURFACE 331
320 ADHESIVE MATERIAL
310 SHEET
SIGNAL CABLE 230

FIG. 3

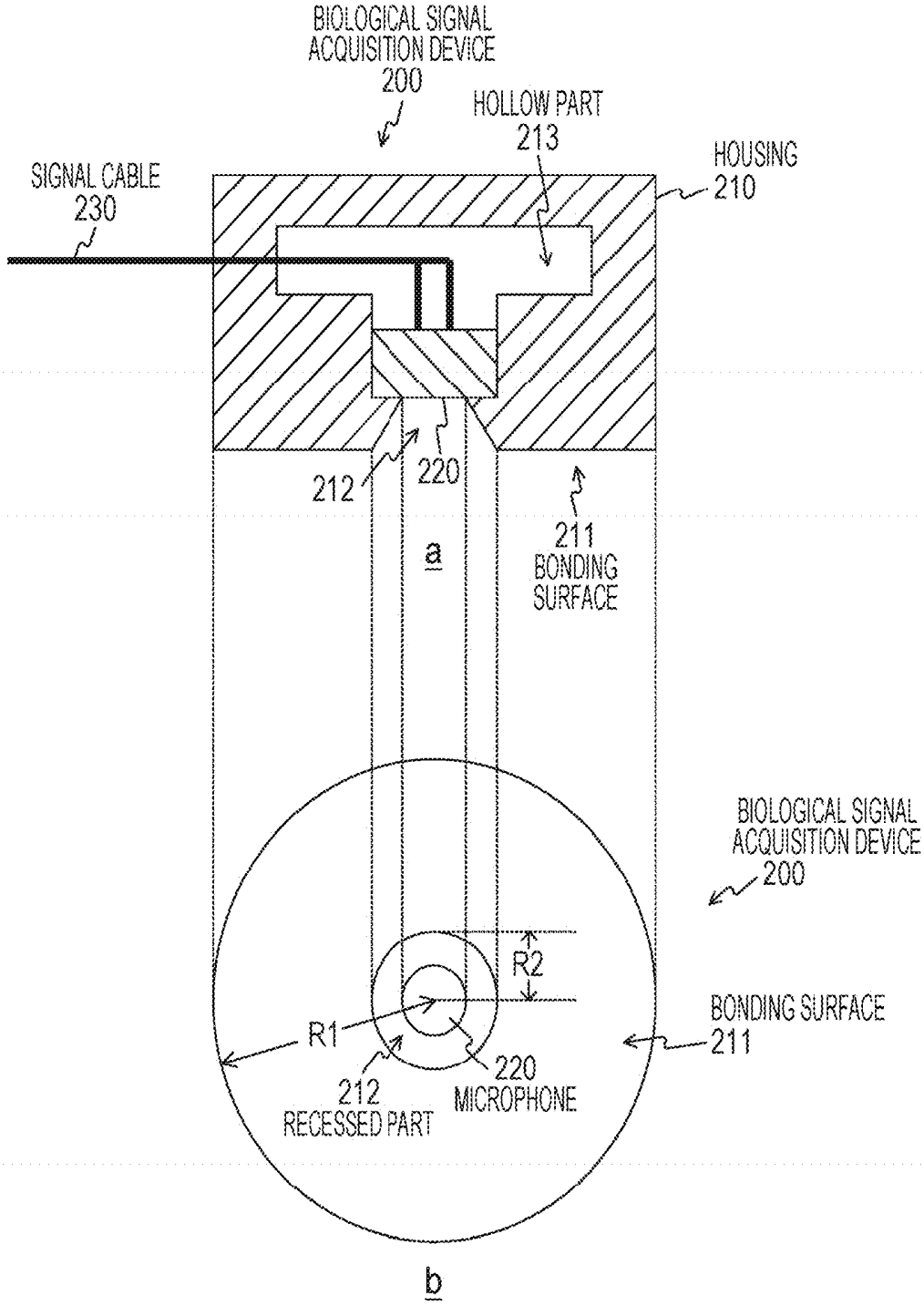

BIOLOGICAL SIGNAL ACQUISITION DEVICE 200
HOLLOW PART 213
HOUSING 210
SIGNAL CABLE 230
212
220
211 BONDING SURFACE
a
BIOLOGICAL SIGNAL ACQUISITION DEVICE 200
R2
R1
BONDING SURFACE 211
212 RECESSED PART
220 MICROPHONE
b

FIG. 4

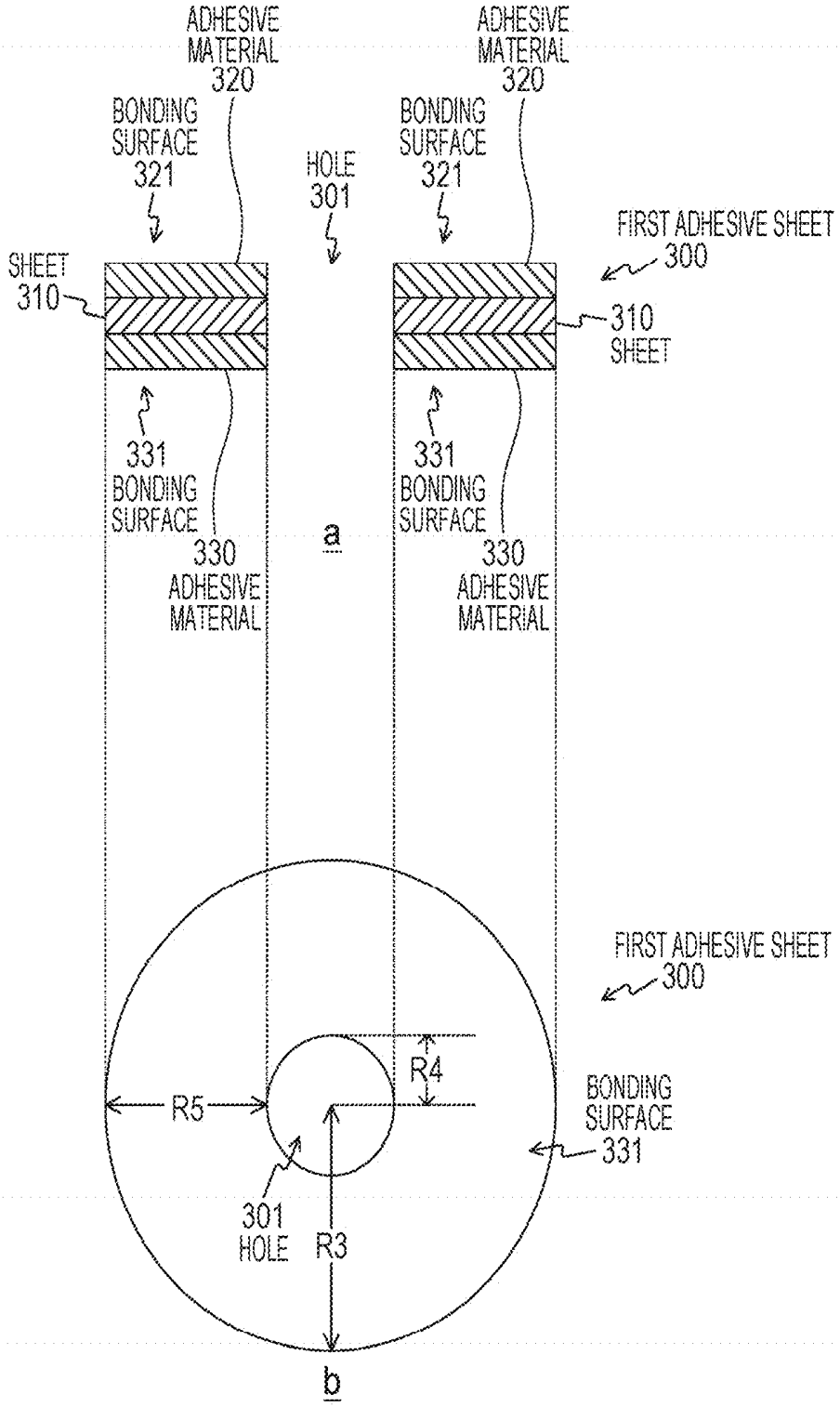

ADHESIVE MATERIAL 320
BONDING SURFACE 321
HOLE 301
ADHESIVE MATERIAL 320
BONDING SURFACE 321
FIRST ADHESIVE SHEET 300
SHEET 310
310 SHEET
331 BONDING SURFACE
330 ADHESIVE MATERIAL
a
331 BONDING SURFACE
330 ADHESIVE MATERIAL
FIRST ADHESIVE SHEET 300
R4
R5
BONDING SURFACE 331
301 HOLE
R3
b

FIG. 5

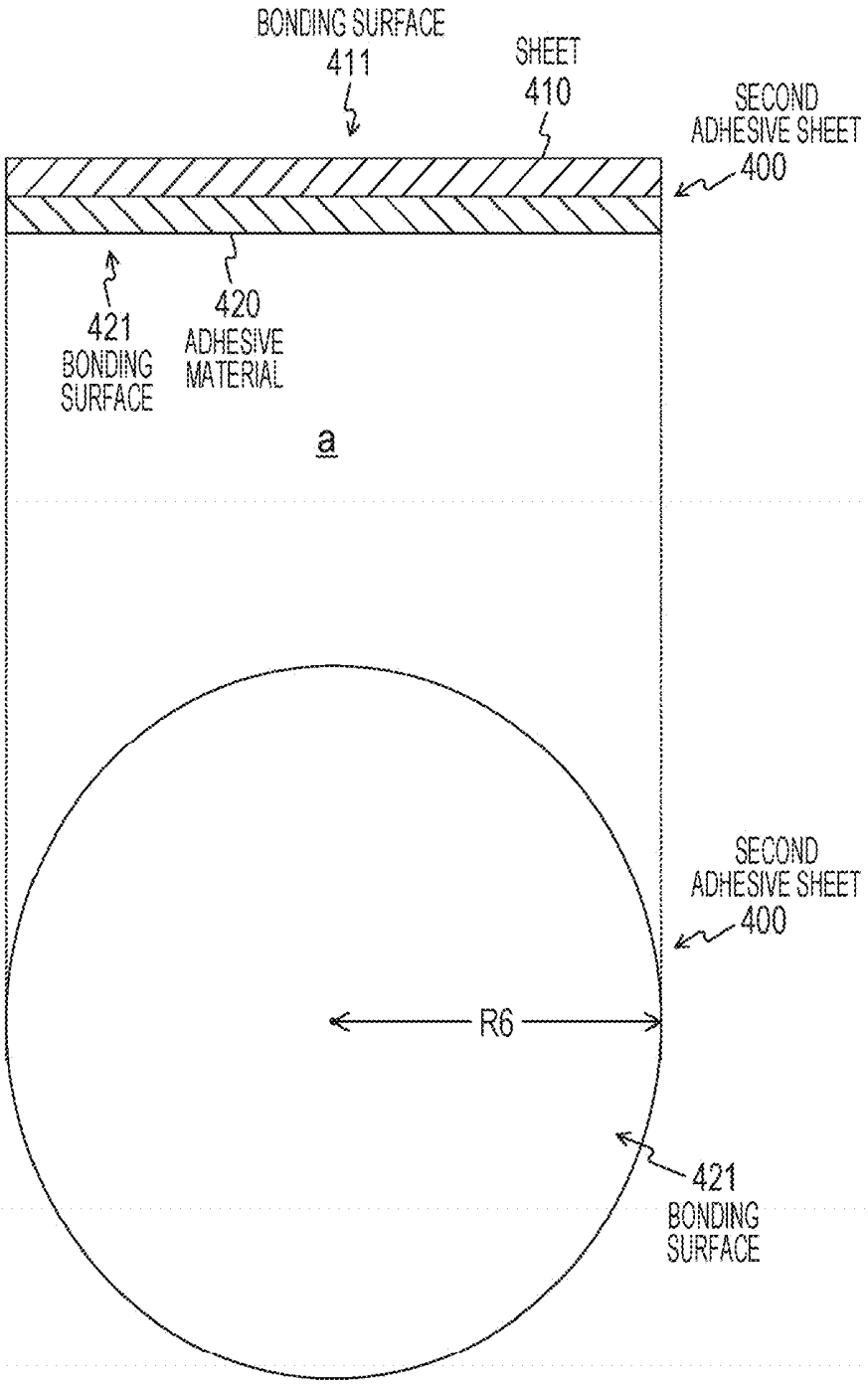

BONDING SURFACE
411
SHEET
410
SECOND
ADHESIVE SHEET
400
421
BONDING
SURFACE
420
ADHESIVE
MATERIAL
a
SECOND
ADHESIVE SHEET
400
R6
421
BONDING
SURFACE
b

FIG. 6

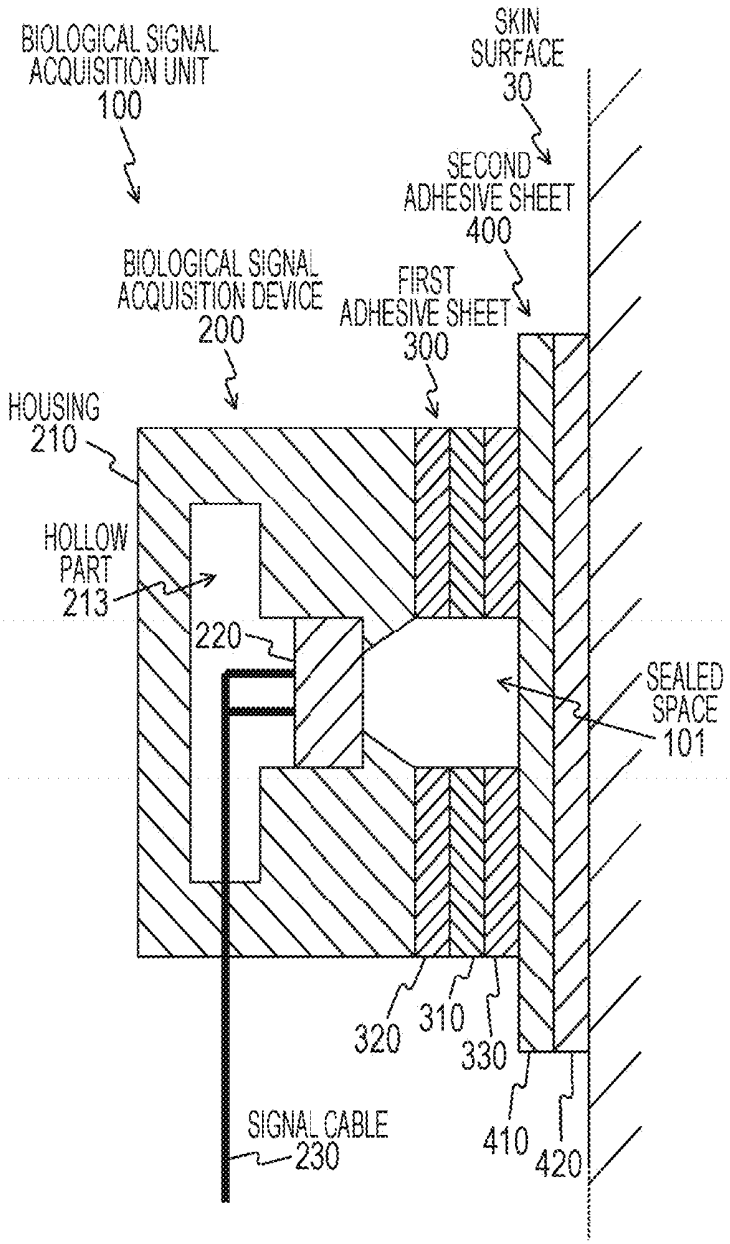

BIOLOGICAL SIGNAL ACQUISITION UNIT 100
SKIN SURFACE 30
SECOND ADHESIVE SHEET 400
BIOLOGICAL SIGNAL ACQUISITION DEVICE 200
FIRST ADHESIVE SHEET 300
HOUSING 210
HOLLOW PART 213
220
SEALED SPACE 101
320
310
330
410
420
SIGNAL CABLE 230

FIG. 7

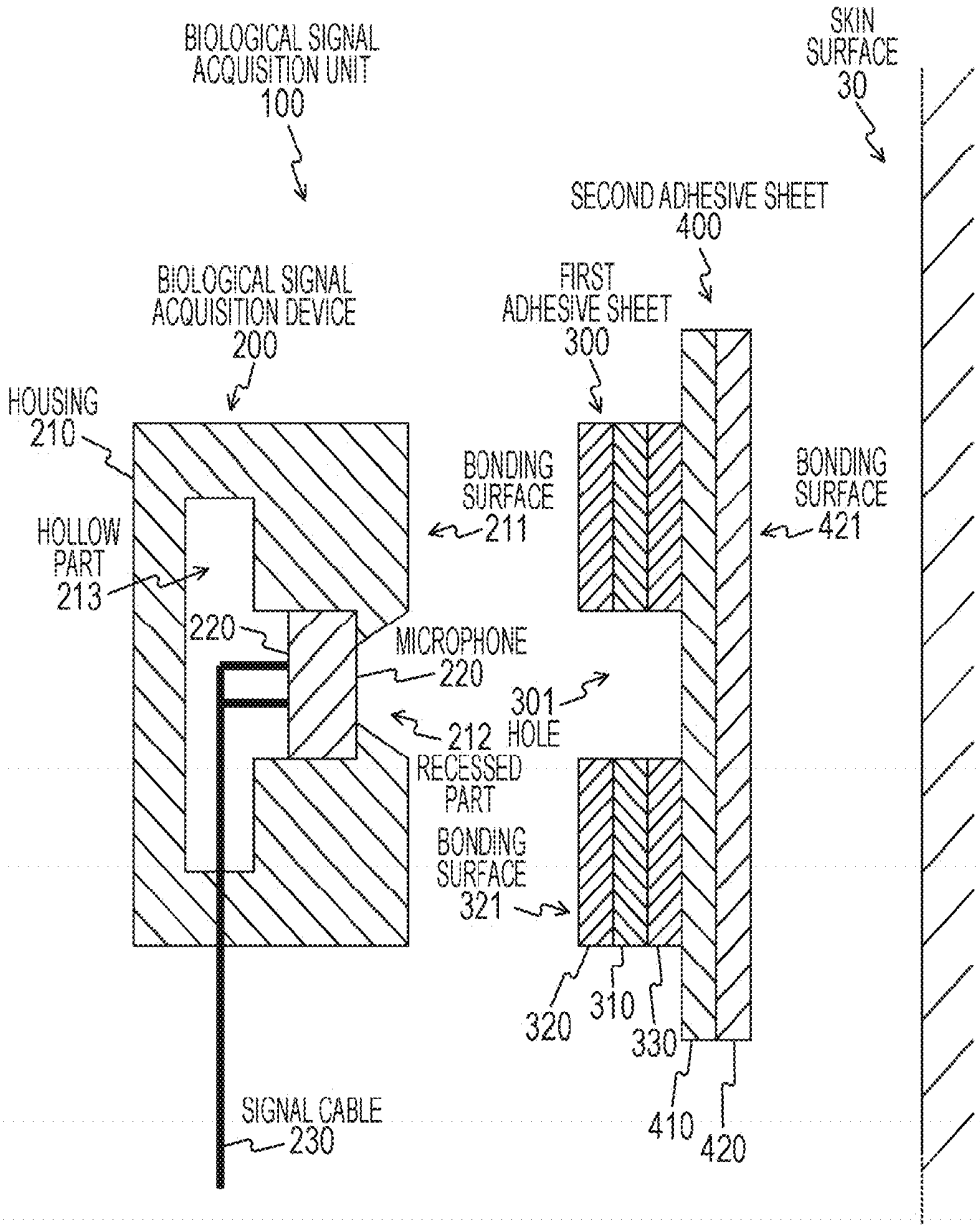

BIOLOGICAL SIGNAL ACQUISITION UNIT 100
SKIN SURFACE 30
SECOND ADHESIVE SHEET 400
BIOLOGICAL SIGNAL ACQUISITION DEVICE 200
FIRST ADHESIVE SHEET 300
HOUSING 210
BONDING SURFACE 211
BONDING SURFACE 421
HOLLOW PART 213
220
MICROPHONE 220
301 HOLE
212
RECESSED PART
BONDING SURFACE 321
320
310
330
410
420
SIGNAL CABLE 230

FIG. 8

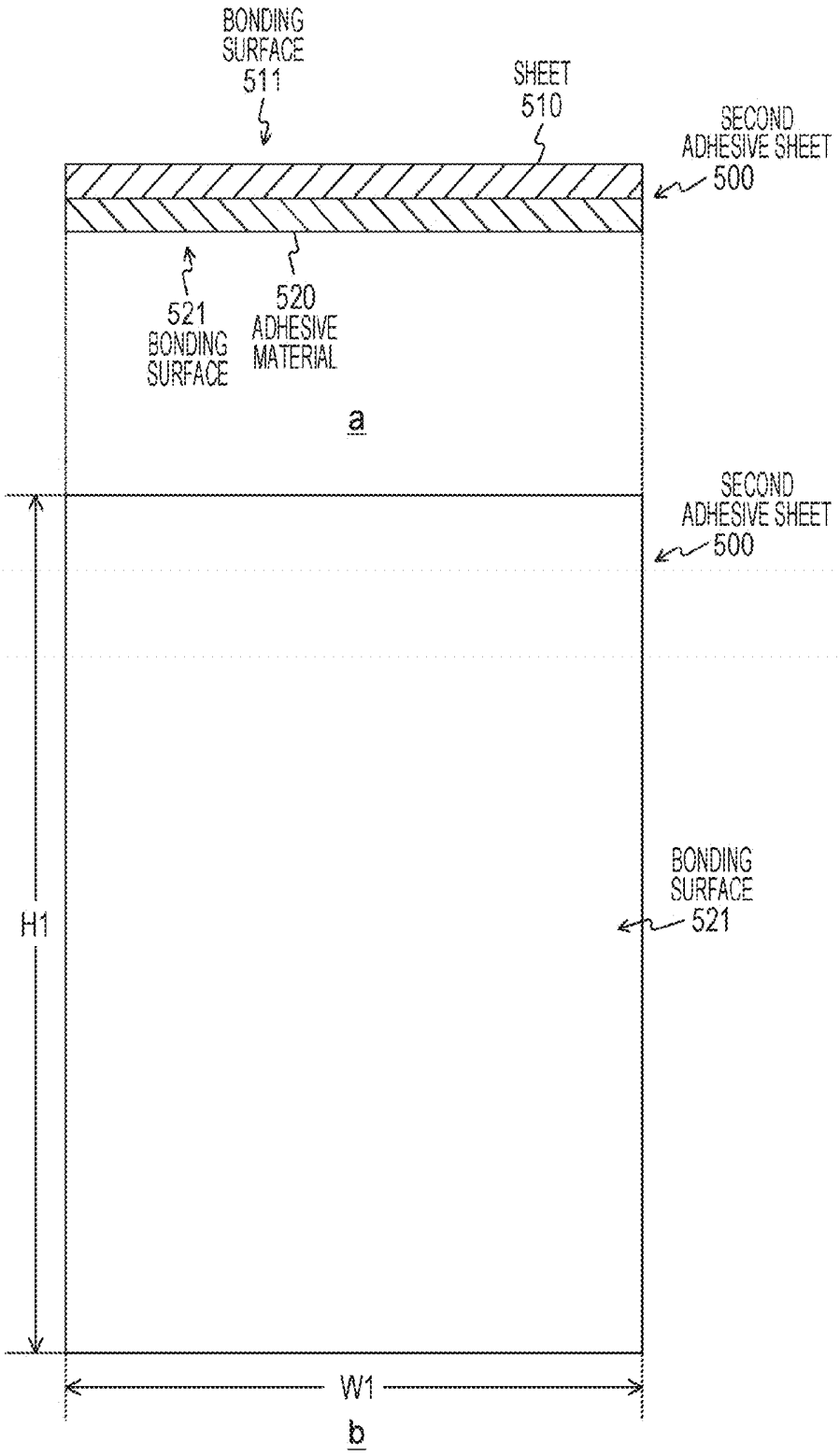

BONDING SURFACE 511
SHEET 510
SECOND ADHESIVE SHEET 500
521 BONDING SURFACE
520 ADHESIVE MATERIAL
a
SECOND ADHESIVE SHEET 500
BONDING SURFACE 521
H1
W1
b

FIG. 9

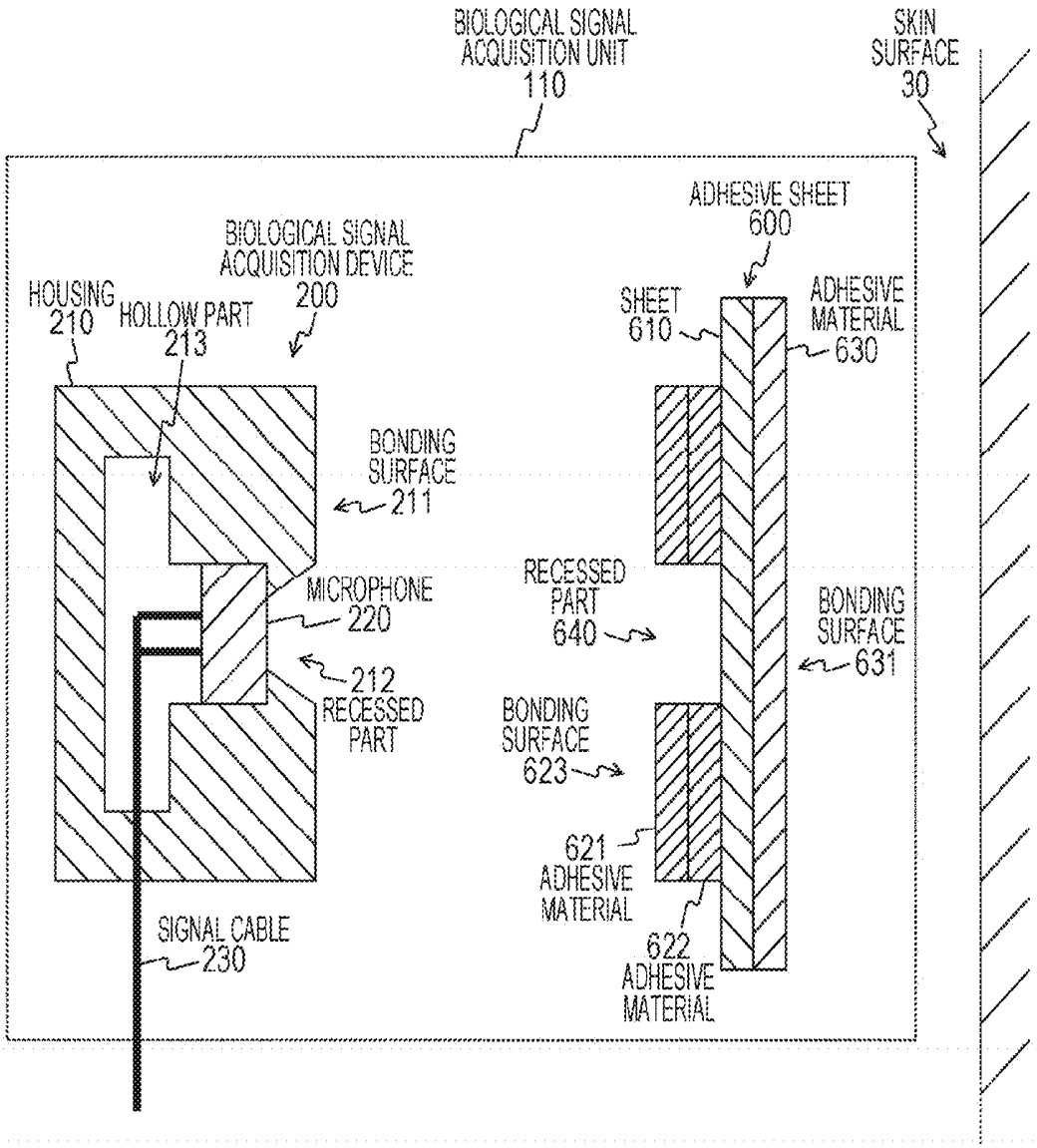

BIOLOGICAL SIGNAL ACQUISITION UNIT 110
SKIN SURFACE 30
ADHESIVE SHEET 600
BIOLOGICAL SIGNAL ACQUISITION DEVICE 200
HOUSING 210
HOLLOW PART 213
SHEET 610
ADHESIVE MATERIAL 630
BONDING SURFACE 211
MICROPHONE 220
RECESSED PART 640
BONDING SURFACE 631
212 RECESSED PART
BONDING SURFACE 623
621 ADHESIVE MATERIAL
SIGNAL CABLE 230
622 ADHESIVE MATERIAL

FIG. 10

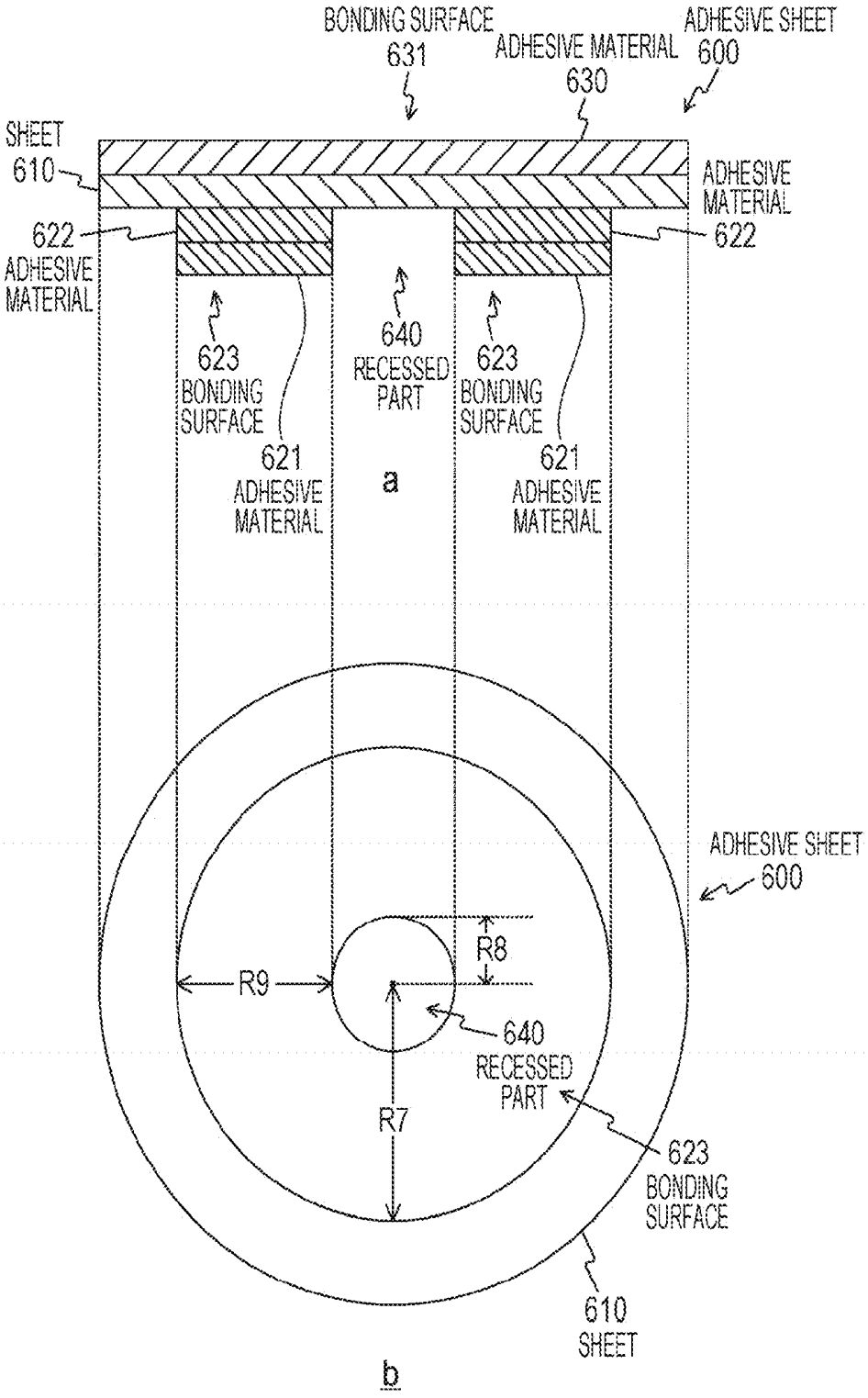

BONDING SURFACE
631
ADHESIVE MATERIAL
630
ADHESIVE SHEET
600
SHEET
610
ADHESIVE MATERIAL
622
ADHESIVE MATERIAL
622
623
BONDING SURFACE
640
RECESSED PART
623
BONDING SURFACE
621
ADHESIVE MATERIAL
a
621
ADHESIVE MATERIAL
ADHESIVE SHEET
600
R8
R9
640
RECESSED PART
R7
623
BONDING SURFACE
610
SHEET
b

FIG. 11

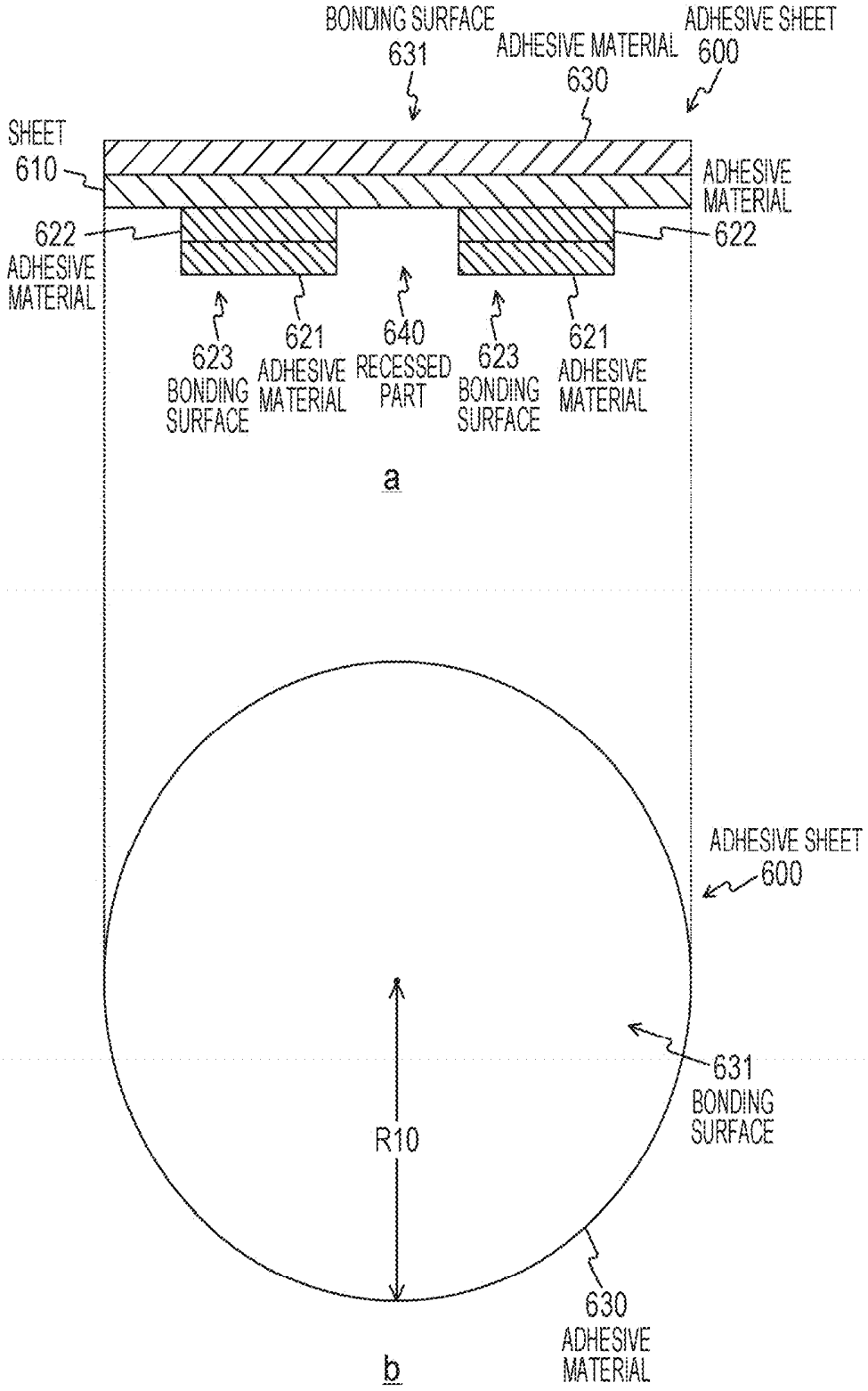

BONDING SURFACE
631
ADHESIVE MATERIAL
630
ADHESIVE SHEET
600
SHEET
610
ADHESIVE MATERIAL
622
ADHESIVE MATERIAL
622
623
BONDING SURFACE
621
ADHESIVE MATERIAL
640
RECESSED PART
623
BONDING SURFACE
621
ADHESIVE MATERIAL
a
ADHESIVE SHEET
600
631
BONDING SURFACE
R10
630
ADHESIVE MATERIAL
b

FIG. 12

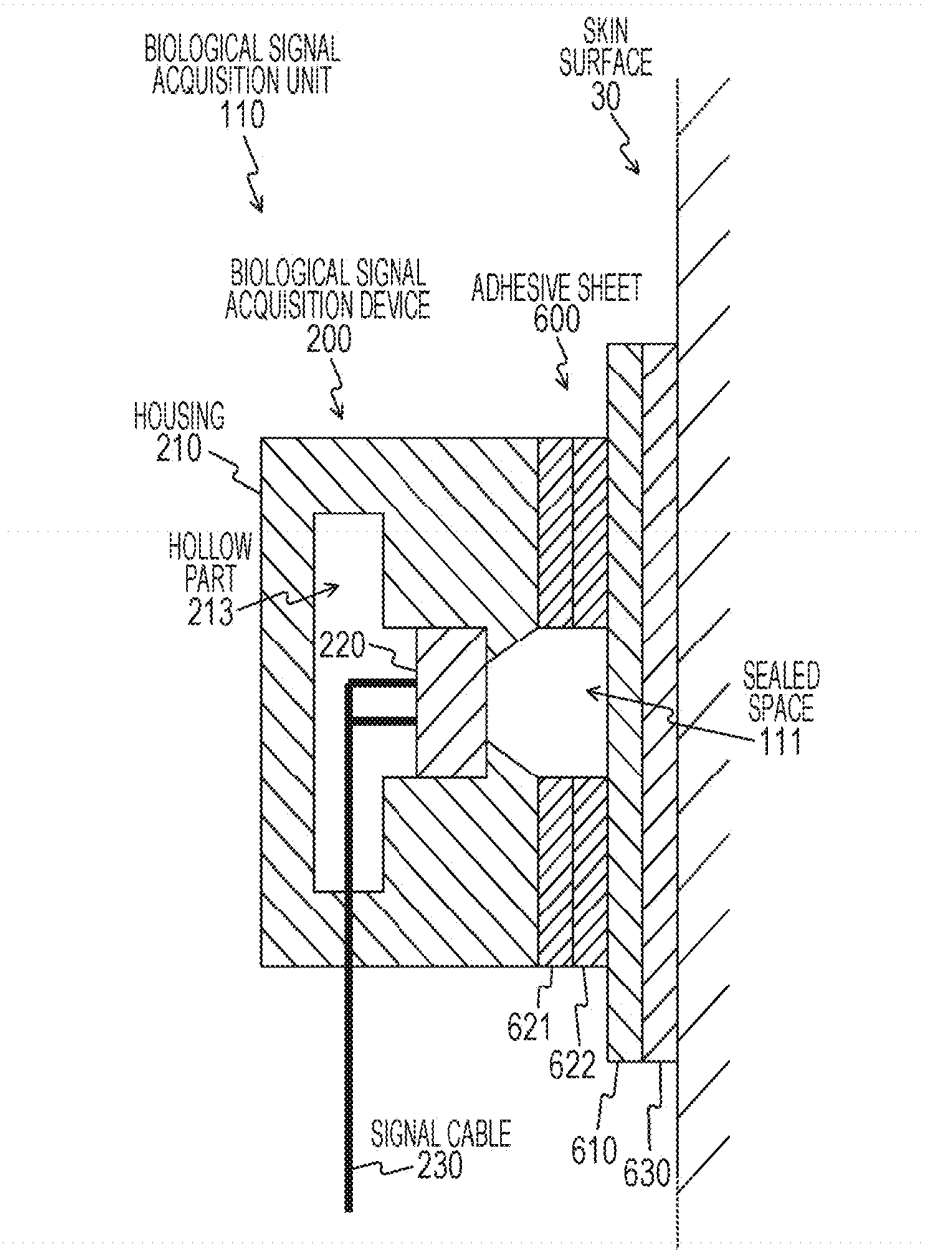

BIOLOGICAL SIGNAL ACQUISITION UNIT 110
SKIN SURFACE 30
BIOLOGICAL SIGNAL ACQUISITION DEVICE 200
ADHESIVE SHEET 600
HOUSING 210
HOLLOW PART 213
220
SEALED SPACE 111
621
622
610
630
SIGNAL CABLE 230

FIG. 13

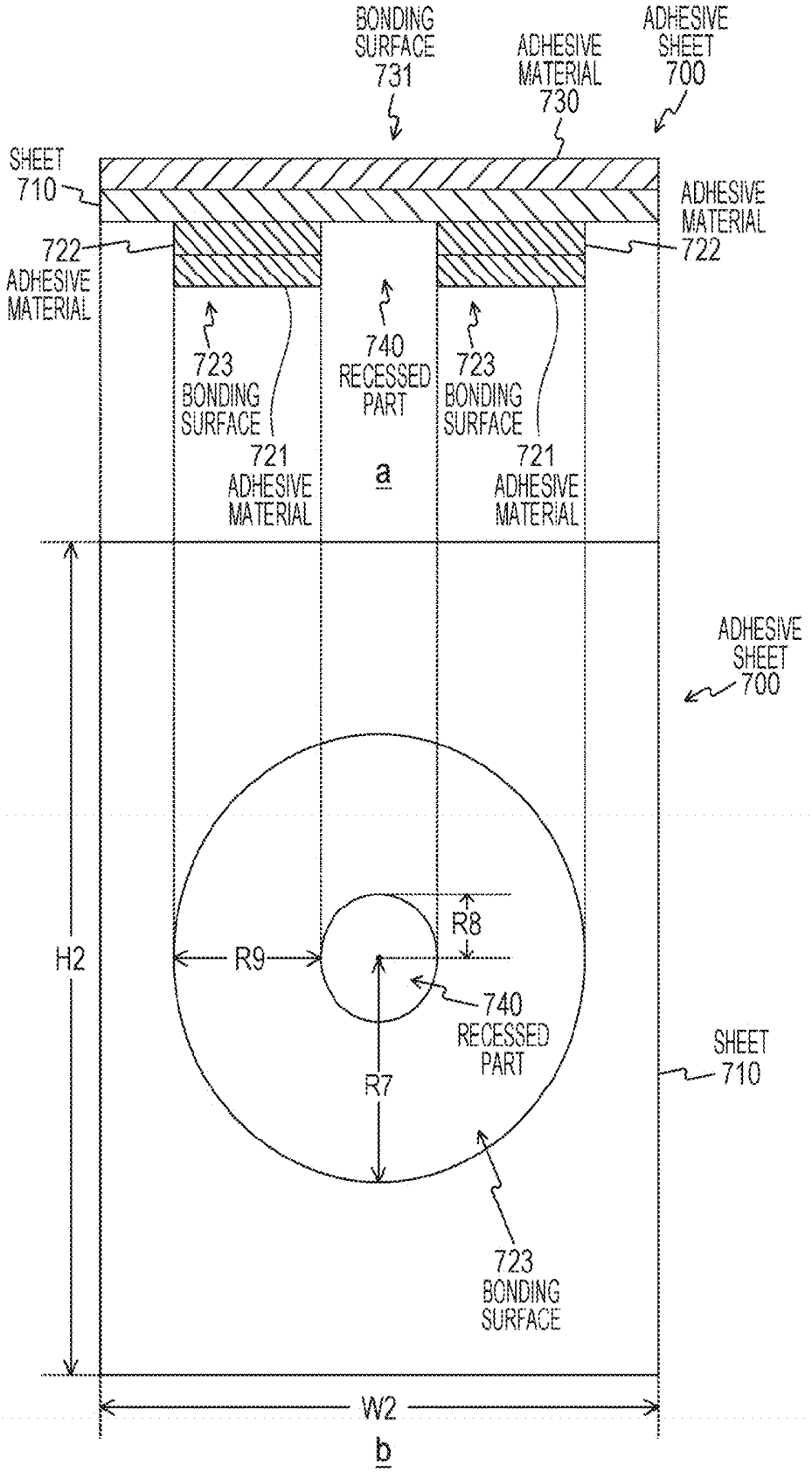

BONDING SURFACE 731
ADHESIVE MATERIAL 730
ADHESIVE SHEET 700
SHEET 710
ADHESIVE MATERIAL 722
722 ADHESIVE MATERIAL
723 BONDING SURFACE
740 RECESSED PART
723 BONDING SURFACE
721 ADHESIVE MATERIAL
a
721 ADHESIVE MATERIAL
ADHESIVE SHEET 700
H2
R8
R9
740 RECESSED PART
R7
SHEET 710
723 BONDING SURFACE
W2
b

FIG. 14

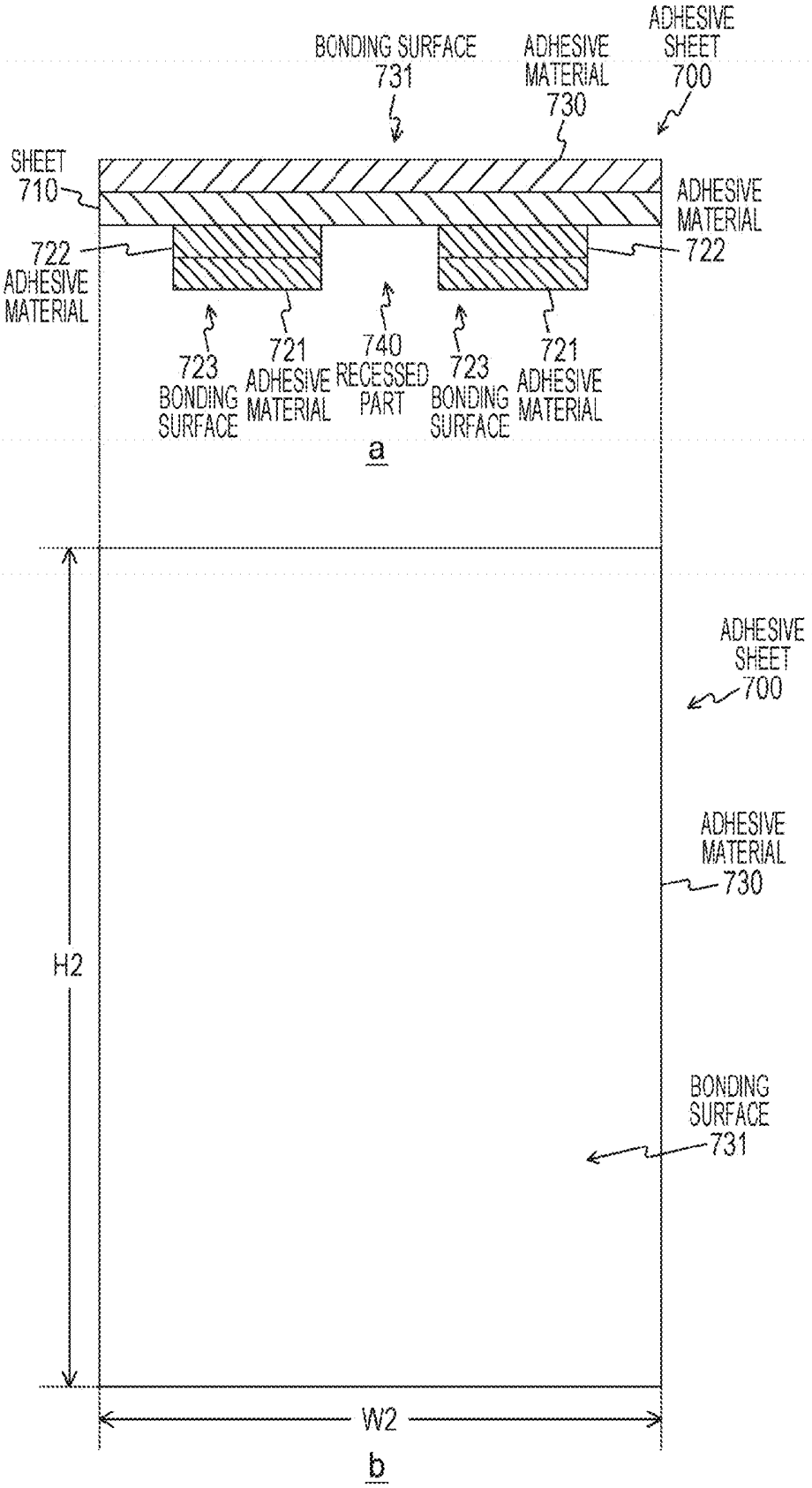
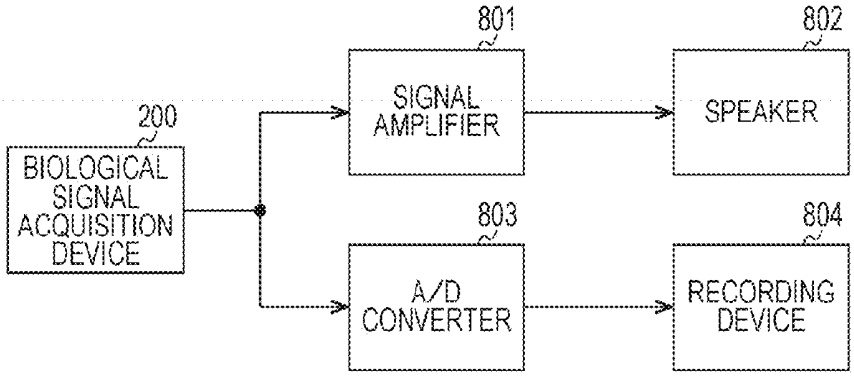
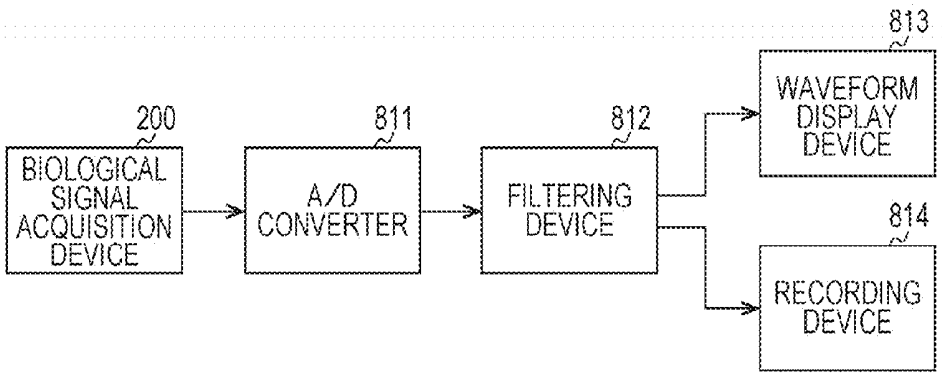

BONDING SURFACE
731
ADHESIVE MATERIAL
730
ADHESIVE SHEET
700
SHEET
710
ADHESIVE MATERIAL
722
722
ADHESIVE MATERIAL
723
BONDING SURFACE
721
ADHESIVE MATERIAL
740
RECESSED PART
723
BONDING SURFACE
721
ADHESIVE MATERIAL
a
ADHESIVE SHEET
700
ADHESIVE MATERIAL
730
H2
BONDING SURFACE
731
W2
b

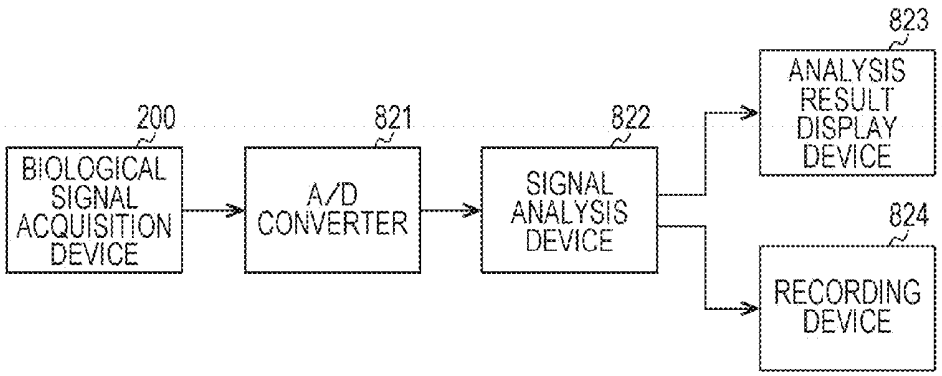
FIG. 15


200
BIOLOGICAL SIGNAL ACQUISITION DEVICE
801
SIGNAL AMPLIFIER
802
SPEAKER
803
A/D CONVERTER
804
RECORDING DEVICE

a


200
BIOLOGICAL SIGNAL ACQUISITION DEVICE
811
A/D CONVERTER
812
FILTERING DEVICE
813
WAVEFORM DISPLAY DEVICE
814
RECORDING DEVICE

b


200
BIOLOGICAL SIGNAL ACQUISITION DEVICE
821
A/D CONVERTER
822
SIGNAL ANALYSIS DEVICE
823
ANALYSIS RESULT DISPLAY DEVICE
824
RECORDING DEVICE

c

ELECTRONIC DEVICE

TECHNICAL FIELD

[0001] The present technique relates to an electronic device. Specifically, it relates to an electronic device that acquires a biological signal of a human body in a state of being fixed to the human body.

BACKGROUND ART

[0002] Conventionally, there exists an electronic device that acquires a biological signal such as a respiratory sound, a cardiac sound, a vascular sound, and a vesicular sound of a person by a microphone, which is attached to a skin surface of a human body.

[0003] For example, there has been proposed a biological signal collecting device having a sensor unit (sound collection unit), which is stuck to the skin surface of the human body by using an intermediate sheet member provided with a bonding agent layer on both surfaces thereof (see, for example, Patent Document 1).

CITATION LIST

Patent Document

[0004] Patent Document 1: Japanese Patent Application Laid-Open No. 2008-302052

SUMMARY OF THE INVENTION

Problems to be Solved by the Invention

[0005] In the above-described conventional technique, with regard to bonding strength of a bonding agent for sticking an intermediate sheet member and the sensor unit, the bonding strength is set to be larger on the sensor unit side than on the intermediate sheet member side. Therefore, in a case where the sensor unit is taken off from the skin surface of the human body after acquisition of the biological signal is completed, a bonding agent layer of the intermediate sheet member remains on the sensor unit when the intermediate sheet member is taken off from the sensor unit.

[0006] Here, in general, when the bonding agent is repeatedly stuck and peeled, the bonding strength thereof tends to decrease. Therefore, in order to prevent the sensor unit from unexpectedly peeling off during use, it is preferable that the intermediate sheet member be renewed every time the sensor unit is used. In this case, when the bonding agent layer remains on the sensor unit, as described above, there is a possibility that the intermediate sheet member may not be bonded appropriately with the sensor unit.

[0007] The present technique has been devised in view of such situation, and an objective thereof is to enable an easy replacement of a fixing member for fixing an object on the skin of the human body.

Solutions to Problems

[0008] The present technique has been devised for resolving the above-described problem, and a first aspect thereof is an electronic device including: a biological signal acquisition device configured to acquire a biological signal of a human body in a state of being fixed to a skin of the human body; a first sheet having one surface to be bonded to the biological signal acquisition device and another surface to be bonded to another sheet, in which a bonding strength per unit area between the other surface and the other sheet is larger than a bonding strength per unit area between the one surface and the biological signal acquisition device; and a second sheet having one surface to be bonded to the other surface of the first sheet and another surface to be bonded to the skin of the human body, in which the bonding strength per unit area between the one surface of the first sheet and the biological signal acquisition device is larger than a bonding strength per unit area between the other surface and the skin of the human body. Accordingly, it has an effect of fixing the biological signal acquisition device to the skin of the human body by making the bonding strength per unit area between the other surface of the first sheet and the second sheet larger than the bonding strength per unit area between the one surface of the first sheet and the biological signal acquisition device, and by making the bonding strength per unit area between the one surface of the first sheet and the biological signal acquisition device larger than the bonding strength per unit area between the other surface of the second sheet and the skin of the human body.

[0009] In the first aspect, an adhesive material is provided on each of the one surface of the first sheet, the other surface of the first sheet, and the other surface of the second sheet. An adhesive strength per unit area of the adhesive material according to the other surface of the first sheet may be larger than an adhesive strength per unit area of an adhesive material according to the one surface of the first sheet, and the adhesive strength per unit area of the adhesive material according to the one surface of the first sheet may be larger than the adhesive strength per unit area of the adhesive material according to the other surface of the second sheet. Accordingly, it has an effect of fixing the biological signal acquisition device to the skin of the human body by making the adhesive strength per unit area of the adhesive material according to the other surface of the first sheet larger than the adhesive strength per unit area of the adhesive material according to the one surface of the first sheet, and by making the adhesive strength per unit area of the adhesive material according to the one surface of the first sheet larger than the adhesive strength per unit area of the adhesive material according to the other surface of the second sheet.

[0010] In the first aspect, the above-described first sheet may be formed by bonding the adhesive material according to the above-described one surface of the above-described first sheet and the adhesive material according to the above-described other surface of the above-described first sheet together. Accordingly, it has an effect of fixing the biological signal acquisition device to the skin of the human body by using one sheet formed by bonding the adhesive material according to the one surface and the adhesive material according to the other surface together.

[0011] In the first aspect, the above-described first sheet may include a sheet member having one surface, to which the adhesive material according to the above-described one surface of the above-described first sheet is to be bonded, and another surface, to which the adhesive material according to the above-described other surface of the above-described first sheet is to be bonded. Accordingly, it has an effect of fixing the biological signal acquisition device to the skin of the human body by using the first sheet having the sheet member.

[0012] In the first aspect, the above-described biological signal acquisition device includes: a bonding surface to be bonded to the above-described one surface of the above-

described first sheet; a recessed part provided at the center of the above-described bonding surface; and a biological signal acquisition unit provided at the bottom of the recessed part and configured to acquire the above-described biological signal. The first sheet has a hole provided at the center of each of the above-described one surface and the above-described other surface of the above-described first sheet. The above-described electronic device further includes a sealed space formed by the above-described biological signal acquisition unit, the above-described recessed part, the above-described hole, and the above-described one surface of the above-described second sheet in a state where the above-described biological signal acquisition device is bonded to the above-described first sheet and the above-described first sheet is bonded to the above-described second sheet. Accordingly, it has an effect of forming the sealed space by the biological signal acquisition unit, the recessed part, the hole, and the one surface of the second sheet in a state where the first sheet is bonded to the second sheet.

[0013] In the first aspect, a periphery of an opening of the above-described recessed part may be substantially the same as a periphery of the above-described hole, and the above-described biological signal acquisition device and the above-described first sheet may be bonded together such that the periphery of the opening of the above-described recessed part substantially corresponds with the periphery of the above-described hole. Accordingly, it has an effect that the biological signal acquisition device is bonded to the first sheet such that the periphery of the opening of the recessed part substantially corresponds with the periphery of the hole.

[0014] In the first aspect, the above-described biological signal acquisition unit may be a microphone. Accordingly, it has an effect that the microphone is used as the biological signal acquisition unit.

[0015] In the first aspect, an area of each of the above-described one surface and the above-described other surface of the above-described second sheet may be larger than an area of each of the above-described one surface and the above-described other surface of the above-described first sheet. Accordingly, it has an effect that the first sheet is bonded to the second sheet in a state where the area of each of both surfaces of the second sheet is larger than the area of each of both surfaces of the first sheet.

[0016] In the first aspect, the above-described biological signal acquisition device may acquire any one of or a combination of a respiratory sound, a cardiac sound, vascular sound, and a vesicular sound as the above-described biological signal. Accordingly, it has an effect that any one of or the combination of the respiratory sound, the cardiac sound, the vascular sound, and the vesicular sound is acquired as the biological signal.

[0017] In the first aspect, the above-described second sheet may be an adhesive film dressing member. Accordingly, it has an effect that the adhesive film dressing member is used as the second sheet.

[0018] In the first aspect, a color for making each of the above-described first sheet and the above-described second sheet distinguishable is given at least to one of the above-described first sheet and the above-described second sheet. Accordingly, it has an effect that the biological signal acquisition device is fixed to the skin of the human body by using the first sheet and the second sheet, each having a color that makes it distinguishable.

[0019] In the first aspect, the color of the above-described second sheet may be semi-transparent. Accordingly, it has an effect that the biological signal acquisition device is fixed to the skin of the human body by using the second sheet, which is to be semi-transparent.

[0020] In this first aspect, a grid pattern design may be given to the above-described one surface of the above-described second sheet. Accordingly, it has an effect that the biological signal acquisition device is fixed to the skin of the human body by using the second sheet, which is given the grid pattern design on the one surface thereof.

Effects of the Invention

[0021] According to the present technique, it is possible to enjoy an excellent effect that replacement of a fixing member for fixing an object on a skin of a human body can be easily performed.

BRIEF DESCRIPTION OF DRAWINGS

[0022] FIG. **1** is a view illustrating a simplified usage example of a biological signal acquisition unit **100** according to a first embodiment of the present technique.

[0023] FIG. **2** is a sectional view illustrating an exemplary configuration of the biological signal acquisition unit **100** according to the first embodiment of the present technique.

[0024] FIGS. **3***a* and **3***b* are a sectional view and a side view illustrating an exemplary configuration of a biological signal acquisition device **200** according to the first embodiment of the present technique.

[0025] FIGS. **4***a* and **4***b* are a sectional view and a side view illustrating an exemplary configuration of a first adhesive sheet **300** according to the first embodiment of the present technique.

[0026] FIGS. **5***a* and **5***b* are a sectional view and a side view illustrating an exemplary configuration of a second adhesive sheet **400** according to the first embodiment of the present technique.

[0027] FIG. **6** is a sectional view illustrating a state during use of the biological signal acquisition unit **100** according to the first embodiment of the present technique.

[0028] FIG. **7** is a sectional view illustrating a state after use of the biological signal acquisition unit **100** is completed according to the first embodiment of the present technique.

[0029] FIGS. **8***a* and **8***b* are a sectional view and a side view illustrating an exemplary configuration of a second adhesive sheet **500** according to the first embodiment of the present technique.

[0030] FIG. **9** is a sectional view of an exemplary configuration of a biological signal acquisition unit **110** according to a second embodiment of the present technique.

[0031] FIGS. **10***a* and **10***b* are a sectional view and a side view of an exemplary configuration of an adhesive sheet **600** according to the second embodiment of the present technique.

[0032] FIGS. **11***a* and **11***b* are a sectional view and a side view of an exemplary configuration of the adhesive sheet **600** according to the second embodiment of the present technique.

[0033] FIG. **12** is a sectional view illustrating a state during use of the biological signal acquisition unit **110** according to the second embodiment of the present technique.

[0034] FIGS. **13***a* and **13***b* are a sectional view and a side view illustrating an exemplary configuration of an adhesive sheet **700** according to the second embodiment of the present technique.

[0035] FIGS. **14***a* and **14***b* are a sectional view and a side view illustrating an exemplary configuration of an adhesive sheet **700** according to the second embodiment of the present technique.

[0036] FIGS. **15***a* to **15***c* are views each illustrating an exemplary electronic device that uses a biological signal acquired by the biological signal acquisition device **200** according to an embodiment of the present technique.

MODES FOR CARRYING OUT THE INVENTION

[0037] Modes for carrying out the present technique (hereinafter, referred to as embodiments) are described herein. Descriptions will be given in the following order.

[0038] 1. First embodiment (an example of fixing a biological signal acquisition device on a skin surface of a human body by using a first adhesive sheet and a second adhesive sheet)

[0039] 2. Second embodiment (an example of fixing the biological signal acquisition device on the skin surface of the human body by using one sheet equivalent to the first adhesive sheet and the second adhesive sheet)

[0040] 3. Application example

1. First Embodiment

Usage Example of the Biological Signal Acquisition Unit

[0041] FIG. **1** is a view illustrating a simplified usage example of a biological signal acquisition unit **100** according to the first embodiment of the present technique. Note that a configuration of the biological signal acquisition unit **100** (a cross section of the biological signal acquisition unit **100** viewed from an arrow A (CS**1**-CS**2** cross section)) is described in detail with reference to FIG. **2**.

[0042] In FIG. **1**, a state is illustrated in which the biological signal acquisition unit **100** is attached to a skin surface **30** of a cervix (neck) **20** of a person **10**. The person **10** is a target of biological signal acquisition (measurement), and for example, is a patient or a subject.

[0043] Furthermore, a signal cable **230** provided to the biological signal acquisition unit **100** is connected to an electronic device **50**. Note that the electronic device **50** performs various processing (e.g., analog-digital (A/D) conversion processing, signal analysis processing) on a biological signal acquired by the biological signal acquisition unit **100**. Note that an exemplary electronic device that performs various processing on the biological signal acquired by the biological signal acquisition unit **100** is described in detail with reference to FIGS. **15***a* to **15***c*.

[0044] [Exemplary Configuration of the Biological Signal Acquisition Unit]

[0045] FIG. **2** is a sectional view illustrating an exemplary configuration of the biological signal acquisition unit **100** according to the first embodiment of the present technique. FIG. **2** is also a sectional view illustrating the cervix **20** of the person **10** with the biological signal acquisition unit **100**. That is, in FIG. **2**, a relation between the biological signal acquisition unit **100** and the skin surface **30** is illustrated in a simplified manner when the biological signal acquisition unit **100** is not yet attached to the skin surface **30** of the cervix **20** of the person **10**.

[0046] The biological signal acquisition unit **100** includes a biological signal acquisition device **200**, a first adhesive sheet **300**, and a second adhesive sheet **400**. Note that the biological signal acquisition unit **100** is an example of the electronic device described in the claims.

[0047] The biological signal acquisition device **200** includes a housing **210**, a microphone **220**, and the signal cable **230**.

[0048] The housing **210** is a cylindrically-shaped housing, and a surface equivalent to one end face of a cylindrical shape is to be a bonding surface **211** to the first adhesive sheet **300**. Furthermore, at the center of the bonding surface **211**, a conically-shaped recessed part **212** is formed, and the microphone **220** is provided at the bottom of the recessed part **212**. Furthermore, a hollow part **213** is formed inside the housing **210**, and the signal cable **230** connected to the microphone **220** is output to outside of the housing **210** through the hollow part **213**.

[0049] Note that in the embodiment of the present technique, a cylindrically-shaped housing is used an example of the housing of the biological signal acquisition device; however, it is also possible to use a housing in a different shape (e.g., polygonal column shape, cone shape).

[0050] The microphone **220** is a biological signal acquisition unit that acquires sound as the biological signal. For example, the microphone **220** acquires the sound generated from the skin surface **30** as the biological signal in a state where the biological signal acquisition device **200** is attached to the skin surface **30** of the cervix **20** of the person **10**. For example, the microphone **220** acquires any one of or a combination of a respiratory sound, a cardiac sound, a vascular sound, and a vesicular sound as the biological signal. Furthermore, the biological signal acquired by the microphone **220** is output to an external device (e.g., electronic device **50** illustrated in FIG. **1**) through the signal cable **230**. Note that the microphone **220** is an example of the biological signal acquisition unit described in the claim.

[0051] For example, the microphone **220** is realized by an electret capacitor microphone. Note that a microphone other than the electret capacitor microphone (e.g., silicon microphone) may also be used as the biological signal acquisition unit.

[0052] Furthermore, although not illustrated or described in detail in the embodiment according to the present technique, a battery for power supply, an A/D converter, and a radio communication device may be incorporated in the biological signal acquisition device **200**. Note that the battery for power supply is a battery that supplies power to the biological signal acquisition device **200**. Furthermore, the A/D converter is a device that A/D converts the biological signal acquired by the microphone **220**. In this way, in a case where the A/D converter is incorporated in the biological signal acquisition device **200**, a digital signal converted by the A/D converter can be output from the biological signal acquisition device **200**, whereby another A/D converter is not necessary. Furthermore, the radio communication device is a device for wirelessly transmitting the biological signal acquired by the microphone **220** to the external device. For example, it is assumed that a noise may be caused when the signal cable **230** is scraped. Therefore, by incorporating the radio communication device in the biological signal acquisition device **200**, it is possible to prevent the noise caused when the signal cable **230** is scraped.

[0053] The signal cable **230** is a signal cable for outputting the biological signal acquired by the microphone **220** to the external device.

[0054] The first adhesive sheet **300** is an annular sheet (as illustrated in FIG. **4***b*, for example), both of surfaces thereof being bonding surfaces, and includes a sheet **310**, an adhesive material **320**, and an adhesive material **330**. Herein, as illustrated in FIG. **4***b*, a hole **301** at the center of the first adhesive sheet **300** is circular when viewed from the skin surface **30** side, and a size of a periphery thereof is substantially the same as a size of a periphery of an opening of the recessed part **212** of the biological signal acquisition device **200**. Note that the first adhesive sheet **300** is an example of the first sheet described in the claims.

[0055] The sheet **310** is an annular sheet member, and the adhesive material **320** is attached to one of surfaces thereof and the adhesive material **330** is attached to the other of the surfaces thereof. As a material of the sheet **310**, resin such as polyethylene, a non-woven fabric, and the like may be used.

[0056] The adhesive material **320** is an annular adhesive material, one of surfaces thereof being attached to the sheet **310** and the other of the surfaces thereof being a bonding surface **321** to the biological signal acquisition device **200**. In a case where the biological signal acquisition device **200** is mounted on the skin surface **30**, the bonding surface **321** of the adhesive material **320** is stuck to the bonding surface **211** of the biological signal acquisition device **200**.

[0057] The adhesive material **330** is an annular adhesive material, one of surfaces thereof being attached to the sheet **310** and the other of the surfaces thereof being a bonding surface **331** to the second adhesive sheet **400**. In a case where the biological signal acquisition device **200** is mounted on the skin surface **30**, the bonding surface **331** of the adhesive material **330** is stuck to a bonding surface **411** of the second adhesive sheet **400**.

[0058] The second adhesive sheet **400** is a circular sheet (as illustrated in FIG. **5***b*, for example), one of surfaces thereof being an adhesive surface, and includes a sheet **410** and an adhesive material **420**.

[0059] The sheet **410** is a circular sheet, one of surfaces thereof being attached to the adhesive material **420** and the other of the surfaces thereof being a bonding surface **411** to the first adhesive sheet **300**. As a material of the sheet **410**, it is preferable that a material capable of efficiently transmitting a vibration of the skin surface **30** to the microphone **220** be used. For example, acrylic resin, polyurethane, nylon, and the like may be used as the material of the sheet **410**. Furthermore, by using an elastic sheet such that it can adapt to movement of the skin surface **30**, it is possible to decrease damage on the skin of the person **10**. As a sheet having this feature, an adhesive film dressing member for medical use, for example, may be used. Note that the dressing material refers to a member used for protecting the skin surface by wrapping or covering it.

[0060] The adhesive material **420** is a circular adhesive material, one of surfaces thereof being attached to the sheet **410** and the other of the surfaces being a bonding surface **421** to be bonded to the skin surface **30**. In a case where the biological signal acquisition device **200** is mounted on the skin surface **30**, the bonding surface **421** of the adhesive material **420** is stuck to the skin surface **30**.

[0061] In this way, in a case where the biological signal acquisition device **200** is mounted on the skin surface **30**, the biological signal acquisition device **200** is stuck to the first adhesive sheet **300** by the adhesive material **320**, and the first adhesive sheet **300** is stuck to the second adhesive sheet **400** by the adhesive material **330**. Furthermore, the second adhesive sheet **400** is stuck to the skin surface **30** by the adhesive material **420**.

[0062] [Exemplary Configuration of the Biological Signal Acquisition Device]

[0063] FIGS. **3***a* and **3***b* are a sectional view and a side view of an exemplary configuration illustrating the biological signal acquisition device **200** according to the first embodiment of the present technique. That is, the sectional view of the biological signal acquisition device **200** is illustrated in FIG. **3***a*, and the side view of the biological signal acquisition device **200** (side view viewed from the bonding surface **211** side (skin surface **30** side)) is illustrated in FIG. **3***b*. Note that the sectional view of the biological signal acquisition device **200** illustrated in FIG. **3***a* is the same as the sectional view of the biological signal acquisition device **200** illustrated in FIG. **2**, except that it is rotated 90 degrees clockwise. Therefore, a detailed description is omitted here.

[0064] As described above, the conically-shaped recessed part **212** is formed at the center of the bonding surface **211**, and the microphone **220** is provided at the bottom of the recessed part **212**.

[0065] Here, when R1 is a radius of a circle corresponding to the bonding surface **211** including the recessed part **212**, R2 is a radius of a circle corresponding to the opening of the recessed part **212**, and A1 is an area of the bonding surface **211**, the following formula is established.

$$A1=\pi(R1)^2-\pi(R2)^2$$

[0066] [Exemplary Configuration of the First Adhesive Sheet]

[0067] FIGS. **4***a* and **4***b* are a sectional view and a side view illustrating an exemplary configuration of the first adhesive sheet **300** according to the first embodiment of the present technique. That is, FIG. **4***a* is the sectional view of the first adhesive sheet **300**, and FIG. **4***b* is the side view (side view viewed from the bonding surface **331** side (skin surface **30** side) of the first adhesive sheet **300**. Note that the sectional view of the first adhesive sheet **300** illustrated in FIG. **4***a* is the same as the sectional view of the first adhesive sheet **300** illustrated in FIG. **2**, except that it is rotated 90 degrees clockwise. Therefore, a detailed description is omitted here.

[0068] As described above, the cylindrically-shaped hole **301** is formed in the first adhesive sheet **300**. Here, a size of an outer periphery of the circle corresponding to the bonding surface **211** of the biological signal acquisition device **200** and a size of an outer periphery of a circle corresponding to the first adhesive sheet **300** are the same. Furthermore, a size of an outer periphery of the circle corresponding to the opening of the recessed part **212** and a size of an outer periphery of a circle corresponding to the hole **301** of the first adhesive sheet **300** are the same.

[0069] Therefore, when R3 is a radius of the circle corresponding to the first adhesive sheet **300**, R4 is a radius of the circle corresponding to the hole **301** of the first adhesive sheet **300**, and A2 is an area of the bonding surface **331**, R1=R3, R2=R4, and A1=A2. Therefore, the following formula is established.

$$A2=\pi(R3)^2-\pi(R4)^2$$

[0070] Furthermore, when R5 is a length in a radial direction of the bonding surface **331**, the following formula is established.

$$R5=R3-R4$$

[0071] [Exemplary Configuration of the Second Adhesive Sheet]

[0072] FIGS. **5***a* and **5***b* are a sectional view and a side view illustrating an exemplary configuration of the second adhesive sheet **400** according to the first embodiment of the present technique. That is, the sectional view of the second

adhesive sheet **400** is illustrated in FIG. **5***a*, and the side view of the second adhesive sheet **400** (the side view when viewed from the bonding surface **421** side (skin surface **30** side)) is illustrated in FIG. **5***b*. Note that, the sectional view of the second adhesive sheet **400** illustrated in FIG. **5***a* is the same as the sectional view of the second adhesive sheet **400** illustrated in FIG. **2**, except that it is rotated 90 degrees clockwise. Therefore, a detailed description is omitted here.

[0073] As described above, unlike the first adhesive sheet **300**, there is no hole formed in the second adhesive sheet **400**. Furthermore, a size of an outer periphery of a circle corresponding to the bonding surface **421** of the second adhesive sheet **400** is larger than a size of an outer periphery of the circle corresponding to the first adhesive sheet **300**.

[0074] Therefore, when R6 is a radius of the circle corresponding to the second adhesive sheet **400**, and A3 is an area of the bonding surface **421**, R1=R3<R6 and A1=A2<A3. Therefore, the following formula is established.

$$A3=\pi(R6)^2$$

[0075] Here, the first adhesive sheet **300**, the second adhesive sheet **400**, and an adhesive strength between each of the adhesive materials (adhesive materials **320**, **330**, and **420**) are described herein.

[0076] For example, a double-sided tape having different adhesive strengths on both surfaces thereof may be used as the first adhesive sheet **300**. In a case where this double-sided tape is used, it is preferable that the adhesive strength of one of the surfaces (surface to be stuck to the biological signal acquisition device **200**) be at a level such that the adhesive material does not remain on the bonding surface **211** when it is peeled off from the biological signal acquisition device **200**. Note, however, that the following relation is established with regard to this adhesive strength.

[0077] Furthermore, as the second adhesive sheet **400**, for example, it is possible to use a medical film (for example, one-sided tape) being capable of suppressing the skin damage and being thin and soft enough to allow the biological signal such as the respiratory sound to pass through it.

[0078] Let a first adhesive strength AS**1** be an adhesive strength per unit area between the biological signal acquisition device **200** and the first adhesive sheet **300** (adhesive strength per unit area of the adhesive material **320**), and a second adhesive strength AS**2** be an adhesive strength per unit area between the second adhesive sheet **400** and the skin surface **30** (adhesive strength per unit area of the adhesive material **420**). Furthermore, let a third adhesive strength AS**3** be an adhesive strength per unit area between the first adhesive sheet **300** and the second adhesive sheet **400** (adhesive strength per unit area of the adhesive material **330**). In this case, the following relation is established among these three adhesive strengths.

$$AS2<AS1<AS3$$

[0079] That is, it is set such that a bonding strength per unit area between the bonding surface **331** of the first adhesive sheet **300** and the second adhesive sheet **400** is larger than a bonding strength per unit area between the bonding surface **321** of the first adhesive sheet **300** and the biological signal acquisition device **200**. Furthermore, it is set such that the bonding strength per unit area between the bonding surface **321** of the first adhesive sheet **300** and the biological signal acquisition device **200** is larger than a bonding strength per unit area between the bonding surface **421** of the second adhesive sheet **400** and the skin surface **30**.

[0080] Specifically, the second adhesive strength (adhesive strength per unit area of the adhesive material **420**) AS**2** is set at a level low enough to be able to suppress the skin damage when the second adhesive sheet **400** is peeled off from the skin surface **30**. In this case, an area A3 of the bonding surface **421** is set so as to have an area large enough to sufficiently make up for weakness of the second adhesive strength AS**2**. For example, in a case where the adhesive strength per unit area of the bonding surface **421** is halved, the area A3 of the bonding surface **421** is set to be doubled.

[0081] In this way, by setting the area A3 of the bonding surface **421** to be large, it is possible to suppress the second adhesive strength AS**2** to be low. Accordingly, it is possible to fix the biological signal acquisition unit **100** stably on the skin surface **30**, and when the biological signal acquisition unit **100** is peeled off from the skin surface **30**, it is possible to suppress damage to the skin surface **30**.

[0082] Here, it is assumed that a hole having the same size as the size of the outer periphery of the circle corresponding to the opening of the recessed part **212** of the biological signal acquisition device **200** be provided in the second adhesive sheet **400**. In this case, it is assumed that sticking the hole **301** of the first adhesive sheet **300** and the hole of the second adhesive sheet **400** together by accurately aligning positions thereof could be difficult. Therefore, by allowing the second adhesive sheet **400** to be in a shape having no hole, the area A3 of the bonding surface **421** can be made larger. Accordingly, when a user of the biological signal acquisition unit **100** sticks the first adhesive sheet **300** and the second adhesive sheet **400** together, it is possible to easily stick them together without making an exact alignment.

[0083] Note that in the first embodiment of the present technique, an example is described in which a size of the outer periphery of the second adhesive sheet **400** is set to be larger than a size of the outer periphery of the first adhesive sheet **300**; however, these sizes can also be substantially the same. For example, whereas the hole **301** is formed in the first adhesive sheet **300**, no hole is formed in the second adhesive sheet **400**. Therefore, even if the size of the outer periphery of the second adhesive sheet **400** and the size of the outer periphery of the first adhesive sheet **300** are the same, an area of the bonding surface of the second adhesive sheet **400** is larger by an area equivalent to the hole **301** of the first adhesive sheet **300**. For example, in a case where the biological signal acquisition unit **100** is stuck to a narrow part (for example, a cervix of an infant), it is effective to decrease the size of the outer periphery of the second adhesive sheet **400**.

[0084] In this way, in the first embodiment of the present technique, each of the areas of the bonding surfaces **411** and **421** of the second adhesive sheet **400** is set to be larger than each of the areas of the bonding surfaces **321** and **331** of the first adhesive sheet **300**.

[0085] [Exemplary State of Using the Biological Signal Acquisition Unit]

[0086] FIG. **6** is a sectional view illustrating a state of using the biological signal acquisition unit **100** according to the first embodiment of the present technique. That is, in FIG. **6**, a section is illustrated when the biological signal acquisition unit **100** is mounted on the skin surface **30**.

[0087] Here, in FIG. **6**, the biological signal acquisition unit **100** is illustrated in a state where each of the bonding surfaces **211**, **321**, **331**, and **411** of the biological signal acquisition unit **100** in FIG. **2** is stuck to each other, and the bonding surface **421** is stuck to the skin surface **30**.

[0088] As illustrated in FIG. **6**, the biological signal acquisition device **200** and the first adhesive sheet **300** are bonded together such that a periphery of the opening of the recessed part **212** of the biological signal acquisition device **200** substantially corresponds to a periphery of the hole **301** of the first adhesive sheet **300**.

[0089] Furthermore, in a state where each of the bonding surfaces **211**, **321**, **331**, and **411** of the biological signal acquisition unit **100** is stuck to each other, a sealed space **101** is formed by the recessed part **212** of the biological signal acquisition device **200** and the hole **301** of the first adhesive sheet **300**. That is, the sealed space **101** is a closed space surrounded by the microphone **220** and an internal surface of the recessed part **212** of the biological signal acquisition device **200**, an internal surface of the hole **301** of the first adhesive sheet **300**, and the bonding surface **411** of the second adhesive sheet **400**. In this way, the biological signal acquisition unit **100** is provided with the sealed space **101** formed in a state in which the biological signal acquisition device **200** is bonded to the first adhesive sheet **300**, and the first adhesive sheet **300** is bonded to the second adhesive sheet **400**.

[0090] For example, when a person (for example, subject) **10** respires, a vibration of a gas inside a respiratory tract is transmitted to the skin surface **30**. In this way, the vibration transmitted to the skin surface **30** is transmitted to the second adhesive sheet **400**, and the vibration transmitted to the second adhesive sheet **400** further causes air inside the sealed space **101** to vibrate. Then, when the vibration of the air inside the sealed space **101** is transmitted to the microphone **220**, the vibration of the air is converted into an electric signal by the microphone **220**. In this way, the electric signal converted by the microphone **220** is transmitted to the external device (for example, the electronic device **50** illustrated in FIG. **1**) through the signal cable **230**.

[0091] In this way, by causing the air inside the sealed space **101** to vibrate, the vibration of the skin surface **30** is transmitted to the microphone **220**; therefore, it is important that the sealed space **101** is hermetically sealed. For example, sound pressure decreases when a gap exists in the sealed space **101**, whereby the biological signal acquirable by the microphone **220** may be significantly small.

[0092] Therefore, it is necessary to make a length in a radial direction of the first adhesive sheet **300** (R5 illustrated in FIG. **4***b*) large enough such that there is no partial gap when stuck. For example, it is preferable that the length in the radial direction of the first adhesive sheet **300** (R5 illustrated in FIG. **4***b*) be 2 mm or more. It is more preferable that it be 3 mm or more.

[0093] FIG. **7** is a sectional view illustrating a state after use of the biological signal acquisition unit **100** is completed according to the first embodiment of the present technique. That is, in FIG. **7**, the section is illustrated in which the biological signal acquisition unit **100** is peeled off from the skin surface **30** after the biological signal of the person **10** has been measured.

[0094] For example, in a case where measurement of the biological signal of the person **10** has been completed, the biological signal acquisition unit **100** can be peeled off from the skin surface **30** by pulling the second adhesive sheet **400**, which is stuck to the skin surface **30**.

[0095] Herein, as described above, the third adhesive strength AS**3** (adhesive strength per unit area between the first adhesive sheet **300** and the second adhesive sheet **400**) is larger than the first adhesive strength AS**1** (adhesive strength per unit area between the biological signal acquisition device **200** and the first adhesive sheet **300**). Therefore, when the second adhesive sheet **400** is peeled off by pulling the biological signal acquisition device **200**, the first adhesive sheet **300** is peeled off from the biological signal acquisition device **200** in a state where it is stuck to the second adhesive sheet **400**.

[0096] Note that it is also possible to peel off the biological signal acquisition unit **100** from the skin surface **30** in a different way. For example, it is assumed that the first adhesive sheet **300** is peeled off by pulling the biological signal acquisition device **200**. In this case, since the third adhesive strength AS**3** is larger than the first adhesive strength AS**1**, the first adhesive sheet **300** is peeled off from the biological signal acquisition device **200** in a state where it is stuck to the second adhesive sheet **400**. Then, it can be peeled off from the skin surface **30** by pulling the second adhesive sheet **400** to which the first adhesive sheet **300** is stuck.

[0097] In this way, in a case where the biological signal acquisition unit **100** is peeled off from the skin surface **30**, since the third adhesive strength AS**3** is larger than the first adhesive strength AS**1**, it is possible to achieve a state in which the first adhesive sheet **300** and the second adhesive sheet **400** are stuck together. Therefore, the first adhesive sheet **300** can be easily peeled off from the biological signal acquisition device **200**.

[0098] A color of the biological signal acquisition unit **100** is described herein.

[0099] For example, by giving a different color to each of the first adhesive sheet **300** and the second adhesive sheet **400**, it is possible to easily check existence of each of the adhesive sheets.

[0100] For example, it is possible to give a color, which is easily distinguishable from the color of the biological signal acquisition device **200**, to the first adhesive sheet **300**. In this way, by giving the color to the first adhesive sheet **300**, it is possible to let a user of the biological signal acquisition unit **100** easily become aware of forgetting to attach the first adhesive sheet **300** on the biological signal acquisition device **200**. Furthermore, when the user of the biological signal acquisition unit **100** forgets to peel off the first adhesive sheet **300** from the biological signal acquisition device **200**, it is possible to enable the user to easily notice it. Therefore, a wrong use of the biological signal acquisition unit **100** can be prevented.

[0101] Furthermore, to the second adhesive sheet **400**, it is possible to give a color easily distinguishable from a color of the skin surface **30**, where it is to be stuck. In this way, by giving a color to the second adhesive sheet **400**, for example, in a case where the first adhesive sheet **300** is stuck to the second adhesive sheet **400**, which is stuck to the skin surface **30**, it is possible to easily check a position on the second adhesive sheet **400**. Therefore, it is possible to prevent a mistake in sticking the first adhesive sheet **300**.

[0102] In this way, it is possible to give a color for making each of the first adhesive sheet **300** and the second adhesive sheet **400** distinguishable, at least to one of the first adhesive sheet **300** and the second adhesive sheet **400**.

[0103] Here, for example, it is assumed that the first adhesive sheet **300** is stuck onto the second adhesive sheet **400**, which is stuck to the skin surface **30**. In this case, it is assumed that a mistake in sticking may occur by sticking to a position outside of the second adhesive sheet **400**, or by sticking to a

position where the second adhesive sheet **400** is not stuck (position on the skin surface **30**), and the like.

[0104] Therefore, for example, it is possible to prevent the mistake in sticking by giving a grid pattern design and the like to the bonding surface **411** of the second adhesive sheet **400**. Accordingly, it is possible to easily make an alignment when sticking the first adhesive sheet **300** to the second adhesive sheet **400**. Furthermore, by giving a semi-transparent color to the second adhesive sheet **400**, it is possible to check a skin condition in a part where the second adhesive sheet **400** is stuck.

[0105] [Another Exemplary Configuration of the Second Adhesive Sheet]

[0106] In the descriptions above, the circular second adhesive sheet **400** has been used as an example; however, it is also possible to use a non-circular second adhesive sheet. Therefore, in FIG. **8**, an example of the non-circular second adhesive sheet is described.

[0107] FIGS. **8***a* and **8***b* are a sectional view and a side view illustrating an exemplary configuration of a second adhesive sheet **500** according to the first embodiment of the present technique. That is, the sectional view of the second adhesive sheet **500** is illustrated in FIG. **8***a*, and the side view of the second adhesive sheet **500** (side view when viewed from a bonding surface **521** side (skin surface **30** side)) is illustrated in FIG. **8***b*.

[0108] Note that the second adhesive sheet **500** is the same as the second adhesive sheet **400** illustrated in FIGS. **5***a* and **5***b*, and the like, except that a bonding surface **521** and a bonding surface **511** thereof have a rectangular shape. Therefore, mainly differences from the second adhesive sheet **400** are described herein, and other descriptions are partially omitted.

[0109] Here, similarly to the second adhesive sheet **400**, no hole is formed in the second adhesive sheet **500**. Furthermore, a size of an outer periphery of a rectangle corresponding to the bonding surface **521** of the second adhesive sheet **500** is larger than the size of the outer periphery of the circle corresponding to the first adhesive sheet **300**.

[0110] Specifically, when H1 is a long side of the rectangle corresponding to the second adhesive sheet **500**, W1 is a short side thereof, and A4 is an area of the bonding surface **521**, $R1=R3 \leq W1/2 \leq H1/2$ and $A1=A2 \leq A4$. Therefore, the following formula is established.

$$A4=H1 \times W1$$

[0111] In this way, it is possible to use an adhesive sheet in a different shape as the second adhesive sheet in accordance with a use condition.

2. Second Embodiment

[0112] In the first embodiment of the present technique, examples are described in which the biological signal acquisition device is fixed to the skin surface of the human body by using the first adhesive sheet and the second adhesive sheet. However, it is also possible to fix the biological signal acquisition device by using one sheet equivalent to the first adhesive sheet and the second adhesive sheet according to the first embodiment of the present technique.

[0113] Therefore, in a second embodiment of the present technique, an example is described in which a biological signal acquisition device is fixed by using one sheet equivalent to the first adhesive sheet and the second adhesive sheet according to the first embodiment of the present technique.

[0114] [Exemplary Configuration of the Biological Signal Acquisition Unit]

[0115] FIG. **9** is a sectional view illustrating an exemplary configuration of a biological signal acquisition unit **110** according to the second embodiment of the present technique. Furthermore, in FIG. **9**, a sectional view of a cervix **20** of a person **10** is illustrated with the biological signal acquisition unit **110**. That is, in FIG. **9**, a relation between the biological signal acquisition unit **110** and a skin surface **30** in a state before the biological signal acquisition unit **110** is attached to the skin surface **30** of the cervix **20** of the person **10** is illustrated in a simplified manner.

[0116] The biological signal acquisition unit **110** includes a biological signal acquisition device **200** and an adhesive sheet **600**. Note that the biological signal acquisition device **200** is the same as the biological signal acquisition device **200** according to the first embodiment of the present technique. Therefore, a part common with the first embodiment of the present technique is denoted with the same reference numeral, and a description thereof is partially omitted.

[0117] The adhesive sheet **600** is a circular sheet (as illustrated in FIGS. **10***b* and **11***b*, for example), both of surfaces thereof being bonding surfaces, and includes a sheet **610**, an adhesive material **621**, an adhesive material **622**, and an adhesive material **630**. Here, the sheet **610** is equivalent to the sheet **410** according to the first embodiment of the present technique, and the adhesive material **630** is equivalent to the adhesive material **420** according to the first embodiment of the present technique. Furthermore, the adhesive material **621** is equivalent to the adhesive material **320** according to the first embodiment of the present technique, and the adhesive material **622** is equivalent to the adhesive material **330** according to the first embodiment of the present technique. That is, the sheet **610** and the adhesive material **630** are equivalent to the second adhesive sheet **400** according to the first embodiment of the present technique. Furthermore, the adhesive material **621** and the adhesive material **622** are equivalent to the first adhesive sheet **300** according to the first embodiment of the present technique, except that the sheet **310** is omitted. Therefore, in the second embodiment of the present technique, mainly differences with the first embodiment of the present technique are described, and a description is partially omitted for a common part.

[0118] The sheet **610** is a circular sheet, one of surfaces thereof being attached to the adhesive material **630**, and the other of the surfaces thereof being attached to the adhesive material **622**. Note that, a material and the like of the sheet **610** are similar to those of the sheet **410**.

[0119] The adhesive material **630** is a circular adhesive material, one of surfaces thereof being attached to the sheet **610** and the other of the surfaces thereof being a bonding surface **631** to be bonded to the skin surface **30**. In a case where the biological signal acquisition device **200** is mounted to the skin surface **30**, the bonding surface **631** of the adhesive material **630** is stuck to the skin surface **30**.

[0120] The adhesive material **621** and the adhesive material **622** are annular adhesive materials (illustrated in FIG. **10***b*, for example) mutually bonded by one surface thereof facing each other, and a recessed part **640** is formed by a hole in the adhesive material **621** and the adhesive material **622**. Here, a size of a periphery of an opening of the recessed part **640** is substantially the same as a size of the periphery of the opening of the recessed part **212** of the biological signal acquisition device **200**.

[0121] Furthermore, the adhesive material **621** has a bonding surface **623**, which is a surface on an opposite side of the surface to which the adhesive material **622** is bonded, to the biological signal acquisition device **200**. In a case where the biological signal acquisition device **200** is mounted on the skin surface **30**, the bonding surface **623** of the adhesive material **621** is stuck to the bonding surface **211** of the biological signal acquisition device **200**.

[0122] Still further, a surface of the adhesive material **622** on an opposite side of a surface to which the adhesive material **621** is bonded is attached to the sheet **610**.

[0123] In this way, the sheet formed by mutually bonding the adhesive materials **621** and **622** is equivalent to the first adhesive sheet **300** according to the first embodiment of the present technique.

[0124] Furthermore, in a case where the biological signal acquisition device **200** is mounted on the skin surface **30**, the biological signal acquisition device **200** and the adhesive sheet **600** are stuck together by the adhesive material **621**, and the adhesive sheet **600** and the skin surface **30** are stuck together by the adhesive material **630**.

[0125] An adhesive strength of each of the adhesive materials (adhesive materials **621**, **622**, and **630**) is described herein. Let a first adhesive strength AS**4** be an adhesive strength per unit area between the biological signal acquisition device **200** and the adhesive sheet **600** (adhesive strength per unit area of the adhesive material **621**), and let a second adhesive strength AS**5** be an adhesive strength per unit area between the adhesive sheet **600** and the skin surface **30** (adhesive strength per unit area of the adhesive material **630**). Furthermore, let a third adhesive strength AS**6** be an adhesive strength per unit area between the adhesive material **622** and the sheet **610** (adhesive strength per unit area of the adhesive material **622**). In this case, the following relation is established among these three adhesive strengths.

$$AS5<AS4<AS6$$

[0126] [Exemplary Configuration of the Adhesive Sheet]

[0127] FIGS. **10** and **11** are a sectional view and a side view illustrating an exemplary configuration of the adhesive sheet **600** according to the second embodiment of the present technique. That is, the sectional views of the adhesive sheet **600** are illustrated in FIGS. **10***a* and **11***a*. The side view of the adhesive sheet **600** (side view when viewed from the bonding surface **623** side (biological signal acquisition device **200** side)) is illustrated in FIG. **10***b*. Furthermore, the side view of the adhesive sheet **600** (side view when viewed from the bonding surface **631** side (skin surface **30** side)) is illustrated in FIG. **11***b*. Note that sectional views of the adhesive sheet **600** illustrated in FIGS. **10***a* and **11***a* are the same as the sectional view of the adhesive sheet **600** illustrated in FIG. **9**, except that it is rotated 90 degrees clockwise. Therefore, a detailed description is omitted here.

[0128] As illustrated in FIG. **10**, the cylindrically-shaped recessed part **640** is formed in the adhesive sheet **600**. Here, the size of the outer periphery of the circle corresponding to the bonding surface **211** of the biological signal acquisition device **200** and a size of an outer periphery of a circle corresponding to the adhesive material **621** of the adhesive sheet **600** are the same. Furthermore, the size of the outer periphery of the circle corresponding to the opening of the recessed part **212** and a size of an outer periphery of a circle corresponding to the opening of the recessed part **640** of the adhesive sheet **600** are the same.

[0129] Here, when R7 is a radius of the circle corresponding to the adhesive material **621** of the adhesive sheet **600**, R8 is a radius of the circle corresponding to the opening of the recessed part **640** of the adhesive sheet **600**, and AS is an area of the bonding surface **623**, R1=R7, R2=R8, and A1=A5, whereby the following formula is established.

$$A5=\pi(R7)^2-\pi(R8)^2$$

[0130] Furthermore, when R9 is a length in a radial direction of the bonding surface **623**, the following formula is established.

$$R9=R7-R8$$

[0131] Furthermore, as illustrated in FIGS. **11***a* and **11***b*, the recessed part **640** is not formed in a surface on an opposite side of the adhesive sheet **600** (bonding surface **631**). Still further, a size of an outer periphery of a circle corresponding to the bonding surface **631** of the adhesive sheet **600** is larger than a size of an outer periphery of a circle corresponding to the adhesive material **621** of the adhesive sheet **600**.

[0132] Therefore, when R10 is a radius of a circle corresponding to the adhesive material **630** of the adhesive sheet **600**, and A6 is an area of the bonding surface **631**, R1=R7<R10 and A1=A5<A6. Therefore, the following formula is established.

$$A6=\pi(R10)^2$$

[0133] Note that a relation between the adhesive strength of each of the adhesive materials (adhesive materials **621**, **622**, and **630**) and the area of each of the bonding surfaces (**623** and **631**) is substantially the same as the equivalent relationship according to the first embodiment of the present technique; therefore, a description is omitted herein.

[0134] [Exemplary State of Using the Biological Signal Acquisition Unit]

[0135] FIG. **12** is a sectional view illustrating a state in which the biological signal acquisition unit **110** according to the second embodiment of the present technique is used. That is, in FIG. **12**, the section is illustrated when the biological signal acquisition unit **110** is mounted on the skin surface **30**.

[0136] Herein, in FIG. **12**, the biological signal acquisition unit **110** is illustrated in a state where each of the bonding surfaces **211** and **623** of the biological signal acquisition unit **110** illustrated in FIG. **9** are stuck to each other, and the bonding surface **631** is stuck to the skin surface **30**.

[0137] Furthermore, in the state where each of the bonding surfaces **211** and **623** of the biological signal acquisition unit **110** is stuck to each other, a sealed space **111** is formed by the recessed part **212** of the biological signal acquisition device **200** and the recessed part **640** of the adhesive sheet **600**. That is, the sealed space **111** is a closed space surrounded by the microphone **220** and the internal surface of the recessed part **212** of the biological signal acquisition device **200**, and an internal surface and a bottom surface of the recessed part **640** (surface of the sheet **610**) of the adhesive sheet **600**. Note that the sealed space **111** corresponds to the sealed space **101** according to the first embodiment of the present technique.

[0138] Note that acquisition of an electric signal (biological signal) by the microphone **220** by a vibration of air inside the sealed space **111** is the same as the acquisition according to the first embodiment of the present technique; therefore, a description is omitted herein.

[0139] Herein, with reference to FIGS. **9** and **12**, a case is described in which the biological signal acquisition unit **110**

is peeled off from the skin surface **30** after the measurement of the biological signal of the person **10** has been completed.

[0140] For example, in a case where the measurement of the biological signal of the person **10** has been completed, the biological signal acquisition unit **110** can be peeled off from the skin surface **30** by pulling the adhesive sheet **600** stuck to the skin surface **30**. Then, by pulling the adhesive sheet **600** from the biological signal acquisition device **200**, the adhesive sheet **600** can be peeled off from the biological signal acquisition device **200**.

[0141] Note that it is also possible to peel off the biological signal acquisition unit **110** from the skin surface **30** in a different way. For example, it may be peeled off from the adhesive sheet **600** by pulling the biological signal acquisition device **200**. Then, it can be peeled off from the skin surface **30** by pulling the adhesive sheet **600** in a state where the biological signal acquisition device **200** has been peeled off.

[0142] Here, as described above, a relation of AS**5**<AS**4**<AS**6** is established. Therefore, even if operation of pulling the adhesive sheet **600** from the biological signal acquisition device **200** or an operation of directly pulling the biological signal acquisition device **200** stuck to the skin surface **30** is performed, the adhesive materials **621** and **622** and the sheet **610** are not peeled off. Therefore, it is possible to easily peel off the adhesive sheet **600** from the biological signal acquisition device **200**.

[0143] [Another Exemplary Configuration of Adhesive Sheet]

[0144] In the descriptions above, the circular adhesive sheet **600** has been used as an example; however, it is also possible to use a non-circular adhesive sheet. Therefore, an example of the non-circular adhesive sheet is described in FIGS. **13** and **14**.

[0145] FIGS. **13** and **14** are a sectional view and a side view of an exemplary configuration of an adhesive sheet **700** according to the second embodiment of the present technique. That is, the sectional views of the adhesive sheet **700** are illustrated in FIGS. **13***a* and **14***a*. The side view of the adhesive sheet **700** (side view when viewed from a bonding surface **723** side (biological signal acquisition device **200** side)) is illustrated in FIG. **13***b*. Furthermore, the side view of the adhesive sheet **700** (side view when viewed from a bonding surface **731** side (skin surface **30** side)) is illustrated in FIG. **14***b*.

[0146] Note that the adhesive sheet **700** is the same as the adhesive sheet **600** illustrated in FIGS. **10***a* and **10***b*, **11***a* and **11***b*, and the like, except that the bonding surface **731** (a sheet **710** and an adhesive material **730**) has a rectangular shape. Therefore, mainly differences from the adhesive sheet **600** are described herein, and other descriptions are partially omitted.

[0147] Here, a size of an outer periphery of a rectangle corresponding to the bonding surface **731** of the adhesive sheet **700** is larger than a size of an outer periphery of a circle corresponding to an adhesive surface **723**.

[0148] Specifically, when H2 is a long side of the rectangle corresponding to the bonding surface **731** of the adhesive sheet **700**, W2 is a short side thereof, and A7 is an area of the bonding surface **731**, R1=R7≤W2/2≤H2/2 and A1=A5<A7. Therefore, the following formula is established.

$$A7=H2\times W2$$

[0149] In this way, it is possible to use an adhesive sheet in a different shape as the adhesive sheet in accordance with a use condition.

3. Application Example

[0150] In the first and the second embodiments of the present technique, an example of fixing the biological signal acquisition unit, which includes the adhesive sheet and the biological signal acquisition device, to the skin surface of the human body has been described. The biological signal acquired in this way can be used after being processed in various ways. Therefore, an example of using the biological signal acquired by the biological signal acquisition unit is described below.

[0151] [Example of an Electronic Device Using the Biological Signal]

[0152] FIGS. **15***a* to **15***c* are views each illustrating an example of an electronic device using the biological signal acquired by the biological signal acquisition device **200** according to the embodiments of the present technique. That is, in FIGS. **15***a* to **15***c*, system configurations for monitoring the biological signal (biological signal of a subject) acquired by the biological signal acquisition device **200** are illustrated.

[0153] In FIG. **15***a*, an example of the system configuration in a case where voice output and recording of the biological signal is performed is illustrated.

[0154] For example, the biological signal acquired by the biological signal acquisition device **200** is output to a signal amplifier **801** and an A/D converter **803**. The signal amplifier **801** amplifies the biological signal output from the biological signal acquisition device **200**, outputs it to a speaker **802**, and allows the speaker **802** to output it in voice. In this way, by outputting the biological signal acquired by the biological signal acquisition device **200** in voice from the speaker **802**, it is possible to hear the biological signal in real time. Note that it is also possible to output a voice from the speaker **802** only at the time of abnormalities.

[0155] Furthermore, the A/D converter **803** converts the biological signal (analogue signal) output from the biological signal acquisition device **200** into a digital signal, outputs it to a recording device **804**, and allows the recording device **804** to record it. In this way, by recording the biological signal in the recording device **804**, it is possible to use the biological signal even after the time of acquisition of the biological signal. Here, an example is described in which the biological signal is output in voice by the speaker **802** and the biological signal is recorded in the recording device **804**. Note, however, that it is possible to perform both of the voice output and recording of the biological signal simultaneously in this way or to perform either one of them.

[0156] In FIG. **15***b*, an example of the system configuration in a case where waveform display and recording of the biological signal is performed is illustrated.

[0157] For example, the biological signal acquired by the biological signal acquisition device **200** is output to an A/D converter **811**. The A/D converter **811** converts the biological signal (analogue signal) output from the biological signal acquisition device **200** into a digital signal, and outputs it to a filtering device **812**.

[0158] The filtering device **812** performs predetermined filtering processing on the biological signal (digital signal) output from the A/D converter **811**. This filtering processing, for example, is processing of attenuating a signal other than the required biological signal. For example, in a case where the required biological signal is a respiratory sound, the signal other than the required biological signal is a cardiac sound and the like. In this way, in a case where the required biological signal is the respiratory sound, processing of attenuating

the cardiac sound and the like (signal other than the required biological signal) is performed as the filtering processing.

[0159] A waveform display device **813** displays a waveform of the biological signal on which the filtering processing has been performed by the filtering device **812**. In this way, by displaying the biological signal on the waveform display device **813**, it is possible to easily check a state of the biological signal on a monitor visually.

[0160] A recording device **814** records the biological signal on which the filtering processing has been performed by the filtering device **812**. In this way, by recording the biological signal on which the filtering processing has been performed in the recording device **814**, it is possible to use the biological signal even after the time of acquisition of the biological signal. Here, an example is described in which the biological signal is displayed on the waveform display device **813** and the biological signal is recorded in the recording device **814**. It is possible to perform both of wave displaying and recording of the biological signal simultaneously in this way or to perform either one of them.

[0161] In FIG. **15***c*, an example of the system configuration, in a case where signal analysis result display and recording of the biological signal is performed, is illustrated.

[0162] For example, the biological signal acquired by the biological signal acquisition device **200** is output to an A/D converter **821**. The A/D converter **821** converts the biological signal (analogue signal) output from the biological signal acquisition device **200** into a digital signal, and outputs it to a signal analysis device **822**.

[0163] The signal analysis device **822** performs predetermined signal analysis processing on the biological signal (digital signal) output from the A/D converter **821**. Here, for example, it is assumed that the biological signal to be analyzed is the respiratory sound. In this case, as the signal analysis processing, for example, processing for obtaining the number of respirations per unit time and an interval between respirations is performed. Furthermore, as the signal analysis processing, for example, processing for discriminating between a respiration in a normal state and a respiration in an abnormal state is performed. For example, the respiration in the abnormal state can be determined based on the time passed from a previous respiration. For example, in a case where 20 seconds have passed from the previous respiration, it is determined as being the respiration in the abnormal state (for example, a choking state).

[0164] An analysis result display device **823** displays a signal analysis result by the signal analysis device **822**. Here, in a case where the analysis result is displayed, it is possible to display an alarm or to notify by an alarm sound in a case where the number of respirations per unit time exceeds a set threshold (for example, an upper limit value or a lower limit value), in a case where the respiration in the abnormal state is detected, or the like. For example, in a case where 20 seconds have passed from the previous respiration, it is determined as being the respiration in the abnormal state, whereby an alarm to notify it is displayed (or, an alarm to notify it is output in voice). Furthermore, in a case where the analysis result is displayed on the analysis result display device **823**, since more sophisticated information than the number of respirations and the like can be obtained, a user can concentrate on other important matters. Furthermore, by being notified of the abnormal state by the alarm, it is not necessary for the user to always observe the state of the biological signal, whereby it is possible to improve convenience of the user.

[0165] A recording device **824** records the analysis result of the signal analysis processing by the signal analysis device **822**. In this way, by recording the analysis result of the signal analysis processing in the recording device **824**, the analysis result can be used even after the time of acquisition of the analysis result. Note that an example is described herein in which the analysis result of the signal analysis processing is displayed on the analysis result display device **823**, and the analysis result is recorded in the recording device **824**. It is possible to perform both of display and recording of the analysis result of the signal analysis processing simultaneously in this way or to perform either one of them.

[0166] Note that it may also be a system configuration combining each of the system configurations illustrated in FIGS. **15***a* to **15***c*. For example, by combining FIGS. **15***a* and **15***c*, it is possible to hear the biological signal in real time as well as to check the abnormal state by the alarm.

[0167] Here, conventionally, a stethoscope is widely used for observing a biological sound such as a respiratory sound and a cardiac sound of a patient. In general, the stethoscope includes: a chest piece unit (biological signal acquisition unit) placed on the skin of the patient for picking up an auscultation sound such as the respiratory sound and the cardiac sound; a tube unit for transmitting the auscultation sound picked up by this to an ear piece unit; and an ear piece to be inserted into an ear for hearing the auscultation sound.

[0168] Furthermore, in recent years, an electronic stethoscope has been put into practical use, whereby a plurality of persons can hear the auscultation sound simultaneously, or the auscultation sound can be recorded. Furthermore, in an examination and the like of a sleep apnea syndrome, an examination method of monitoring the biological sound (biological signal) continuously for a long time is increasing. Here, in the method of monitoring continuously for a long time, stability of the monitoring is important.

[0169] For example, it is not possible to acquire the biological sound (biological signal) when the biological signal acquisition device peels off from the skin. Furthermore, even if it is not peeled off, when the biological signal acquisition device is partially peeled off and is in a state of being loose from a skin surface, there is a possibility that acquisition of the biological sound (biological signal) may become impossible. In this case, even when it is possible to acquire the biological sound (biological signal), it is assumed that it may be a very small sound or that a large surrounding sound (environmental sound) may mix into the biological sound (biological signal).

[0170] Therefore, in order to stably monitor the biological sound (biological signal) continuously for a long time, it is necessary that the biological signal acquisition device be securely fixed to the skin. For example, there has been proposed a technique in which a gel sheet is used for fixing the biological signal acquisition device to the skin. In this way, by using the gel sheet, it is possible to secure confidentiality of the sealed space between the microphone incorporated in the biological signal acquisition device and the skin surface as well as to realize difficulty in being peeled off, simultaneously.

[0171] In this way, in order to stably monitor the biological sound (biological signal) continuously for a long time, it is important to prevent the biological signal acquisition device from being peeled off from the skin by using a strong adhesive material.

[0172] Here, after the biological signal has been acquired by mounting the biological signal acquisition device on the skin of the patient, it is necessary to peel off the biological signal acquisition device from the skin of the patient after the use thereof. However, in a case where the strong adhesive material is used for mounting the biological signal acquisition device, it is important to prevent damage on the skin of the patient when peeling the biological signal acquisition device off. That is, in order to realize stability of monitoring, it is important to prevent the damage on the skin of the patient as well as to prevent the biological signal acquisition device from peeling off from the skin.

[0173] Here, in general, when the adhesive material is repeatedly stuck and peeled, the adhesive strength thereof tends to decrease. Therefore, in a case where a frequently-used adhesive material is used for fixing the biological signal acquisition device, there is a possibility that it may be used in a state where the adhesive strength is decreased. In this case, since there is a possibility that the biological signal acquisition device may peel off unexpectedly during use, it is preferable that the adhesive material may be renewed for each use.

[0174] However, when the adhesive material is difficult to be peeled from the biological signal acquisition device, it may increase an effort of the user in peeling it off. Furthermore, an unnecessary adhesive material may remain in a part of the biological signal acquisition device. Without noticing it, in a case where a new adhesive material is stuck to the part where the adhesive material remains for acquiring the biological signal, there is a possibility that the biological signal acquisition device may peel off during use. Furthermore, there is a possibility that an accurate biological signal may not be acquired.

[0175] As described above, in order to stably monitor the biological signal continuously for a long time, it is necessary to make the biological signal acquisition device difficult to be peeled off from the skin surface. However, when the strong adhesive material is used for fixing the biological signal acquisition device, it is assumed that peeling off of the biological signal acquisition device from the skin may become difficult when the monitoring of the biological signal is completed. That is, in a case where the biological signal acquisition device is taken off from the skin, it is important to prevent the damage on the skin surface. Furthermore, in a case where it is difficult to take off the adhesive material from the biological signal acquisition device, the unnecessarily remaining adhesive material may have an adverse effect on the next monitoring to be performed.

[0176] Therefore, in the embodiments of the present technique, an adhesive strength and an area of the adhesive material constituting a fixing member (for example, the first adhesive sheet **300**, the second adhesive sheet **400**, and the adhesive sheet **600**) used for fixing the biological signal acquisition device are set appropriately. Accordingly, it is possible to make it difficult to be peeled from the skin even when used continuously for a long time, and to suppress the damage on the skin when peeling it off from the skin after use. Furthermore, it is possible to easily perform replacement of the fixing member (for example, the first adhesive sheet **300**, the second adhesive sheet **400**, and the adhesive sheet **600**).

[0177] Note that in the embodiments of the present technique, the biological signal acquisition device having a cylindrical shape is exemplified as the biological signal acquisition device; however, the embodiments of the present technique are also applicable to the biological signal acquisition device having a shape other than the cylindrical shape (for example, a polygonal column and a cone). Furthermore, in the embodiments of the present technique, the biological signal acquisition device mounted on a cervix for acquiring the biological signal is exemplified; however, the embodiments of the present technique is also applicable to a biological signal acquisition device mounted on another part of a human body (for example, a chest region and an abdominal region) for acquiring the biological signal.

[0178] Note that the above-described embodiments are examples for realizing the present technique, and each of matters in the embodiments has a correspondence relation with each of matters used to specify the invention in claims. Similarly, the matters used to specify the invention in claims have the correspondence relation with the matters in the embodiments denoted with the same name. Note, however, that the present technique is not to be limited to the embodiments, and can be realized by adding various modifications on the embodiments without departing from the scope of the present technique.

[0179] Note that the present technique may also be configured as below.

[0180] (1) An electronic device including:

[0181] a biological signal acquisition device configured to acquire a biological signal of a human body in a state of being fixed to a skin of the human body;

[0182] a first sheet having one surface to be bonded to the biological signal acquisition device and another surface to be bonded to another sheet, in which a bonding strength per unit area between the other surface and the other sheet is larger than a bonding strength per unit area between the one surface and the biological signal acquisition device; and

[0183] a second sheet having one surface to be bonded to the other surface of the first sheet and another surface to be bonded to the skin of the human body, in which the bonding strength per unit area between the one surface of the first sheet and the biological signal acquisition device is larger than a bonding strength per unit area between the other surface and the skin of the human body.

[0184] (2) The electronic device according to the above (1), in which

[0185] an adhesive material is provided on each of the one surface of the first sheet, the other surface of the first sheet, and the other surface of the second sheet,

[0186] an adhesive strength per unit area of an adhesive material according to the other surface of the first sheet is larger than an adhesive strength per unit area of an adhesive material according to the one surface of the first sheet, and

[0187] the adhesive strength per unit area of the adhesive material according to the one surface of the first sheet is larger than an adhesive strength per unit area of the adhesive material according to the other surface of the second sheet.

[0188] (3) The electronic device according to the above (2) in which the first sheet is formed by bonding the adhesive material according to the one surface of the first sheet and the adhesive material according to the other surface of the first sheet together.

[0189] (4) The electronic device according to the above (2), in which the first sheet includes a sheet member having one surface, to which the adhesive material according to the one surface of the first sheet is to be bonded, and another surface, to which the adhesive material according to the other surface of the first sheet is to be bonded.

[0190] (5) The electronic device according to any of the above (1) to (4), the biological signal acquisition device including:

[0191] a bonding surface to be bonded to the one surface of the first sheet;

[0192] a recessed part provided at the center of the bonding surface; and

[0193] a biological signal acquisition unit provided at the bottom of the recessed part and configured to acquire the biological signal,

[0194] the first sheet having a hole provided at the center of each of the one surface and the other surface of the first sheet,

[0195] the electronic device further including a sealed space formed by the biological signal acquisition unit, the recessed part, the hole, and the one surface of the second sheet in a state where the biological signal acquisition device is bonded to the first sheet, and the first sheet is bonded to the second sheet.

[0196] (6) The electronic device according to the above (5), in which a periphery of an opening of the recessed part is substantially the same as a periphery of the hole, and

[0197] the biological signal acquisition device and the first sheet are bonded together such that the periphery of the opening of the recessed part substantially corresponds with the periphery of the hole.

[0198] (7) The electronic device according to the above (5) or (6), in which the biological signal acquisition unit is a microphone.

[0199] (8) The electronic device according to any of the above (1) to (7), in which an area of each of the one surface and the other surface of the second sheet is larger than an area of each of the one surface and the other surface of the first sheet.

[0200] (9) The electronic device according to any of the above (1) to (8), in which the biological signal acquisition device acquires any one of or a combination of a respiratory sound, a cardiac sound, a vascular sound, and a vesicular sound as the biological signal.

[0201] (10) The electronic device according to any of the above (1) to (9), in which the second sheet is an adhesive film dressing member.

[0202] (11) The electronic device according to any of the above (1) to (10), in which a color for making each of the first sheet and the second sheet distinguishable is given at least to one of the first sheet and the second sheet.

[0203] (12) The electronic device according to any of the above (1) to (10), in which the color of the second sheet is semi-transparent.

[0204] (13) The electronic device according to any of (1) to (10), wherein a grid pattern design is given to the one surface of the second sheet.

REFERENCE SIGNS LIST

[0205] **10** Person
[0206] **20** Cervix
[0207] **30** Skin surface
[0208] **50** Electronic device
[0209] **100**,**110** Biological signal acquisition unit
[0210] **101**,**111** Sealed space
[0211] **200** Biological signal acquisition device
[0212] **210** Housing
[0213] **212** Recessed part
[0214] **213** Hollow part
[0215] **220** Microphone
[0216] **230** Signal cable
[0217] **300** First adhesive sheet
[0218] **301** Hole
[0219] **310** Sheet
[0220] **320**,**330** Adhesive material
[0221] **400** Second adhesive sheet
[0222] **410** Sheet
[0223] **420** Adhesive material
[0224] **500** Second adhesive sheet
[0225] **510** Sheet
[0226] **520** Adhesive material
[0227] **600** Adhesive sheet
[0228] **610** Sheet
[0229] **621**,**622**,**630** Adhesive material
[0230] **640** Recessed part
[0231] **700** Adhesive sheet
[0232] **710** Sheet
[0233] **721**,**722**,**730** Adhesive material
[0234] **740** Recessed part
[0235] **801** Signal amplifier
[0236] **802** Speaker
[0237] **803**,**811**,**821** A/D converter
[0238] **804**,**814**,**824** Recording device
[0239] **812** Filtering device
[0240] **813** Waveform display device
[0241] **822** Signal analysis device
[0242] **823** Analysis result display device

1. An electronic device comprising:

a biological signal acquisition device configured to acquire a biological signal of a human body in a state of being fixed to a skin of the human body;

a first sheet having one surface to be bonded to the biological signal acquisition device and another surface to be bonded to another sheet, wherein a bonding strength per unit area between the other surface and the other sheet is larger than a bonding strength per unit area between the one surface and the biological signal acquisition device; and

a second sheet having one surface to be bonded to the other surface of the first sheet and another surface to be bonded to the skin of the human body, wherein the bonding strength per unit area between the one surface of the first sheet and the biological signal acquisition device is larger than a bonding strength per unit area between the other surface and the skin of the human body.

2. The electronic device according to claim **1**, wherein

an adhesive material is provided on each of the one surface of the first sheet, the other surface of the first sheet, and the other surface of the second sheet,

an adhesive strength per unit area of the adhesive material according to the other surface of the first sheet is larger than an adhesive strength per unit area of an adhesive material according to the one surface of the first sheet, and

the adhesive strength per unit area of the adhesive material according to the one surface of the first sheet is larger than an adhesive strength per unit area of the adhesive material according to the other surface of the second sheet.

3. The electronic device according to claim 2 wherein the first sheet is formed by bonding the adhesive material according to the one surface of the first sheet and the adhesive material according to the other surface of the first sheet together.

4. The electronic device according to claim 2, wherein the first sheet includes a sheet member having one surface, to which the adhesive material according to the one surface of the first sheet is to be bonded, and another surface, to which the adhesive material according to the other surface of the first sheet is to be bonded.

5. The electronic device according to claim 1, the biological signal acquisition device including:

a bonding surface to be bonded to the one surface of the first sheet;

a recessed part provided at the center of the bonding surface; and

a biological signal acquisition unit provided at the bottom of the recessed part and configured to acquire the biological signal,

the first sheet having a hole provided at the center of each of the one surface and the other surface of the first sheet,

the electronic device further comprising a sealed space formed by the biological signal acquisition unit, the recessed part, the hole, and the one surface of the second sheet in a state where the biological signal acquisition device is bonded to the first sheet and the first sheet is bonded to the second sheet.

6. The electronic device according to claim 5, wherein

a periphery of an opening of the recessed part is substantially the same as a periphery of the hole, and

the biological signal acquisition device and the first sheet are bonded together such that the periphery of the opening of the recessed part substantially corresponds with the periphery of the hole.

7. The electronic device according to claim 5, wherein the biological signal acquisition unit is a microphone.

8. The electronic device according to claim 1, wherein an area of each of the one surface and the other surface of the second sheet is larger than an area of each of the one surface and the other surface of the first sheet.

9. The electronic device according to claim 1, wherein the biological signal acquisition device acquires any one of or a combination of a respiratory sound, a cardiac sound, a vascular sound, and a vesicular sound as the biological signal.

10. The electronic device according to claim 1, wherein the second sheet is an adhesive film dressing member.

11. The electronic device according to claim 1, wherein a color for making each of the first sheet and the second sheet distinguishable is given at least to one of the first sheet and the second sheet.

12. The electronic device according to claim 1, wherein a color of the second sheet is semi-transparent.

13. The electronic device according to claim 1, wherein a grid pattern design is given to the one surface of the second sheet.

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摘要(译)

为了容易地更换用于将物体固定在人体皮肤上的固定构件。 电子设备包括生物信号获取设备，第一片和第二片。生物信号获取装置在固定到人体皮肤的状态下获取人体的生物信号。第一片材具有一个待粘合到生物信号采集装置的表面和另一个要粘合到另一个片材的表面。此外，第一片材的另一个表面与另一个片材之间的每单位面积的粘合强度大于第一片材的一个表面与生物信号获取装置之间的每单位面积的粘合强度。第二片材包括一个要粘合到第一片材的另一个表面上的表面和另一个要粘合到人体皮肤上的表面。此外，第一片材的一个表面与生物信号获取装置之间的每单位面积的粘合强度大于第二片材的另一个表面与人体皮肤之间的每单位面积的粘合强度。