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BLOOD PRESSURE MEASURING DEVICE

Abstract

A blood pressure measurement device includes a device body, a curler fixed to the device body, a fluid bag fixed to an inner surface of the curler and inflated by a fluid, and band provided integrally with an outer surface of the curler or the outer surface of the curler and an outer surface of the fluid bag and including a hook-and-loop fastener on an outer surface of the band.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application is the U.S. national stage application filed pursuant to 35 U.S.C. 365 (c) and 120 as a continuation of International Patent Application No. PCT/JP2023/031133, filed Aug. 29, 2023, which application claims priority to Japanese Patent Application No. 2022-205664, filed Dec. 22, 2022, which applications are incorporated herein by reference in their entireties.

TECHNICAL FIELD
[0002] The present invention relates to a blood pressure measurement device.
BACKGROUND ART
[0003] In recent years, blood pressure measurement devices used for measuring a blood pressure are used as means to check health status at home, as well as in medical facilities. A blood pressure measurement device detects vibration of the artery wall to measure blood pressure by, for example, inflating and contracting a cuff wound around the upper arm or the wrist of a living body and detecting the pressure in the cuff by using a pressure sensor.
[0004] In addition, as the blood pressure measurement device, as disclosed in JP 2006-174860 A, there is known a wearable blood pressure monitor that is attached to a wrist. In such a wearable blood pressure monitor, an air bag and a curler are joined to each other, but the curler and a band are not joined to each other. Thus, a positional deviation may be generated between the curler and the band. When the positional deviation is generated, a portion in which the air bag and the curler cannot be suppressed by the band is generated, which may cause a decrease in measurement accuracy, deterioration of the air bag, or the like. In addition, an insert material is inserted in order to reinforce the band, but this increases a manufacturing cost of the band.
[0005] In addition, as disclosed in JP 2020-65651 A, there is also known a general wrist-type blood pressure measurement device in which the curler and the air bag are disposed in a cloth bag including an inner cloth and an outer cloth in order to prevent the positional deviation.
CITATION LIST
Patent Literature
[0006] Patent Document 1: JP 2006-174860 A [0007] Patent Document 2: JP 2020-65651 A
SUMMARY OF INVENTION
Technical Problem
[0008] In the blood pressure measurement device in which the curler and the air bag are disposed in the cloth bag, it is necessary to use an easily stretchable material for the inner cloth so as not to hinder a bulge of the air bag. Thus, in a case of the blood pressure measurement device attached to the wrist, the blood pressure measurement device has a shape with a small radius of curvature when the blood pressure measurement device is attached, and a large sag or a wrinkle is generated in the inner cloth, which leads to deterioration in appearance.
[0009] Thus, an object of the present invention is to provide a blood pressure measurement device which can prevent positional deviations between a band and a curler and between the band and a fluid bag and has a good appearance and high accuracy.
Solution to Problem
[0010] According to one aspect, there is provided a blood pressure measurement device including a device body, a curler fixed to the device body, a fluid bag fixed to an inner surface of the curler and inflated by a fluid, and a band provided integrally with an outer surface of the curler or the outer surface of the curler and an outer surface of the fluid bag and including a hook-and-loop fastener on an outer surface of the band.
[0011] According to this aspect, the band is formed integrally with the outer surface of the curler, or the band is formed integrally with the outer surfaces of the curler and the fluid bag, and thus

generation of positional deviations between the band that fastens the fluid bag toward a living body and the curler and/or between the band and the fluid bag can be prevented. Thus, the blood pressure measurement device can stably press the fluid bag against the living body, and thus the accuracy of the blood pressure measurement is stabilized and the deterioration of the fluid bag can be prevented. In addition, the band is provided on the outer circumferential surface of a curler **51**, and thus the generation of the sag or the wrinkle can be prevented, so that the blood pressure measurement device can obtain a high appearance.

[0012] There is provided the blood pressure measurement device according to the above-described aspect, in which the curler is formed longer than a length of the fluid bag in a longitudinal direction and is formed to be elastically deformable to follow a shape of the living body of an attachment site in a circumferential direction, and the band is provided on an outer circumferential surface of the curler and extends from a first end of the curler.

[0013] According to this aspect, the curler is elastically deformed to follow the shape of the living body and the band can fix the curler by a pair of the hook-and-loop fasteners, and thus the fluid bag can be pressed against the living body.

[0014] There is provided the blood pressure measurement device according to the above-described aspect, in which the curler is made of a low-hardness material and includes a fixed portion fixed to the device body and into which a high-hardness material having a hardness higher than a hardness of the low-hardness material is inserted, and the band is made of a material that is less likely to stretch than the curler.

[0015] According to this aspect, even when the curler is made of a material having a relatively low hardness, when the fluid bag is pressed toward the living body by the band and fastened by the hook-and-loop fastener, the curler can be bent and deformed to follow the living body. In addition, an outer circumferential surface of the curler is covered with the band made of a material that is less likely to stretch than the curler. Accordingly, the curler can be suppressed from being deformed outward in a radial direction when the fluid bag is inflated. Thus, the curler is easily elastically deformed to follow the shape of the living body, can be suppressed from being deformed outward in the radial direction during a blood pressure measurement, and can efficiently press the fluid bag toward the living body.

[0016] In addition, the curler is formed by inserting the high-hardness material having hardness higher than that of the material forming the curler into the fixed portion to be fixed to the device body, and thus an intensity of the fixed portion to be attached to the device body can be improved.

[0017] There is provided the blood pressure measurement device according to the above-described aspect, in which the device body includes a loop portion that folds back the band.

[0018] According to this aspect, the band makes it easy to fasten the curler and can bring the fluid bag into close contact with the living body stably.

[0019] There is provided the blood pressure measurement device according to the above-described aspect, in which a first end of both ends of the curler overlaps a second end of the both ends when the blood pressure measurement device is attached to a living body having a shortest length in a circumferential direction of at least the living body to which attachment is expected.

[0020] According to this aspect, the first end of the both ends of the curler overlaps the second end, and thus the fluid bag can be brought into contact with the living body even when the curler is attached to any of the living bodies having different circumferences. That is, the blood pressure measurement device prevents the both ends of the curler from coming into contact with each other in the circumferential direction to generate a gap between the living body and the fluid bag, and the fluid bag can be brought into close contact with the living body.

[0021] There is provided the blood pressure measurement device according to the above-described aspect, in which a first end of the curler has a smaller radius of curvature than a second end overlapping the first end of the curler.

[0022] According to this aspect, the second end of the curler is located outward in the radial

direction than the first end before fastened by the band, and thus the second end of the curler can be disposed on an outer side of the first end when fastened by the band. Thus, in the blood pressure measurement device, when the curler is fastened by the band, the end portions easily overlap each other and the curler is easily wound around the wrist.

[0023] There is provided the blood pressure measurement device according to the above-described aspect, further including a guide portion that guides the second end overlapping the first end of the curler to an outer side of the first end.

[0024] According to this aspect, the second end can be guided to the first end of the curler by the guide portion, and thus the end portions of the curler can be easily overlapped each other.

[0025] There is provided the blood pressure measurement device according to the above-described aspect, in which the guide portion is a protrusion provided at the first end or the second end of the curler and moves the second end to an outer side.

[0026] According to this aspect, the guide portion is formed by the protrusion, and thus the curler is easily guided from one of the first end and the second end to the other.

[0027] There is provided the blood pressure measurement device according to the above-described aspect, in which the guide portion is a sheet member provided on an inner surface of the band that covers an end portion of the fluid bag and extends from the curler.

[0028] According to this aspect, the fluid bag and the second end of the curler is covered with the sheet member, and thus the first end of the curler can be suppressed from interfering with the fluid bag and the second end of the curler in the circumferential direction.

[0029] There is provided the blood pressure measurement device according to the above-described aspect, in which the curler is formed of a fixed portion made of a low-hardness material and a high-hardness material inserted into the low-hardness material and having a hardness higher than a hardness of the low-hardness material is inserted, the fixed portion being fixed to the device body, and the outer surface of the fluid bag is integrally fixed to the fixed portion and the band.

[0030] According to this aspect, even when the curler is made of a material having a relatively low hardness, when the fluid bag is pressed toward the living body by the band and fastened by the hook-and-loop fastener, the curler can be bent and deformed to follow the living body. In addition, the fluid bag is configured such that the outer circumferential surface is covered with the band. Accordingly, the fluid bag can be suppressed from being deformed outward in the radial direction when the fluid bag is inflated. Thus, the fluid bag is easily deformed to follow the shape of the living body, and the fluid bag is suppressed from being deformed outward in the radial direction during a blood pressure measurement and can be efficiently pressed toward the living body.

[0031] In addition, the curler is formed by inserting the high-hardness material having hardness higher than that of the material forming the curler into the fixed portion to be fixed to the device body, and thus an intensity of the fixed portion to be attached to the device body can be improved.

[0032] There is provided the blood pressure measurement device according to the above-described aspect, further including a sensor provided on an inner surface of a first end portion of the curler and separated from the fluid bag in a longitudinal direction of the curler and detects information on a living body.

[0033] According to this aspect, the sensor for detecting the information on the living body is provided in the curler, and thus the sensor can be brought into contact with the living body, and the information of the living body other than the blood pressure can be detected.

Advantageous Effects of Invention

[0034] According to the present invention, a blood pressure measurement device which can prevent positional deviations between a band and a curler and between the band and a fluid bag and has a good appearance and high accuracy can be provided.

Description

BRIEF DESCRIPTION OF DRAWINGS

[0035] FIG. **1** is a perspective view illustrating a configuration of a blood pressure measurement device according to an embodiment of the present invention.

[0036] FIG. **2** is a side view illustrating the configuration of the blood pressure measurement device.

[0037] FIG. **3** is a side view illustrating the configuration of the blood pressure measurement device in a state of being attached to the wrist.

[0038] FIG. **4** is a block diagram illustrating the configuration of the blood pressure measurement device.

[0039] FIG. **5** is a perspective view illustrating configurations of a cuff structure and a band used in the blood pressure measurement device.

[0040] FIG. **6** is a side view illustrating a configuration of a main part of a cuff structure according to another embodiment of the present invention.

[0041] FIG. **7** is a side view illustrating a configuration of a main part of a cuff structure according to another embodiment of the present invention.

[0042] FIG. **8** is a side view illustrating a configuration of a main part of a cuff structure according to another embodiment of the present invention.

[0043] FIG. **9** is a perspective view illustrating a configuration of a blood pressure measurement device according to another embodiment of the present invention.

[0044] FIG. **10** is a perspective view illustrating a configuration of a blood pressure measurement device according to another embodiment of the present invention.

[0045] FIG. **11** is a perspective view illustrating a configuration of a blood pressure measurement device according to another embodiment of the present invention.

DESCRIPTION OF EMBODIMENTS

[0046] Hereinafter, an example of a blood pressure measurement device **1** according to an embodiment of the present invention will be described with reference to FIG. **1** to FIG. **5**.

[0047] FIG. **1** is a perspective view illustrating a configuration of the blood pressure measurement device **1** according to the embodiment of the present invention, and FIG. **2** is a side view illustrating the configuration of the blood pressure measurement device **1**. FIG. **3** is a side view illustrating the configuration of the blood pressure measurement device **1** in a state of being attached to a wrist **300**. FIG. **4** is a block diagram illustrating a configuration of a device body **3** of the blood pressure measurement device **1**. FIG. **5** is a perspective view illustrating configurations of a cuff structure **4** and a band **5** used in the blood pressure measurement device **1**.

[0048] The blood pressure measurement device **1** is an electronic blood pressure measurement device attached to a living body. In an example of the present embodiment, the blood pressure measurement device **1** is a wearable device attached to the wrist **300** as illustrated in FIG. **3**. The blood pressure measurement device **1** is, for example, an electronic blood pressure measurement device having an aspect of measuring a blood pressure from arteries **311** and **312** of the wrist **300**.

[0049] As illustrated in FIGS. **1** to **3**, the blood pressure measurement device **1** includes the device body **3**, the cuff structure **4**, and a band **5**.

[0050] As illustrated in FIGS. **1** to **4**, the device body **3** includes, for example, a housing **11**, a display unit **12**, an operation unit **13**, a pump **14**, an acceleration sensor **15**, a valve **16**, a pressure sensor **17**, a battery **18**, a communication unit **19**, a charging circuit unit **21**, a memory **22**, and a processor **23**.

[0051] The housing **11** is a case that accommodates components of the device body **3**. The housing **11** accommodates, for example, the display unit **12**, the operation unit **13**, the pump **14**, the acceleration sensor **15**, the valve **16**, the pressure sensor **17**, the battery **18**, the communication unit **19**, a biometric sensor **20**, the charging circuit unit **21**, the memory **22**, and the processor **23**. The housing **11** accommodates, for example, a fluid circuit **24** and a substrate **25**. Here, the fluid circuit

24 may include, for example, a pipe or a flow path plate that forms a flow path of a fluid supplied from the pump **14** to the cuff structure **4**, a component such as a fluid resistor that controls a supply amount or a pressure of the fluid supplied to the cuff structure **4**, and a check valve that controls a flow direction of the fluid. For example, the acceleration sensor **15**, the communication unit **19**, the circuit configuration of the charging circuit unit **21**, the memory **22**, and the processor **23** are mounted on the substrate **25**.

[0052] The housing **11** includes, for example, an outer case **31**, a windshield **32** that covers an upper opening of the outer case **31**, and a back lid **33** that covers a lower portion of the outer case **31**.

[0053] The outer case **31** is formed in, for example, a cylindrical shape, a rectangular cylindrical shape, or a polygonal cylindrical shape. In the present embodiment, the outer case **31** is formed in the rectangular cylindrical shape. The outer case **31** includes a loop portion **31***a* provided on one surface of an outer circumferential surface. The loop portion **31***a* is a rectangular annular member including an opening that is long in one direction and through which the band **5** can be inserted in order to allow the band **5** to pass the loop portion **31***a* and to fold back the band **5**. The loop portion **31***a* is integrally formed on an outer surface of the outer case **31**. The windshield **32** is a glass plate having the same shape as that of an outer circumferential edge of the outer case **31**, that is, a rectangular shape in the present embodiment. The windshield **32** is not limited to the glass plate as long as the windshield **32** is made of a transparent or translucent material. The back lid **33** closes the bottom of the outer case **31**. The housing **11** may have a configuration in which the back lid **33** is not included, and the bottom of the outer case **31** may be closed by a curler **51** (described later) of the cuff structure **4**, the curler **51** being fixed to the housing **11**.

[0054] The display unit **12** is disposed directly below the windshield **32**. The display unit **12** is electrically connected to the processor **23**. The display unit **12** is, for example, a liquid crystal display or an organic electroluminescence display. The display unit **12** displays various types of information including the date and time, measurement results of blood pressure values such as the systolic blood pressure and diastolic blood pressure, heart rate, a charging status and a remaining amount of the battery **18**, and the like. For example, the display unit **12** is formed in the same shape as the windshield **32** in a plan view.

[0055] The operation unit **13** is configured to be capable of inputting a command from a user. The operation unit **13** includes, for example, a plurality of buttons **41** provided on the housing **11**, a sensor that detects operation of each of the buttons **41**, and a touch panel **43** provided on the display unit **12** or the windshield **32**. When the operation unit **13** is operated by the user, the operation unit **13** converts a command into an electrical signal. The sensor and the touch panel **43** are electrically connected to the processor **23** to output electrical signals to the processor **23**.

[0056] The pump **14** is, for example, a piezoelectric pump. The pump **14** compresses air as a fluid, for example, and supplies the compressed air to the pressing cuff **52** and the sensing cuff **54**, which are described later, of the cuff structure **4** via the fluid circuit. The pump **14** is electrically connected to the processor **23**.

[0057] The acceleration sensor **15** is, for example, a 3-axis acceleration sensor. The acceleration sensor **15**, for example, measures acceleration and outputs an analog signal. The acceleration sensor **15** is, for example, connected to the processor **23** via an A/D conversion circuit.

[0058] The valve **16** is, for example, an on-off valve. The valve **16** opens and closes a fluid circuit connecting the pump **14** to the cuff structure **4** and/or a fluid circuit connecting the cuff structure **4** to the atmosphere. The valve **16** is electrically connected to the processor **23**. For example, the valve **16** is opened and closed by control of the processor **23**.

[0059] As a specific example, the valve **16** is a safety valve that releases air supplied to the pressing cuff **52** and the sensing cuff **54** (which are described later) of the cuff structure **4** to the atmosphere. The valve **16** is switched to a closed state by being controlled by the processor **23** when air is supplied to the pressing cuff **52** and the sensing cuff **54** during a blood pressure measurement. In

addition, when the air in the pressing cuff **52** and the sensing cuff **54** is exhausted, the valve **16** is controlled by the processor **23** so as to be switched from the closed state to the open state. Further, the valve **16** may be formed such that the opening degree is adjustable. The valve **16** may be provided on the fluid circuit **24**, or may be integrally provided inside s housing of the pump **14**.
[0060] The pressure sensor **17** is provided, for example, in the fluid circuit **24**. The pressure sensor **17** detects the pressures of the pressing cuff **52** and/or the sensing cuff **54**. For example, the pressure sensor **17** detects the pressure of the sensing cuff **54**. The pressure sensor **17** is electrically connected to the processor **23** via the A/D conversion circuit, converts detected pressure into an electrical signal, and outputs the electrical signal to the processor **23**.
[0061] The battery **18** is, for example, a secondary battery such as a chargeable and dischargeable lithium ion battery. The battery **18** is electrically connected to the processor **23**. The battery **18** supplies power to the processor **23**. The battery **18** supplies power for driving to the respective configurations of the processor **23** and the display unit **12**, the operation unit **13**, the pump **14**, the acceleration sensor **15**, the valve **16**, the pressure sensor **17**, and the communication unit **19** via the processor **23**.
[0062] The communication unit **19** can transmit and receive information to and from an external device wirelessly and/or by wire. The communication unit **19** is, for example, a wireless communication module conforming to a wireless communication standard. The communication unit **19** transmits information, such as information controlled by the processor **23** and measured blood pressure values and pulse, to an external device, or receives, for example, a program or recording medium for software update from an external device and transmits this to the control unit. In the present embodiment, the external device is, for example, an external terminal, such as a smartphone, a tablet terminal, a personal computer, and a smart watch.
[0063] In the present embodiment, the communication unit **19** and the external terminal may be directly connected, or may be connected over a network. The communication unit **19** and the external terminal may be connected via a mobile communication network, such as 4G and 5G, and a wireless communication line, such as Wimax and Wi-Fi (registered trademark). Further, the communication unit **19** and the external device may be connected by wireless communication means, such as Bluetooth Low Energy (BLE (registered trademark)), Near Field Communication (NFC), and infrared communication. Furthermore, in addition to the wireless communication module, the communication unit **19** may include a universal connector such as a micro Universal Serial Bus (USB) or a dedicated connector for the blood pressure measurement device **1**, and may be directly connected to the external terminal by various cables such as a USB cable or connected to the external terminal via a wired communication line such as a Local Area Network (LAN) connection. Thus, the communication unit **19** may include a plurality of communication means, such as a wireless antenna and a micro-USB connector. The connector for wired communication may be a dedicated connector for the blood pressure measurement device **1**.
[0064] The biometric sensor **20** is a sensor that is formed so as to be capable of detecting the information on a living body by coming into contact with or facing the wrist **300**. The biometric sensor **20** converts the detected information on a living body into an electrical signal and outputs the electrical signal to the processor **23**. The biometric sensor **20** may be, for example, a sensor that measures a physical quantity such as a heart rate or a body temperature, or may be a sensor that measures a chemical value such as a blood glucose level or a blood oxygen concentration. For example, the biometric sensor **20** is provided on the back lid **33** of the housing **11** and/or the curler **51** (described later) of the cuff structure **4**. In the present embodiment, an example is illustrated in which the biometric sensor **20** is provided on the curler **51**. The blood pressure measurement device **1** need not include the biometric sensor **20**. The biometric sensor **20** is connected to the substrate **25** via, for example, a pogo pin **26** and a flexible printed circuit (FPC) **27**. Here, the pogo pin is, for example, a spring probe or a contact probe.
[0065] The charging circuit unit **21** includes, for example, an antenna unit **211**, a power receiving

unit **212**, and a charging unit **213**. The charging circuit unit **21** charges the battery **18** by wireless power feeding. For example, the charging circuit unit **21** receives transmission power transmitted from the antenna unit **103** of a power transmission device **100** provided outside and charges the battery **18**.

[0066] The antenna unit **211** receives the transmission power from the antenna unit of the power transmission device. The antenna unit **211** is, for example, a receiver coil as a power receiving resonance circuit. The antenna unit **211** supplies the received power to the power receiving unit **212**. A power receiving surface of the antenna unit **211** is formed in a planar shape. The antenna unit **211** is disposed, for example, in the housing **11**. As a specific example, the antenna unit **211** is provided in the housing **11** and adjacent to the display unit **12** on a side opposite to the windshield **32** of the display unit **12**. The antenna unit **211** includes, for example, a resonance capacitor and constitutes the power receiving resonance circuit.

[0067] The power receiving unit **212** rectifies the power received by the antenna unit **211** and supplies the rectified power to the charging unit **213**. As a specific example, the power receiving unit **212** rectifies the received power supplied from the antenna unit **211** and converts rectified received power from AC to DC. For example, the power receiving unit **212** includes a rectifying circuit and a control circuit, controls the operation of the rectifying circuit by the control circuit, and outputs rectified DC power to the charging unit **213**.

[0068] The charging unit **213** supplies the power supplied from the power receiving unit **212** to the battery **18** as power for charging. For example, the charging unit **213** converts the power supplied from the power receiving unit **212** into a predetermined current value and a predetermined voltage value and supplies the converted power to the battery **18**. Further, for example, the charging unit **213** may include a circuit that outputs the charge state of the battery **18** to the power receiving unit **212** and/or the processor **23**.

[0069] The memory **22** includes, for example, a Random Access Memory (RAM) and a Read Only Memory (ROM). The memory **22** stores various data. For example, the memory **22** stores in advance, for example, programs/recording mediums and various program/recording medium data such as applications for controlling the entire blood pressure measurement device **1** and the pump **14**, settings data for setting various functions of the blood pressure measurement device **1**, and calculation data for calculating a blood pressure value and a pulse from the pressure measured by the pressure sensor **17** to be changeable.

[0070] The processor **23** controls the operation of the entire blood pressure measurement device **1** and the operations of the pump **14** and the valve **16** based on the programs or recording mediums stored in the memory **22** to perform a predetermined operation (function). The processor **23** executes the predetermined operation, analysis, processing, or the like according to the read program or recording medium. The processor **23** is an arithmetic device such as a CPU. The processor **23** may include, for example, a sub CPU in addition to a main CPU. In addition, the processor **23** displays statuses or results of the executed various operations, calculations, analyses, processes, and the like on the display unit **12** by the program/recording medium or the application.

[0071] The cuff structure **4** includes, for example, the curler **51**, the pressing cuff **52**, the back plate **53**, and the sensing cuff **54**. The cuff structure **4** is formed by layering the curler **51**, the pressing cuff **52**, the back plate **53**, and the sensing cuff **54**.

[0072] Hereinafter, specific examples of the cuff structure **4** will be described with reference to FIGS. **1** to **3** and **5**. As illustrated in FIGS. **1** to **3** and **5**, the cuff structure **4** includes the curler **51**, the pressing cuff **52**, the back plate **53**, and the sensing cuff **54**.

[0073] For example, a first end side of the curler **51** is fixed to the wrist side of the housing **11**. The curler **51** is formed in a band-like shape that curves in a shape following along the circumferential direction of the wrist **300**. The curler **51** is constituted by a resin material. The curler **51** is made of a material having a low hardness and having flexibility and shape retainability. Here, “flexibility” refers to deformation of the shape of the curler **51** in a radial direction at the time of application of

an external force of the band **5** to the curler **51**. "Shape retainability" refers to the ability of the curler **51** to maintain a pre-imparted shape when no external force is applied to the curler **51**. That is, the curler **51** is made of a resin material having a hardness that does not undergo compressive deformation or substantially does not undergo compressive deformation but allows elastic deformation such as bending deformation in which the shape, in particular, a curvature of a curved portion changes. Thus, the curler **51** is formed to be elastically deformable so that the curler **51** is bent and deformed by the application of the external force and an inner space in which the wrist **300** is disposed becomes larger or smaller to follow the shape of the wrist to which the curler **51** is attached. For example, the curler **51** is made of a thermoplastic polyurethane resin (hereinafter referred to as TPU).

[0074] For example, a groove **51***a* to which the band **5** is disposed and fixed is formed on the outer circumferential surface of the curler **51**. In other words, the curler **51** includes a pair of walls **51***b* along a longitudinal direction of the outer circumferential surface at a pair of edges along the longitudinal direction, and a space between the pair of walls **51***b* is the groove **51***a* to which the band **5** is disposed and fixed. For example, the groove **51***a* is formed from a first end portion to a second end portion of the curler **51** along the outer circumferential surface of the curler **51**.

[0075] In addition, the curler **51** is formed such that a first side from a portion fixed to the housing **11** is longer than a second side. For example, both ends of the curler **51** are formed to have a length and a shape so as to be located at a first side portion of the wrist **300** between a palm side of a hand and a back side of the hand of the wrist **300** even when the curler **51** is attached to either the wrist **300** having the longest circumference or the wrist **300** having the shortest circumference among users to whom the curler **51** is expected to be attached. For example, the curler **51** is formed in a shape in which any one of the first end portion and the second end portion overlaps the other. For example, the curler **51** is inclined such that an end surface of an end portion located inward in the radial direction in a state where the both ends overlap each other faces the overlapped end portion side. In addition, the curler **51** may have a shape in which the entirety of the curler **51** curved in the longitudinal direction so as to follow the shape of the wrist **300** or part of the curler **51** is partially formed in a flat plate shape.

[0076] As a specific example, the curler **51** is, for example, fixed to the outer case **31** or the back lid **33** of the housing **11**. The curler **51** includes a fixed portion **61** fixed to the back lid **33** and formed in a flat plate shape, a first curved portion **62** provided at a first end of the fixed portion **61** and curved with a predetermined radius of curvature, and a second curved portion **63** provided at a second end of the fixed portion **61** and curved with a predetermined radius of curvature.

[0077] A reinforcing material made of a high-intensity material such as polycarbonate (PC) is inserted into the fixed portion **61** by, for example, insert molding. The inserted reinforcing material is a material forming the curler **51**, that is a material having a hardness higher than that of TPU in this embodiment. In addition, for example, a hole in which a fastening member such as a screw for fixing the curler **51** to the housing **11**, connecting portions **73** and **83**, a valve provided in the fluid circuit **24**, and the like are disposed is formed in the fixed portion **61**.

[0078] The first curved portion **62** is formed to have a length from the fixed portion **61** to the first side portion of the wrist **300**. In addition, for example, the biometric sensor **20** is provided on the inner surface of the end portion side of the first curved portion **62**. The second curved portion **63** is formed to have a length from the fixed portion **61** to the first side portion of the wrist **300** on which the end portion of the first curved portion **62** is disposed, beyond a second side portion of the wrist **300** and the palm side of the hand of the wrist **300**.

[0079] For example, as indicated by a two dot chain line in FIG. **2**, in a state before the external force is applied to the curler **51**, the end portion of the second curved portion **63** may be located further outward in the radial direction than the end portion of the first curved portion **62** and separated in the circumferential direction, and the end portions of the first curved portion **62** and the second curved portion **63** may be separated from each other. As a specific example, the second

curved portion **63** is formed such that the entire region or a part of the second curved portion **63** from the palm side of the hand to the end portion side is formed in a straight shape, the second curved portion **63** is formed in a curved shape having a single radius of curvature larger than the radius of curvature of the end portion side of the first curved portion **62** or in a curved shape having a plurality of different radii of curvature, or the second curved portion **63** is formed by a combination of the straight shape and the curved shape.

[0080] The curler **51** is formed so as to be capable of performing the overlap in which when the curler **51** is fastened by the band **5** toward the wrist **300** side, for example, one of the end portions of the first curved portion **62** and the end portion of the second curved portion **63** is located further outward in the radial direction than the other. As a specific example, as illustrated in FIGS. **2** and **3**, the end portion of the second curved portion **63** is located further outward in the radial direction than the end portion of the first curved portion **62**, and when the curler **51** is fastened by the band **5** toward the wrist **300** side the second curved portion **63** is formed so as to be capable of overlapping an outer surface side of the first curved portion **62**. In other words, the end portion of the second curved portion **63** is formed to be capable of overlapping the end portion of the first curved portion **62**. For example, in the first curved portion **62**, the inner circumferential surface side is formed to be longer than the outer circumferential surface side, and thus the end surface is inclined with respect to the longitudinal direction of the first curved portion **62**.

[0081] Note that, for example, the lengths of the first curved portion **62** and the second curved portion **63** may be configured such that the first curved portion **62** and the second curved portion **63** overlap each other in all the wrists **300** to which attachment is expected. In addition, for example, the first curved portion **62** and the second curved portion **63** may be configured such that the first curved portion **62** and the second curved portion **63** overlap each other when the blood pressure measurement device **1** is attached to a wrist **300** having a specific circumference, for example, from a wrist **300** having the median circumference to a wrist **300** having the shortest circumference among the wrists **300** to which the blood pressure measurement device **1** is expected to be attached.

[0082] In addition, a sensor attachment portion provided with the biometric sensor **20** is formed on an inner surface of the first curved portion **62** or the second curved portion **63** which is located inward in the radial direction when overlapping each other among the first curved portion **62** and the second curved portion **63**. In the present embodiment, the sensor attachment portion is formed in the first curved portion **62**, and the biometric sensor **20** is attached to the inner surface on a distal end side of the first curved portion **62**. The sensor attachment portion is provided to be separated from the air bags **71** and **81** of the pressing cuff **52** and the sensing cuff **54**, respectively, fixed to an inner circumferential surface of the curler **51** in the circumferential direction of the curler **51**.

[0083] The lengths of the first curved portion **62** and the second curved portion **63** are lengths by which even in the wrist **300** having any circumference, the second curved portion **63** faces a site of the wrist **300** where the two arteries **311** and **312** are present, the second curved portion **63** is disposed on a part of the side portion of the wrist **300**, and the end portion of the first curved portion **62** and the end portion of the second curved portion **63** are separated from each other. The two arteries **311** and **312** as used herein are the radial artery **311** and the ulnar artery **312**.

[0084] The curler **51** has the largest curvature, for example, at a boundary (ridge portion) between the fixed portion **61** and the first curved portion **62** and at a boundary (ridge portion) between the fixed portion **61** and the second curved portion **63**.

[0085] For example, the curler **51** is insert-molded in a rectangular flat plate shape, and then the band **5** is bonded to the groove **51***a*, and the curler **51** is formed in a predetermined curved shape using a molding die.

[0086] The pressing cuff **52** is fixed to the inner circumferential surface of the curler **51** by a double-sided tape, an adhesive, thermal welding, or the like. The pressing cuff **52** is provided at least in a region of the second curved portion **63** where the artery of the wrist **300** is present. As a

specific example, the pressing cuff **52** is provided in a region of the curler **51** in the longitudinal direction from the fixed portion **61** side of the first curved portion **62** including the ridge portion between the fixed portion **61** and the first curved portion **62** to the end portion side of the second curved portion **63**. The pressing cuff **52** extends along the inner surface of the curler **51**.

[0087] The pressing cuff **52** is fluidly connected to the pump **14** through the fluid circuit **24**. A first main surface of the pressing cuff **52** is fixed to the inner surface of the curler **51**. The pressing cuff **52** is inflated to press the back side of the hand of the wrist **300** and press the back plate **53** and the sensing cuff **54** toward the wrist **300** side.

[0088] The pressing cuff **52** includes, for example, a single or a plurality of air bags **71**, and a connecting portion **73** such as a nipple provided in the air bag **71** and connected to the fluid circuit **24**. Here, the air bag **71** is a bag-like structure, and in the present embodiment, the blood pressure measurement device **1** is configured to use air with the pump **14**, and thus the present embodiment will be described using the air bag. However, in a case where a fluid other than air is used, the bag-like structure may be any fluid bag that is inflated by the fluid. The air bag **71** is formed in a rectangular bag shape that is long in one direction.

[0089] The air bag **71** is formed in a bag shape by thermal welding or the like of a plurality of sheet members. For example, when the pressing cuff **52** is configured to include the plurality of air bags **71**, the plurality of air bags **71** are laminated, integrally formed by welding or the like, and fluidly continuous with each other. The sheet member forming the air bag **71** is made of, for example, a thermoplastic elastomer. As the thermoplastic elastomer, for example, TPU is used.

[0090] The back plate **53** is fixed to the surface of the pressing cuff **52** on the wrist **300** side with a double-sided tape, an adhesive, or the like. The back plate **53** is formed of a resin material. The back plate **53** is formed in a rectangular plate shape that is long in one direction, for example. For example, the back plate **53** may be configured to be divided, that is, may be formed by arranging a plurality of rectangular small pieces in one direction. The back plate **53** has shape followability.

[0091] Here, “shape followability” refers to a function in which the back plate **53** can be deformed in such a manner as to follow the shape of a contacted portion of the wrist **300** to be disposed. This contacted portion of the wrist **300** refers to a region of the wrist **300** that comes into contact with the back plate **53**. This contact includes both direct contact with the back plate **53** and indirect contact with the back plate **53** with the sensing cuff **54** interposed therebetween.

[0092] The sensing cuff **54** is fixed to the main surface of the back plate **53** on the wrist side. The sensing cuff **54** comes into direct contact with a region of the wrist **300** where the arteries **311** and **312** are present or indirect contact with the region with the cover or the like interposed therebetween. The sensing cuff **54** is formed in a rectangular shape that is long in one direction. The sensing cuff **54** may be configured to come into direct contact with a region of the wrist **300** where one of arteries **311** and **312** are present. The sensing cuff **54** is smaller than the pressing cuff **52** in the longitudinal direction. The sensing cuff **54** is the same as or smaller than the pressing cuff **52** in the lateral direction. The sensing cuff **54** is in the same shape as that of the back plate **53** or is smaller than that of the back plate **53**, in the longitudinal direction and the width direction of the back plate **53**. The sensing cuff **54** compresses the region on the palm side of the hand of the wrist where the artery is present by being inflated. The sensing cuff **54** is pressed by the inflated pressing cuff **52** toward the living body side with the back plate **53** interposed therebetween.

[0093] As a specific example, the sensing cuff **54** includes the air bag **81**, a flow path body **82** fluidly connected to the air bag **81**, and a connecting portion **83***a* provided to the flow path body **82**. The air bag **81** and the flow path body **82** are formed in a bag shape by thermal welding or the like of a plurality of sheet members. The sheet member forming the air bag **81** and the flow path body **82** is made of, for example, a thermoplastic elastomer. As the thermoplastic elastomer, for example, TPU is used.

[0094] Here, the air bag **81** is a bag-like structure, and in the present embodiment, the blood pressure measurement device **1** is configured to use air with the pump **14**, and thus the present

embodiment will be described using the air bag. However, in a case where a fluid other than air is used, the bag-like structure may be any fluid bag that is inflated by the fluid. The air bag **81** is constituted in a rectangular shape that is long in one direction.

[0095] The flow path body **82** is, for example, integrally provided at a part of one edge of the air bag **81** in the longitudinal direction. The flow path body **82** is provided at the end portion of the air bag **81** near the device body **3**. In addition, the flow path body **82** is formed in a shape which is long in one direction with a width smaller than the width of the air bag **81** in the lateral direction. The connecting portion **83** is integrally provided at a distal end of the flow path body **82**. The flow path body **82** is connected to the fluid circuit **24** via the connecting portion **83** and forms a flow path between the fluid circuit **24** and the air bag **81**. The connecting portion **83** is, for example, a nipple.

[0096] The band **5** is formed in a band-like shape. The band **5** includes, for example, a pair of hook-and-loop fasteners **5***a* in which a hook is formed on a first side and a loop is formed on a second side, and when the pair of hook-and-loop fasteners **5***a* engage with each other, the band **5** whose end portion side is inserted into the loop portion **31***a* is fixed.

[0097] The band **5** is formed integrally with the curler **51** or the pressing cuff **52**, fastens the curler **51** or the pressing cuff **52** to the wrist **300**, and brings the pressing cuff **52** and the sensing cuff **54** into close contact with the wrist **300**. That is, the band **5** is formed so as to be capable of pressing the pressing cuff **52** and the sensing cuff **54** toward the wrist **300** by fastening the curler **51** so as to deform the curler **51** toward the wrist **300**.

[0098] In the present embodiment, the band **5** is welded or attached to the groove **51***a* of the curler **51**, and is formed integrally with the curler **51**. The band **5** extends from one of the end portions which is located on the outer side when overlapping each other among the first curved portion **62** and the second curved portion **63** of the curler **51**. In the present embodiment, the band **5** extends from the end portion of the second curved portion **63**, and the loop portion **31***a* is provided on the outer surface of the outer case **31** on the side where the first curved portion **62** is provided. When the band **5** fastens the wrist **300** having the maximum circumference to which attachment is expected, the band **5** is inserted into the loop portion **31***a* provided in the outer case **31** and extends from the second curved portion **63** by a foldable length.

[0099] In the band **5**, for example, a pair of hook-and-loop fasteners **5***a* is provided on a first main surface of a cloth material, and the groove **51***a* of the curler **51** is attached to a second main surface. The cloth material of the band **5** is made of a material that is less likely to stretch than the curler **51**. The band **5** reinforces the curler **51** by attaching the cloth material to the curler **51**. In other words, the band **5** is made of the cloth material that is less likely to stretch than the curler **51**, and is attached to the curler **51**, thereby suppressing the curler **51** from deforming to an outer side in the radial direction.

[0100] Next, an example of the power transmission device **100** that transmits power to the charging circuit unit **21** of the device body **3** will be described.

As illustrated in FIG. **4**, the power transmission device **100** includes a power source **101**, a power transmission unit **102**, and an antenna unit **103**. The power source **101** is, for example, an AC adapter or the like connected to a commercial power source or the like. The power source **101** converts AC power input from the commercial power source into DC power and supplies the DC power to the power transmission unit **102**.

[0101] The power transmission unit **102** generates AC power as transmission power from the DC power supplied from the power source **101**, and supplies the AC power to the antenna unit **103**. For example, the power transmission unit **102** generates AC power having a frequency that is the same or substantially the same as a resonance frequency of a power transmission resonance circuit of the antenna unit **103**.

[0102] The antenna unit **103** is, for example, a transmitter coil as the power transmission resonance circuit. A power transmission surface of the antenna unit **103** is formed in a planar shape. The

antenna unit **103** transmits power to the antenna unit **211** of the device body **3**. The antenna unit **103** includes, for example, a resonance capacitor and constitutes the power transmission resonance circuit.

[0103] According to the blood pressure measurement device **1** configured as described above, the band **5** is integrally provided on the outer circumferential surface of the curler **51**, and thus a positional deviation between the band **5** and the curler **51**, that is, a positional deviation between the band **5** and the pressing cuff **52** provided on the inner circumferential surface of the curler **51** is not generated. Accordingly, the pressing cuff **52** and the sensing cuff **54** can be stably pressed toward the wrist, and thus blood pressure measurement accuracy can be stabilized and deterioration of the air bags **71** and **81** can be prevented.

[0104] In addition, the band **5** is provided on the outer circumferential surface of the curler **51**, and thus the sag or the wrinkle is not generated in the band **5**, and the high appearance can be obtained.

[0105] The curler **51** is formed to be longer than the length of the pressing cuff **52** in the longitudinal direction, and the band **5** is integrally attached to the outer circumferential surface of the curler **51** and extends from the end portion of the second curved portion **63** of the curler **51**. Thus, the band **5** fastens the curler **51** to the wrist **300** by the pair of hook-and-loop fasteners **5***a*, and thus the curler **51** is elastically deformed to follow the shape of the wrist **300**, so that the curler **51** can be fixed.

[0106] The curler **51** is made of the low-hardness material such as TPU, and the band **5** is made of a material that is less likely to stretch than the curler **51**. Accordingly, when the pressing cuff **52** and the sensing cuff **54** are pressed toward the wrist **300** by the band **5** and fastened by the hook-and-loop fastener **5***a*, the curler **51** can be bent and deformed to follow the wrist **300**. In addition, the curler **51** is configured such that an outer circumferential surface is covered with the band **5** in which the cloth material is made of the material that is less likely to stretch than the curler **51**. Accordingly, when the pressing cuff **52** and the sensing cuff **54** are inflated, the curler **51** can be suppressed from being deformed outward in the radial direction. Thus, the curler **51** is easily elastically deformed to follow the shape of wrist **300**, and can efficiently press the sensing cuff **54** toward the wrist **300** during the blood pressure measurement.

[0107] In addition, the curler **51** is formed by inserting the high-hardness material having hardness higher than that of the low-hardness material that is TPU and forming the curler **51** into the fixed portion **61** to be fixed to the device body **3**. Thus, the intensity of the fixed portion **61** attached to the device body **3** can be improved, and thus the curler **51** can be prevented from being damaged even when the device body **3** is fixed by a screw or the like.

[0108] In addition, the device body **3** includes the loop portion **31***a* in the housing **11**, and the band **5** is folded back at the loop portion **31***a* and then fixed by the pair of hook-and-loop fasteners **5***a*. Thus, the band **5** makes it easy to fasten the curler **51** and can bring the pressing cuff **52** and the sensing cuff **54** into close contact with the wrist **300** stably.

[0109] The first end of both ends of the curler **51** overlaps the second end of the both ends when the blood pressure measurement device is attached to the living body having a shortest length in a circumferential direction of at least the wrist **300** to which attachment is expected. so that the sensing cuff **54** can be brought into contact with the region where the arteries **311** and **312** are present even when the curler **51** is attached to any of the wrists **300** having different circumferences. That is, the blood pressure measurement device **1** prevents the both ends of the curler **51** from coming into contact with each other in the circumferential direction to generate a gap between the wrist **300** and the sensing cuff **54**, and the pressing cuff **52** and the sensing cuff **54** can be brought into close contact with the wrist **300**.

[0110] The first curved portion **62**, which is the first end of the curler **51**, has a smaller radius of curvature than the second curved portion **63** overlapping the first curved portion **62**. Accordingly, the second curved portion **63** of the curler **51** is located outward in the radial direction than the first curved portion **62** before the band **5** is fastened, and thus the second curved portion **63** can be

disposed on the outer side of the first curved portion **62** when fastened by the band **5**. Further, when the curler **51** is fastened by the band **5**, the second curved portion **63** can be wound up with a trajectory of a movement of the second curved portion **63** such that the second curved portion **63** covers the first curved portion **62**, so that the second curved portion **63** can easily overlap the first curved portion **62**. As described above, in the blood pressure measurement device **1**, when the curler **51** is fastened by the band **5**, the end portions easily overlap each other and the curler **51** is easily wound around the wrist **300**.

[0111] Further, the blood pressure measurement device **1** is configured such that the band **5** is integrally attached to the outer circumferential surface of the groove **51***a* of the curler **51**, and thus edges of the band **5** in a width direction face the pair of walls **51***b* of the curler **51**. Accordingly, the edges of the band **5** in the width direction are covered by the pair of walls **51***b*, and thus the band **5** can be prevented from being peeled off by an external force from the outer circumferential surface of the curler **51**.

[0112] The band **5** and the curler **51** are integrally formed, and thus the blood pressure measurement device **1** configured as described above has a good appearance, and can prevent the positional deviations between the band **5** and the curler **51** and between the band **5** and the air bags **71** and **81**, and thus highly accurate blood pressure measurement can be performed.

[0113] Note that the present invention is not limited to the embodiments described above. For example, in the example described above, the configuration is described, in which the band **5** is fixed to the outer circumferential surface of the curler **51**. However, the band **5** may be configured to include an unfixed portion or to include a notch in a direction orthogonal to the longitudinal direction in a portion of the curler **51**, for example, a portion that is not exposed to the outside, for example, a portion present in the fixed portion **61**. The band **5** is fixed to the curler **51** in a state of being formed in the band-like shape extending in one direction, and then the curler **51** is formed in a curved shape so as to follow the shape of the wrist **300**. At this time, a difference between the inner and outer circumferences is generated in the curler **51** due to the thickness, and at this time, loosening may occur in the band **5** fixed to the curler **51**. However, a part of the band **5** is not fixed to the curler **51** or includes a notch, even when a wrinkle or the like is generated in the portion due to the difference between the inner and outer circumferences of the band **5**, the wrinkle is generated at a portion covered with the housing **11**, and thus the wrinkle is not exposed to the outside and the appearance can be prevented from being impaired.

[0114] In addition, for example, the configuration is described, in which in the blood pressure measurement device **1**, one of the first curved portion **62** which is the first end side of the curler **51** and the second curved portion **63** which is the second end side overlaps the other. Here, the curler **51** may be configured to include a guide portion **55** that guides one of the first curved portion **62** and the second curved portion **63** so as to move to an outer side when the one overlaps the other.

[0115] For example, when the second curved portion **63** moves to the outer side of the first curved portion **62** and the pressing cuff **52** and the sensing cuff **64** come into contact with the end portion of the first curved portion **62**, the movement of the second curved portion **63** may be restricted. Thus, when the curler **51** includes the guide portion **55** that guides the second curved portion **63** to move to the outer side of the first curved portion **62**, the second curved portion **63** rides on the end portion of the first curved portion **62** and easily overlaps the first curved portion **62**.

[0116] For example, as illustrated in FIG. **6**, such a guide portion **55** is a protrusion that protrudes inward in the radial direction at the second curved portion **63**. For example, the guide portion **55** is formed to be inclined with respect to a direction in which the guide portion **55** comes into contact with the end portion of the first curved portion **62** or to be a curved shape in which a tangential line is inclined. When such a guide portion **55** comes into contact with the first curved portion **62**, and the distal end of the first curved portion **62** and the inclined surface come into contact with each other, and thus the guide portion **55** moves the second curved portion **63** in a direction intersecting a direction in which the guide portion **55** comes into contact with the first curved portion **62**, that

is, outward in the radial direction.
[0117] In addition, such a guide portion **55** is preferably formed higher than the sum of the thicknesses of the pressing cuff **52**, the back plate **53**, and the sensing cuff **54**. That is, the distal end of the guide portion **55** is preferably located inward in the radial direction from the inner circumferential surface of the curler **51** than the sensing cuff **54**. Accordingly, the second curved portion **63** is located outward than the first curved portion **62**, and the second curved portion **63** can overlap the first curved portion **62**. In addition, the guide portion **55** can prevent the first curved portion **62** from interfering with the pressing cuff **52**, the back plate **53**, and the sensing cuff **54**. As described above, in the blood pressure measurement device **1**, the second curved portion **63** can more reliably overlap the first curved portion **62** by providing the guide portion **55**.
[0118] The guide portion **55** is not limited to the example illustrated in FIG. **6**. For example, as illustrated in FIG. **7**, the guide portion **55** may be a protrusion that is formed at the distal end of the first curved portion **62** and includes an inclined surface that is inclined with respect to a direction in which the first curved portion **62** and the second curved portion **63** come into contact with each other.
[0119] Further, as illustrated in FIG. **8**, the guide portion **55** may be configured such that, for example, a sheet member is configured to make the air bag **81** of the sensing cuff **54** that is the outermost and the band **5** continuous with each other, and the end portions of the back plate **53**, the pressing cuff **52**, and the curler **51** are covered with this sheet member. For example, the guide portion **55** is formed by forming a part of the sheet member forming the air bag **81** in a shape longer than a shape of the air bag **81** and integrally attaching the sheet member to the band **5**. Alternatively, for example, the guide portion **55** is formed by integrally attaching a rectangular sheet member separate from the air bag **81** to the outer surface of the air bag **81** and the band **5**. With this configuration, the guide portion **55** forms an inclined surface that is inclined with respect to the direction in which the first curved portion **62** and the second curved portion **63** come into contact with each other, and guides the movement of the second curved portion **63**.
[0120] In the example described above, the configuration is described, in which in the blood pressure measurement device **1**, the loop portion **31***a* is provided in the housing **11** and the band **5** is looped in the loop portion **31***a*. However, the configuration is not limited thereto. For example, as illustrated in FIG. **9**, the blood pressure measurement device **1** may have a configuration in which the loop portion **31***a* is not included, and the hook-and-loop fastener **5***a* of the band **5** provided in the first curved portion **62** is joined to the hook-and-loop fastener **5***a* of the band **5** extending from the second curved portion **63**.
[0121] In the example described above, the configuration is described, in which in the blood pressure measurement device **1**, the second curved portion **63** overlaps the outer side of the first curved portion **62**. However, the configuration is not limited thereto. For example, as illustrated in FIG. **10**, the first curved portion **62** may be configured to overlap the outer side of the second curved portion **63**. In such a configuration, the band **5** may extend from the end portion of the first curved portion **62**, and the loop portion **31***a* may be provided on the outer surface of the outer case **31** of the housing **11** on the side from which the second curved portion **63** extends.
[0122] In the example described above, the configuration is described, in which the curler **51** has a shape longer than the pressing cuff **52**, and the pressing cuff **52** is integrally provided on the inner circumferential surface of the curler **51**. However, the configuration is not limited thereto. For example, as illustrated in FIG. **11**, the curler **51** may have only the fixed portion **61** attached to the housing **11**, and the pressing cuff **52** may be fixed to the inner circumferential surface of band **5** integrally attached to the fixed portion **61**. In the case of such a configuration, the band **5** may include a layer made of, for example, TPU as a thermoplastic elastomer on the inner surface of the cloth material, and the band **5** and the pressing cuff **52** may be integrally fixed to each other by thermal welding.
[0123] That is, the present invention is not limited to the above-described embodiment, and various

modifications can be made in an implementation stage without departing from the gist thereof. Furthermore, each of the embodiments may be carried out as appropriate in a combination as much as possible, and combined effects can be obtained in such a case. Furthermore, the inventions at various stages are included in the above-described embodiment, and the various inventions can be extracted in accordance with appropriate combinations in the plurality of disclosed constituent elements. Note that the present invention is not limited to the above-described embodiments, and various modifications can be made in an implementation stage without departing from the gist. Further, embodiments may be carried out as appropriate in a combination, and combined effects can be obtained in such case. Further, the various inventions are included in the embodiment, and the various inventions may be extracted in accordance with combinations selected from the plurality of disclosed constituent elements. For example, in a case where the problem can be solved and the effects can be obtained even when some constituent elements are removed from the entire constituent elements given in the embodiment, the configuration obtained by removing the constituent elements may be extracted as an invention.

REFERENCE NUMERALS LIST

[0124] **1** Blood pressure measurement device [0125] **3** Device body [0126] **4** Cuff structure [0127] **5** Band [0128] **5***a* Hook-and-loop fastener [0129] **11** Housing [0130] **12** Display unit [0131] **13** Operation unit [0132] **14** Pump [0133] **15** Acceleration sensor [0134] **16** Valve [0135] **17** Pressure sensor [0136] **18** Battery [0137] **19** Communication unit [0138] **20** Biometric sensor [0139] **21** Charging circuit unit [0140] **22** Memory [0141] **23** Processor [0142] **24** Fluid circuit [0143] **25** Substrate [0144] **26** Pogo pin [0145] **31** Outer case [0146] **31***a* Loop portion [0147] **32** Windshield [0148] **33** Back lid [0149] **41** Button [0150] **43** Touch panel [0151] **51** Curler [0152] **51***a* Groove [0153] **51***b* Wall [0154] **52** Pressing cuff [0155] **53** Back plate [0156] **54** Sensing cuff [0157] **55** Guide portion [0158] **61** Fixed portion [0159] **62** First curved portion [0160] **63** Second curved portion [0161] **64** Sensing cuff [0162] **71** Air bag [0163] **73** Connecting portion [0164] **81** Air bag [0165] **82** Flow path body [0166] **83** Connecting portion [0167] **100** Power transmission device [0168] **101** Power source [0169] **102** Power transmission unit [0170] **103** Antenna unit [0171] **211** Antenna unit [0172] **212** Power receiving unit [0173] **213** Charging unit [0174] **300** Wrist [0175] **311** Radial artery [0176] **312** Ulnar artery

Claims

1. A blood pressure measurement device comprising: a device body; a curler fixed to the device body; a fluid bag fixed to an inner surface of the curler and inflated by a fluid; and a band provided integrally with an outer surface of the curler or the outer surface of the curler and an outer surface of the fluid bag and including a hook-and-loop fastener on an outer surface of the band, wherein a first end of both ends of the curler overlaps a second end of the both ends when the blood pressure measurement device is attached to the living body having a shortest length in a circumferential direction of at least the living body to which attachment is expected, and the first end of the curler has a smaller radius of curvature than the second end overlapping the first end of the curler.

2. The blood pressure measurement device according to claim 1, wherein the curler is formed longer than a length of the fluid bag in a longitudinal direction and is formed to be elastically deformable to follow a shape of an attachment site of a living body in a circumferential direction, and the band is provided on an outer circumferential surface of the curler and extends from a first end of the curler.

3. The blood pressure measurement device according to claim 2, wherein the curler is made of a low-hardness material and includes a fixed portion fixed to the device body and into which a high-hardness material having a hardness higher than a hardness of the low-hardness material is inserted, and the band is made of a material that is less likely to stretch than the curler.

4. The blood pressure measurement device according to claim 1, wherein the device body includes

a loop portion configured to fold back the band.

5. The blood pressure measurement device according to claim 1, further comprising: a guide portion configured to guide the second end overlapping the first end of the curler to an outer side of the first end.

6. The blood pressure measurement device according to claim 5, wherein the guide portion is a protrusion provided at the first end or the second end of the curler and configured to move the second end to an outer side.

7. The blood pressure measurement device according to claim 5, wherein the guide portion is a sheet member provided on an inner surface of the band, configured to cover an end portion of the fluid bag and extending from the curler.

8. The blood pressure measurement device according to claim 1, wherein the curler is formed of a fixed portion made of a low-hardness material and a high-hardness material inserted into the low-hardness material and having a hardness higher than a hardness of the low-hardness material, the fixed portion being fixed to the device body, and the outer surface of the fluid bag is integrally fixed to the fixed portion and the band.

9. The blood pressure measurement device according to claim 1, further comprising: a sensor provided on an inner surface of a first end portion of the curler and separated from the fluid bag in a longitudinal direction of the curler and configured to detect information on a living body.