



(12)

EUROPEAN PATENT APPLICATION

- (43)

Date of publication:
11.09.2024 Bulletin 2024/37
- (51)

International Patent Classification (IPC):
A44C 5/22 (2006.01)
- (21)

Application number: 24161118.5
- (52)

Cooperative Patent Classification (CPC):
A44C 5/22; A44D 2203/00
- (22)

Date of filing: 04.03.2024

- (84)

Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN
- (71)

Applicant: Casio Computer Co., Ltd.
Tokyo 151-8543 (JP)
- (72)

Inventor: Sato, Ayaka
Hamura-shi, Tokyo, 205-8555 (JP)
- (74)

Representative: Grünecker Patent- und
Rechtsanwälte
PartG mbB
Leopoldstraße 4
80802 München (DE)
- (30)

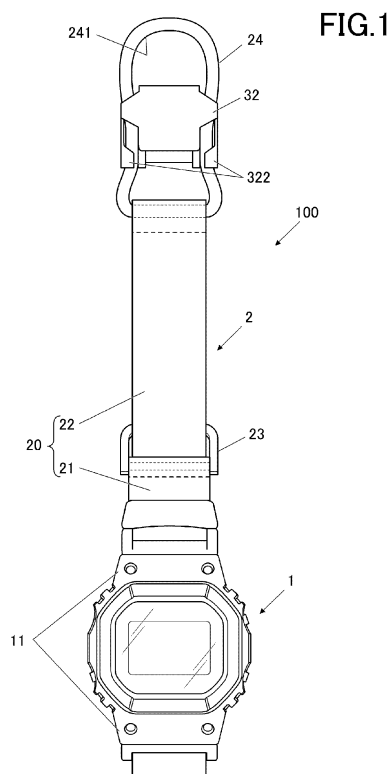
Priority: 08.03.2023 JP 2023035174

(54)

BAND, WEARABLE DEVICE, AND BAND ATTACHING METHOD

- (57)

A band includes, a long band member; a second member provided at one end side of the band member; and a first member including a through hole through which the second member and at least one end side of the band member in which the second member is provided are inserted. The second member or the at least
- one end side of the band member maintains a first state with a width or a thickness that is larger than a width or a thickness of the through hole of the first member in a state in which the second member and the at least one end side of the band member are inserted into the through hole of the first member.



Description

TECHNICAL FIELD

[0001] The present disclosure relates to a band, a 5 wearable device, and a band attaching method.

DESCRIPTION OF RELATED ART

[0002] Conventionally, bands that are magnetically 10 coupled using magnets are known.

[0003] For example, Japanese Unexamined Patent Application Publication (Translation of PCT Application) No. 2022-530911 describes a wristband for fixing a watch to a user. This includes a plurality of magnets that enable 15 the wristband to be magnetically coupled when folded or when separate band portions overlap.

[0004] In this way, if the bands can be coupled using a magnet, it can be easily attached and removed.

[0005] However, for users who have difficulty moving 20 their fingers freely due to, for example, numbness or stiffness in their fingers, wrapping the band around a desired object such as an arm or wrist to secure the band is a highly difficult movement.

[0006] Even if the band coupling itself can be easily 25 performed by using a magnet as described in Japanese Unexamined Patent Application Publication (Translation of PCT Application) No. 2022-530911, it is not possible to attach the band as desired without first being able to wrap the band around an object to be attached such as an arm or wrist.

[0007] The present disclosure has been made in view of the above circumstances, and the purpose of the present disclosure is to provide a band, a wearable device, and a method of attaching a band, so that the above 30 can be easily attached and removed by anyone.

SUMMARY OF THE INVENTION

[0008] According to one embodiment of a case of the 40 present invention, a band includes: a long band member; a second member provided at one end side of the band member; and a first member including a through hole through which the second member and at least one end side of the band member in which the second member 45 is provided are inserted, wherein the second member or the at least one end side of the band member maintains a first state with a width or a thickness that is larger than a width or a thickness of the through hole of the first member in a state in which the second member and the at 50 least one end side of the band member are inserted into the through hole of the first member.

[0009] According to the present invention, anyone can easily attach and remove the band.

BRIEF DESCRIPTION OF DRAWINGS

[0010]

FIG. 1 is a plan view showing an outer appearance of a watch with a band according to the present embodiment viewed from a viewing side.

FIG. 2 is a plan view showing an outer appearance of a watch with a band according to the present embodiment viewed from a non-viewing side.

FIG. 3 is a perspective view of a watch with the band shown in FIG. 1 joined at a portion of a buckle member.

FIG. 4 is a plan view showing an outer appearance of the watch in the state shown in FIG. 3 viewed from a non-viewing side.

FIG. 5A is a plan view of the watch with a second member of the band removed from a first member.

FIG. 5B is a plan view showing a second buckle member that had been removed from the band in FIG. 5A.

FIG. 6 is an explanatory view showing an insertion of the second member into a through hole of the first member.

FIG. 7 is a perspective view showing the second buckle member attached to the second member after insertion into the through hole of the first member.

DETAILED DESCRIPTION

[Configuration]

[0011] Referring to FIG. 1 to FIG. 7, embodiments of a band, a wearable device, and a band attaching method in accordance with the present disclosure will be explained. In the following, "band" is a wearable band. In the following embodiment, the case where the wearable device to which the band is applied is a wristwatch (hereinafter simply referred to as a "watch") will be explained, but the embodiment to which the present disclosure can be applied is not limited thereto.

[0012] FIG. 1 is a plan view showing an outer appearance of a watch with a band according to the present embodiment viewed from a viewing side. FIG. 2 is a plan view showing an outer appearance of the watch in the state shown in FIG. 1 viewed from a non-viewing side. FIG. 3 is also a perspective view viewed from the side of the watch in the state in which the band shown in FIG. 1 is coupled with the portion of the buckle member, and FIG. 4 is a plan view showing the outer appearance of the watch in the state shown in FIG. 3 from the non-viewing side.

[0013] As shown in FIG. 1 to FIG. 4, according to the present embodiment, the watch 100, which is a wearable device, includes a device case 1 and a band 2 attached to this device case 1.

[0014] The upper and lower end portions (upper and lower end portions in FIG. 1, etc.) of the device case 1, that is, the 12 o'clock direction side end portion and the 6 o'clock direction side end portion of the analog type watch, are provided with a band attaching portion 11 to which the band 2 can be attached.

[0015] Also, a module or the like including a display unit not shown is housed inside the device case 1. Note that the watch 100 may be provided with an analog display unit including a clock hand or the like (not shown), or with a digital display unit having, for example, a liquid crystal display unit. Furthermore, a hybrid type display unit having both a digital type and an analog type may be provided.

[0016] The band 2 is provided with a long band member 20 that extends in a longitudinal direction (extending direction). The band member 20 according to the present embodiment includes a first band portion 21 disposed on one side of the device case 1 in the band attached state, and a second band portion 22 disposed on the other side of the device case 1.

[0017] In the present embodiment, one side of the device case 1 in which the first band portion 21 is arranged is the 12 o'clock side in the analog type watch, and the other side of the device case 1 in which the second band portion 22 is arranged is the 6 o'clock side in the analog type watch.

[0018] The band member 20 according to the present embodiment is formed of, for example, a strip of cloth tape or leather. In the case of the cloth tape, it is preferable to include various fibers for strengthening. Note that the material for forming the band member 20 is not limited to those exemplified herein.

[0019] The band 2 includes a first member 23 and a second member 24.

[0020] In the present embodiment, the first member 23 is provided on the side of the first band portion 21 arranged on the 12 o'clock side of the analog type watch, and the second member 24 is provided on the side of the second band portion 22 arranged on the 6 o'clock side of the analog type watch.

[0021] Among them, the first member 23 is a frame-shaped member as shown, for example, in FIG. 2, and the second member 24 and at least one end side of the band member 20 are inserted into a through hole which is a space formed inside the frame.

[0022] As shown in FIG. 2, a width of the through hole of the first member 23 according to the present embodiment (dimension of band 2 in width direction) is a "first length L1".

[0023] If the band member 20 is formed of cloth tape, leather, or the like, the first member 23 is attached by folding and sewing the end of the band member 20 so as to sandwich the first member 23, for example. Note that the method of attaching the first member 23 to the band member 20 is not limited thereto.

[0024] The first member 23 is formed of a metal material such as, for example, titanium, stainless steel (SUS), or aluminum. It should be noted that the material forming the first member 23 is not limited to those exemplified herein, and may be made of, for example, various rigid resin materials.

[0025] It is desirable that the width of the through hole can be maintained to be the "first length L1" as much as

possible so that the first member 23 does not pass through a material having a width dimension larger than the "first length L1" and it is preferable that the first member 23 is formed of a material that is difficult to be deformed.

[0026] The second member 24 is provided on one end side of the band member 20 (the second band portion 22 side in the present embodiment) and has an annular portion 241 as shown in FIG. 1, etc. In the present embodiment, the entire second member 24 is shaped in a rubber band-like ring. In the present embodiment, the buckle member 3 (see the second buckle member 32, FIGS. 1 and 2) described later is attached in the middle of the extending direction which is the longitudinal direction of the band 2 in the second member 24. As a result, the second member 24 is divided before and after the extending direction of the band 2 by the second buckle member 32, but it is preferable that the annular portion 241 is secured to the extent that one finger can be hooked (for example, the inner diameter of the ring is about 1.5 cm) on the free end side than the mounting position of the second buckle member 32. Incidentally, the size of the annular portion 241 to be secured in the second member 24 only needs to be such that it can hook at least one finger, and the specific size and the like are not limited.

[0027] The second member 24 of the present embodiment can have a "second state" which is a "second length L2" (see FIG. 5A, FIG. 6) with a width smaller than the width of the through hole of the first member 23 (i.e., "first length L1" (see FIG. 2) and a "first state" which is a "third length L3" (see FIG. 1, FIG. 2 and FIG. 7) with a width larger than the width of the through hole of the first member 23.

[0028] For example, the second member 24 is formed of an elastic body, such as rubber, and can be elastically deformed so as to obtain a "second state" and a "first state".

[0029] The second member 24 becomes the "second state" and is inserted into the through hole of the first member 23. After the second member 24 and at least one end side of the band member 20 are inserted into the through hole of the first member 23, the second member 24 becomes the "first state".

[0030] It should be noted that although the material for forming the second member 24 is not limited to the exemplary materials shown here, it is preferable to be formed of a material having a firmness to some extent and being self-supporting (a material which is deformed by an external force and has the property of preserving the shape).

[0031] In the present embodiment, the second member 24 is maintained in the "first state" under normal conditions which is a state not pressed by the finger.

[0032] If the band member 20 is formed of cloth tape, leather, or the like, similar to the first member 23, the second member 24 is attached by folding and sewing the end of the band member 20 so as to sandwich the second member 24, for example. Note that the method of attach-

ing the second member 24 to the band member 20 is not limited thereto.

[0033] Also, the band 2 is provided with a latching member for latching the inserted end side (one end side) of the band member 20 when the second member 24 and at least one end side of the band member 20 are inserted into the first member 23. In the present embodiment, the latching member is a magnetic type buckle member 3.

[0034] The buckle member 3 has a first buckle member 31 as a first latching member and a second buckle member 32 as a second latching member. The first member 23 is positioned between the first buckle member 31 and the second buckle member 32 in the extending direction of the band member 20 when the second member 24 and at least one end side of the band member 20 are inserted into the first member 23.

[0035] As shown in FIG. 2, etc., according to the present embodiment, the first buckle member 31 is positioned on the device case 1 side than the first member 23 in the extending direction of the band member 20 (i.e., between the device case 1 and the first member 23). In addition, the second buckle member 32 is positioned on the free end side than the first member 23 in the extending direction of the band member 20 (i.e., between the first member 23 and the free end of the band member 20 including the second member 24). The first buckle member 31 is equipped with a first magnet 311 on an outer side surface (the surface on the front side in FIG. 2) of the band 2. Also, the first buckle member 31 includes a pair of insertion portions 312 (see FIG. 3) in positions on an inner side of the band 2 and front and back in the extending direction of the band 2. The first buckle member 31 is slidably latched to the second band portion 22 by the second band portion 22 being inserted into the insertion portions 312. As a result, the first buckle member 31 can change the position in the extending direction of the band member 20.

[0036] At least one of the first buckle member 31 and the second buckle member 32 is provided at or near the second member 24. In the present embodiment, the second buckle member 32 is attached to the second member 24 on a path of the extending direction of the band 2, as described above. Incidentally, the position where the second buckle member 32 is provided is not limited thereto. For example, the second buckle member 32 may be attached to the band member 20 (second band portion 22) in an area near where the second member 24 is attached to the band member 20.

[0037] The second buckle member 32 is equipped with a second magnet 321 on an outer side surface (the surface on the front side in FIG. 2) of the band 2. The second magnet 321 and the first magnet 311 are attracted to each other. When the band member 20 (the second band portion 22 in the present embodiment) is folded back at the first member 23 as the fulcrum, the second buckle member 32 is positioned in a position opposite the first buckle member 31, and the second magnet 321 is op-

posed to the first magnet 311.

[0038] Since the first buckle member 31 and the second buckle member 32 are provided with the first magnet 311 and the second magnet 321, they are attracted by magnetic force when they are in or near opposite positions to some extent. The buckle member 3, which is the latching member in the present embodiment, is latched by magnetic force.

[0039] FIG. 5B shows the second buckle member in a separate state.

[0040] The second buckle member 32 according to the present embodiment has a pair of latching portions 322 (see FIG. 4) on both sides in the width direction of the band 2 as shown in FIG. 5B. Each of the pair of latching portions 322 is slidably latched to the second member 24 by being respectively hooked to the annular second member 24. As a result, the second buckle member 32 can change the position in the extending direction of the band member 20.

[0041] The second buckle member 32 preferably has a length or thickness in the direction of the band width larger than the width (i.e., "first length L1" (see FIG. 2)) or thickness of the through hole of the first member 23. With this, by attaching the second buckle member 32 to the second member 24 after inserting the second member 24 and at least one end side of the band member 20 into the first member 23 while the second buckle member 32 is detached (see FIG. 5A), it is possible to more reliably prevent the second member 24 from falling out of the first member 23.

[Operation]

[0042] Next, operation of the band 2 and the wearable device (watch 100), and the attaching method of the band 2 in accordance with the present embodiment will be explained.

[0043] In the present embodiment, when the band 2 is attached to the device case 1 of the watch 100, the first band portion 21 is attached to the band attaching portion 11 on the 12 o'clock side of the device case 1, and the second band portion 22 is attached to the band attaching portion 11 on the 6 o'clock side of the device case 1 (for example, the state shown in FIG. 5A).

[0044] Next, the second member 24 having an annular portion 241 provided on one end side of the long band member 20 (free end side of the second band portion 22 according to the present embodiment) is pressed and reduced with the finger in the band width direction. With this, the second member 24 is elastically deformed into a "second state" having a width dimension "second length L2" smaller than the width dimension "first length L1" of the through hole of the first member 23 in the band width direction (see FIG. 5A). In this state, the second member 24 and at least one end side of the band member 20 (the free end side, the side on which the second member 24 is provided) are inserted into the through hole of the first member 23 (see FIG. 6).

[0045] When the second member 24 is released by releasing the finger or the like which had pressed down on the second member 24 after it is inserted into the first member 23, the second member 24 is deformed (returned to the "first state" as normal) to the "first state" with a "third length L3" which is a width dimension greater than the "first length L1" which is the width of the through hole of the first member 23 by the elastic force and maintains this state.

[0046] As a result, the second member 24 becomes unable to pass through the through hole of the first member 23 in the normal state (the "first state") in which it is not pressed down with the finger, and the fall-out from the first member 23 is prevented, so that the band 2 (band member 20) and the device case 1 as a unit maintain an overall annular state with respect to the object to be attached (e.g., the arm or wrist of the user).

[0047] Next, the second buckle member 32 is attached to the second member 24 (see FIG. 7). If the width or thickness of the second buckle member 32 is greater than the width or thickness of the through hole of the first member 23, mounting the second buckle member 32 on the second member 24 more reliably prevents the second member 24 from dropping off from the first member 23. Note that when the second buckle member 32 can be inserted into the through hole of the first member 23 even while the second buckle member 32 is attached to the second member 24, the second buckle member 32 may remain attached to the second member 24.

[0048] Up to this point, the user or his/her assistant may set this in advance. If the band 2 (band member 20) and the device case 1 are in a state in which the whole is annular with respect to the object to be attached (e.g., the arm or wrist of the user, etc.) in advance, when the user wants to wear the watch 100, the setting up to this point is completed simply by passing the arm or wrist, etc. of the side on which the user wants to wear the watch 100 through the band 2 (band member 20) and the device case 1 in the annular shape.

[0049] Next, by hooking the finger or the like to the annular portion 241 of the second member 24, or by holding this portion in the mouth, the second member 24 and at least the free end side (the side on which the second member 24 is provided) of the band member 20 is pulled and folded back with the first member 23 as the fulcrum so as to wrap around the first member 23. When the second buckle member 32 is brought close to or at a position facing the first buckle member 31, the first magnet 311 and the second magnet 321 are attracted to each other by magnetic force, and the first buckle member 31 and the second buckle member 32 are latched together.

[0050] In this state, the user may move the position of the second buckle member 32 with respect to the second member 24 by hooking the finger or the like to the annular portion 241 of the second member 24 or pulling it further by holding it in his mouth. In this case, the band length can be finely adjusted, for example, by shortening the band 2 to a length along the object to be attached (e.g.,

the user's own arm or wrist).

[0051] In addition, when the band 2 is removed, the second buckle member 32 is pulled in a direction away from the first buckle member 31 by a user hooking a finger or the like on the annular portion 241 of the second member 24, or by holding it in his mouth. As a result, when the coupling between the first magnet 311 and the second magnet 321 is released, the band 2 becomes longer up to the position where the second member 24 or the like is hooked to the first member 23 while maintaining the overall annular shape with respect to the object to be attached (e.g., the user's arm or wrist) by the band 2 (band member 20) and the device case 1. As a result, it becomes a state in which the band 2 can be removed by pulling the object to which the band 2 and the watch 100 are attached such as the arm or wrist, etc. from the band 2 while avoiding the risk that the band 2 and the watch 100 to which the band 2 is attached falling accidentally from the arm or wrist, etc.

[0052] This reduces the risk of accidentally dropping the watch 100 to which the band 2 is attached, even if the user is unable to move the hand or finger freely, and makes it possible for the user to easily attach or remove the watch 100 from the arm or wrist or the like on his own.

[0053] The band according to the conventional technology requires to be wrapped around and secured to an object where the user desires to wear the band such as an arm or wrist, and users who have difficulty moving their fingers freely have difficulty fitting the band as desired.

[0054] However, as described above, the band 2 (wearable band) according to the present embodiment is provided with a long band member 20, a second member 24 having an annular portion 241 provided on one end side of the band member 20, and a first member 23 having the second member 24 and at least one end side of the band member 20 inserted into the through hole. After the second member 24 is inserted into the through hole of the first member 23, the second member 24 maintains the "first state" in which the width or thickness thereof is normally greater than the width or thickness of the through hole of the first member 23 as the normal state.

[0055] As a result, after the second member 24 having an annular portion 241 that can hook a finger or be held in the mouth is passed through the through hole of the first member 23, the second member 24 becomes wider than the through hole of the first member 23 to prevent it from falling out.

[0056] Therefore, after the band 2 (band member 20) and the entire device case 1 are in an annular state, even a user who cannot freely move his or her hand or finger can easily attach the band 2 by simply pulling the annular portion 241 of the second member 24 using his or her finger or mouth, as long as an object for attaching such as an arm or wrist or the like is passed through the annular band 2 (band member 20) and the device case 1. Also, when the band 2 is removed, since the band 2 is maintained in an annular state, it is unlikely that the band 2

will fall from the arm unintentionally, and the band 2 can be easily removed by simply hooking a finger on the annular portion 241 or pulling the annular portion 241 with the mouth. Thus, in the band of the present embodiment, it becomes possible for anyone to easily attach and remove the band 2.

[0057] In the present embodiment, the second member 24 is elastically deformable so that its width (second length L2) can be a "second state" whose width is smaller than the width (first length L1) of the through hole of the first member 23 and a "first state" whose width (third length L3) is larger than the width of the through hole of the first member 23. Normally, the second member 24 maintains the "first state" as the normal state.

[0058] According to the above, by pressing the second member 24 or the like, the second member 24 passes through the through hole of the first member 23. Once after the second member 24 is passed through the through hole, by simply releasing the hand or finger, etc. that is, pressing the second member 24, the second member 24 itself becomes a "third length L3" that is larger than the "first length L1" which is the width of the through hole of the first member 23. With this, the state becomes the "first state" and is maintained.

[0059] Therefore, the fall-out of the second member 24 from the through hole of the first member 23 is prevented.

[0060] Also, according to the present embodiment, a buckle member 3 is provided as a latching member to latch the inserted end side of the band member 20 when the second member 24 and at least one end side of the band member 20 are inserted into the first member 23.

[0061] As a result, when the band 2 (band member 20) and the entire device case 1 are made annular, the band 2 (band member 20) can be fastened with a default length that suits the user. For example, if the position of the buckle member 3 is adjusted in advance by sliding the buckle member 3 (latching member) according to the size of one's arm, etc., the band 2 can have a length suitable for the user simply by fastening the buckle member 3.

[0062] The buckle member 3 (latching member) of the present embodiment includes a first buckle member 31 which is a first latching member and a second buckle member 32 which is a second latching member. The first member 23 is positioned between the first buckle member 31 and the second buckle member 32 in the extending direction of the band member 20 when the second member 24 and at least one end side of the band member 20 are inserted into the first member 23. At least one of the first buckle member 31 and the second buckle member 32 is provided at or near the second member 24. As a result, the first buckle member 31 and the second buckle member 32 can be latched or released easily by pulling the second member 24 by hooking a finger on the annular portion 241 or by holding the annular portion 241 in the mouth.

[0063] The buckle member 3, which is the latching member according to the present embodiment, is latched

by magnetic force.

[0064] As a result, even when it is difficult to freely move the hand or finger, the buckle member 3 can be stopped without requiring any particularly difficult action by simply bringing the second buckle member 32 closer to the first buckle member 31.

[0065] Also, it is easy for the user to intuitively confirm that the second buckle member 32 is latched to the first buckle member 31 by the feel and sound when the magnets are coupled to each other.

[0066] Also, the clock 100 as the wearable device according to the present embodiment includes a band 2 (wearable band) as shown in the embodiment, and a device case 1.

[0067] As a result, even if a fragile precision instrument such as a watch module is housed in the device case 1, it is possible to easily and safely attach and detach the clock 100 by preventing the clock 100 from accidentally falling against the user's intention.

[0068] Also, in the present embodiment, the band member 20 of the band 2 (wearable band) includes a first band portion 21 arranged on one side of the device case 1 (e.g., the 12 o'clock side of the clock) in the band attachment state, and a second band portion 22 arranged on the other side of the device case (e.g., the 6 o'clock side of the clock). The first member 23 is provided on the first band portion 21 side and the second member 24 is provided on the second band portion 22 side.

[0069] In this way, since the band member 20 is divided into a first band portion 21 and a second band portion 22, when a defect such as damage occurs to a part of the band member 20, it is often convenient to replace only the part that caused the defect (the first band portion 21 or the second band portion 22).

[0070] According to the present embodiment, the first member 23 is arranged on the 12 o'clock side of the watch.

[0071] For example, in the case of wearing the watch 100 (wristwatch), especially in the case of a right-handed user, it is possible to smoothly attach and detach the band 2 if the first member 23 for securing one end side of the band member 20 (the second member 24 and at least one end side of the band member 20) is positioned on the 12 o'clock side of the watch and the member on the side to be later pulled to be secured (the second band portion 22 side where the second buckle member 32 is provided according to the present embodiment) is provided on the 6 o'clock side which is the front side when attached to the arm in order to make the entire band 2 (band member 20) and the device case 1 into an annular shape. Therefore, by arranging the first member 23 on the 12 o'clock side of the watch, it is possible to realize a watch 100 in which the band 2 can be smoothly attached and detached.

[Modification]

[0072] Various embodiments of the present disclosure

are described above but the present disclosure is not limited to the above embodiments, and various modifications are possible without leaving the scope of the present disclosure.

[0073] For example, the band member 20 is not limited to being made of cloth tape or leather, but may be made of various synthetic resins such as silicon or urethane.

[0074] Further, the shape of the first member 23, the position provided, the mounting method, etc. are not limited to those shown in the above embodiment.

[0075] For example, the first member 23 may be attached to the band member 20 via a screw, shaft, or the like.

[0076] Also, the first member 23 is not limited to a case of being attached to the band member 20.

[0077] For example, the first member 23 may be attached to the device case 1 itself (e.g., the band attaching portion 11 shown in the present embodiment) via a screw, shaft, or the like.

[0078] Furthermore, the first member 23 may be provided integrally with the device case 1. That is, for example, the band attaching portion 11 may function as the first member 23.

[0079] Further, the shape of the second member 24, the position provided, the mounting method, etc. are not limited to those shown in the above embodiment and the above can be suitably changed.

[0080] The second member 24 may also have a "first state" whose width or thickness is greater than the width or thickness of the through hole of the first member 23 and a "second state" whose width or thickness is smaller than the through hole of the first member 23.

[0081] Therefore, the second member 24 may have a "first state" in which the thickness is larger than the thickness of the through hole of the first member 23 and a "second state" in which the thickness is smaller than the thickness of the through hole of the first member 23 while, for example, the width remains smaller than the width of the through hole of the first member 23 (i.e., "first length L1" (see FIG. 2)).

[0082] In the present embodiment, it has been exemplified that the second member 24 itself can take the "first state" larger than the width or thickness of the through hole of the first member 23 and the "second state" smaller than the width or thickness of the through hole of the first member 23. However, the second member 24 may be configured to take the "first state" and the "second state" by attaching or removing other members.

[0083] For example, the second member 24 itself may be in a state smaller than the width or thickness of the through hole of the first member 23. For example, by attaching the second buckle member 32 to the second member 24, the second member 24 together with the second buckle member 32 may be in a "first state" larger than the width or thickness of the through hole of the first member 23. With this, while the second buckle member 32 is detached (see FIG. 5A), the second member 24 becomes the "second state" in a state smaller than the

width or thickness of the through hole of the first member 23. By attaching the second buckle member 32 to the second member 24 after inserting the second member 24 and at least one end side of the band member 20 into the first member 23, the second member 24 becomes the "first state". With this, it is possible to more reliably prevent the second member 24 from falling out of the first member 23.

[0084] Note that in this case, the second member 24 does not necessarily need to be formed of an elastic body to be elastically deformed, such as rubber. The second member 24 may itself be a latching part having a latching member. That is, the second member 24 may itself be provided with a latching member to maintain a state in which the entire band member is annular to the object to be attached.

[0085] Once the second member 24 and at least one end side of the band member 20 are inserted into the first member 23 to make the band 2 (band member 20) and the entire device case 1 annular, the second buckle member 32 is attached to the second member 24, and when the band 2 is simply attached or removed, the state in which the second buckle member 32 is attached is maintained. Therefore, the second member 24 is integrated with the second buckle member 32 to maintain the "first state" under the normal state in which the band 2 (band member 20) and the entire device case 1 are annular.

[0086] It should be noted that the "other members" which can be detachably attached to the second member 24 to take the "first state" and the "second state" in this case are not limited to the second buckle member 32.

[0087] Furthermore, after one end side of the band member 20 in which the second member 24 is provided is inserted into the through hole of the first member 23, the one end side of the band member 20 may be in a "first state" in which its width or thickness is greater than the width or thickness of the through hole of the first member 23 as the normal state.

[0088] For example, after the second member 24 and at least one end side of the band member 20 are inserted into the first member 23, one end side of the band member 20 may be folded back to make it thicker than the thickness of the through hole of the first member 23, and the above state (the "first state") may be maintained by gluing or sewing the folded portion.

[0089] Further, the shape of the buckle member 3 which is the latching member, the position provided, the mounting method, etc. are not limited to those shown in the above embodiment.

[0090] For example, the method of latching the first buckle member 31 to the second band portion 22 is not limited to the method of inserting a cloth tape portion or the like of the band member 20 into the insertion portion 312 like a belt.

[0091] For example, the first buckle member 31 may be latched by sewing a part of it onto the cloth tape portion of the band member 20 or sewing it into the band member

20, or may be latched through a fastener or the like.

[0092] Also, the position to provide the second buckle member 32 and the method to provide it are not limited to the exemplary embodiment.

[0093] For example, the first buckle member 31 as the first latching member may be provided between the first member 23 and the device case 1 in a state in which the second member 24 and at least one end side of the band member 20 are inserted into the first member 23. The second buckle member 32 as the second latching member may be provided between the first member 23 and the second member 24. In this case, the second buckle member 32 may also be provided with an insertion part or the like for inserting the cloth tape portion of the band member 20 so as to insert the band member 20. For example, the second buckle member 32 may be latched by sewing a part of it onto the cloth tape portion of the band member 20 or sewing it into the band member 20, or may be latched through a fastener or the like.

[0094] Furthermore, when the first buckle member 31 and the second buckle member 32 are latched by sewing, or when they are latched by using a fastener or the like, the position of the buckle member in the extending direction is fixed and cannot be moved. When only one is fixed, the band length is finely adjusted by moving the buckle member on the unfixed side. In addition, the band length may be finely adjusted by a method other than moving the first buckle member 31 and the second buckle member 32 in the extending direction of the band 2.

[0095] Moreover, the latching member is not limited to the magnetic type buckle member 3 as exemplified in the present embodiment.

[0096] For example, it may be configured to be latched by a surface fastener, various buttons, hooks, etc.

[0097] It may also be configured to be latched in combination with these and a magnet.

[0098] Moreover, as long as the band 2 is worn and used, the embodiment is not limited to being worn on the arm or wrist.

[0099] For example, the band 2 can be attached to the leg or waist. It can also be worn on the head like a head-band.

[0100] Furthermore, the object of attaching the band 2 need not be a person, and the band 2 (wearable band) of the present embodiment may be applied to, for example, a band to be attached to a pet.

[0101] In addition, the band 2 is not limited to those in which the band member 20 is divided into the first band portion 21 and the second band portion 22 as exemplified in the present embodiment.

[0102] For example, the first member 23 may be provided on one end side of the one-connection band member and the second member 24 may be provided on the other end side.

[0103] When such a band of one connection is applied to a wearable device such as a watch, for example, an insertion part for inserting the band 2 is provided in the non-visual side of the device case, and the band is at-

tached to the device case.

[0104] Also, the first band portion 21 may be positioned on the 6 o'clock side of the watch, and the second band portion 22 may be positioned on the 12 o'clock side of the watch. Furthermore, the attaching position of the first band portion 21, the second band portion 22, the first member 23, and the second member 24 may be changed accordingly to make it easier to use according to the dominant hand of the user who wears the band 2.

[0105] Moreover, the wearable devices to which the band can be attached are not limited to watches.

[0106] For example, it can be applied to various electronic devices such as smart watches and sports watches, as well as wearable devices such as various electronic devices that acquire information other than time, for example, biological information such as heart rate and blood flow information.

[0107] Furthermore, the band is not limited to those used by attaching to device cases such as various electronic devices, but the band may be used alone.

[0108] Although some embodiments of the present disclosure have been described above, the scope of the present disclosure is not limited to the embodiments described above, the various elements of the above embodiments may be combined, and the scope includes the scope of the disclosure described in the claims and their equivalents.

Claims

1. A band comprising:

a long band member;
a second member provided at one end side of the band member; and
a first member including a through hole through which the second member and at least one end side of the band member in which the second member is provided are inserted,
wherein the second member or the at least one end side of the band member maintains a first state with a width or a thickness that is larger than a width or a thickness of the through hole of the first member in a state in which the second member and the at least one end side of the band member are inserted into the through hole of the first member.

2. The band according to claim 1,

wherein the second member may be elastically deformable so as to be capable of being at least one of a first state in which the second member may have the width or thickness greater than the width or thickness of the through hole of the first member, or a second state in which the second member may have the width or thickness

- smaller than the width or thickness of the through hole of the first member, and wherein the second member becomes the second state and is inserted into the through hole of the first member, and in a state in which the second member and the at least one end side of the band member are inserted into the through hole of the first member, the second member becomes the first state as a normal state.
3. The band according to claim 1, further comprising a latching member to latch the one end side of the band member in a state in which the second member and the at least one end side of the band member are inserted into the through hole of the first member.
4. The band according to claim 3,
- wherein the latching member includes a first latching member and a second latching member,
- wherein the first member is positioned between the first latching member and the second latching member in an extending direction of the band member in a state in which the second member and the at least one end side of the band member is inserted into the through hole of the first member, and
- wherein at least one of the first latching member and the second latching member is provided at or near the second member.
5. The band according to claim 3, wherein the latching member is latched by magnetic force.
6. A wearable device comprising:
- the band according to any one of claims 1 to 5; and
- a device case.
7. The wearable device according to claim 6,
- wherein a band member of the band includes,
- a first band portion positioned on one side of the device case in a band attached state, and
- a second band portion positioned on the other side of the device case, and
- wherein the first member is provided on a first band portion side and the second member is provided on a second band portion side.
8. The wearable device according to claim 6, wherein the first member is positioned on a 12 o'clock side of a watch.
9. The wearable device according to claim 6, wherein in the first state, the band member and the device case as a unit maintain an annular shape with respect to an object on which the wearable device is attached.
10. A band attaching method comprising:
- inserting a second member provided on one end side of a long band member or one end side of the band member provided with the second member in a through hole of a first member while the second member is in a second state smaller than a width or thickness of the through hole of the first member,
- maintaining a state in which the band member and the device case as a unit form an annular shape with relation to an object on which the band is attached with the second member or at least one end side of the band member being in a first state in which the width or thickness is larger than the width or the thickness of the through hole of the first member, and
- passing the band member and the device case in the annular state through the object to which the band is attached.

FIG. 1

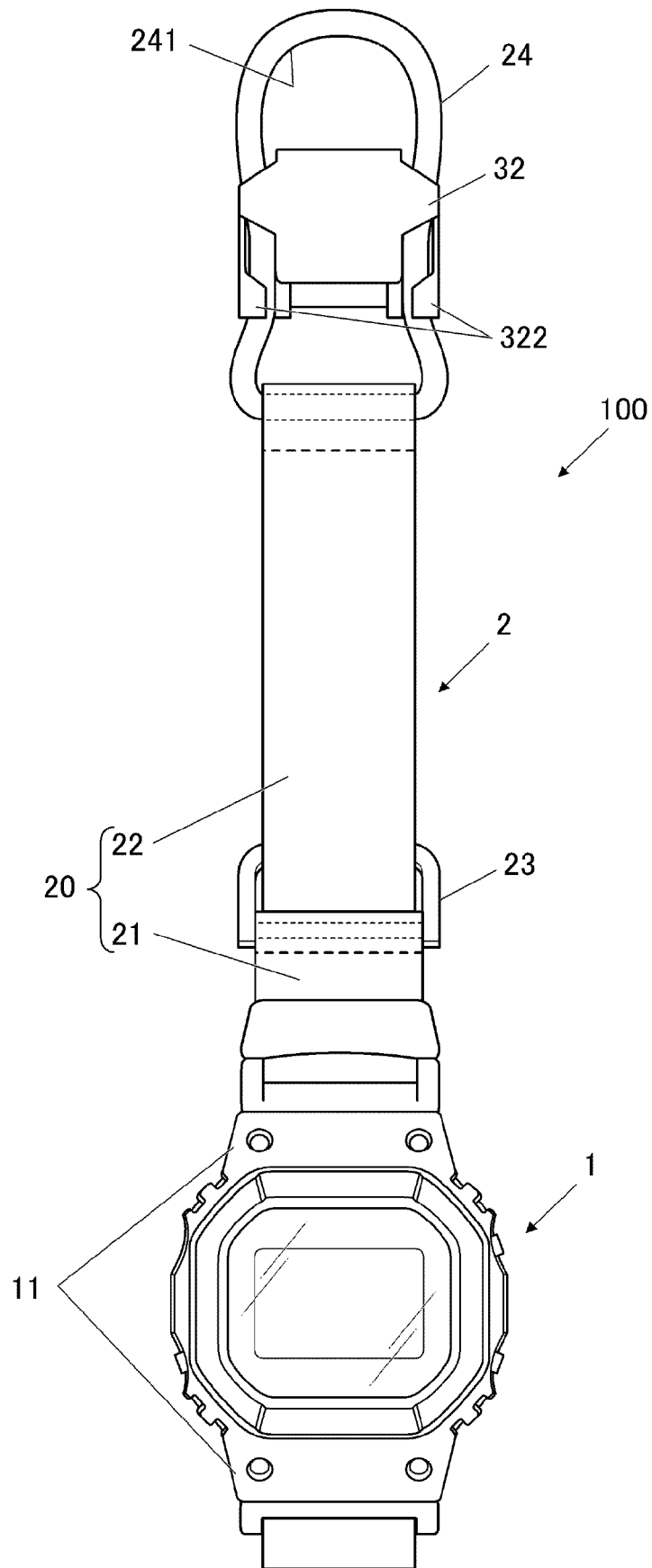


FIG.2

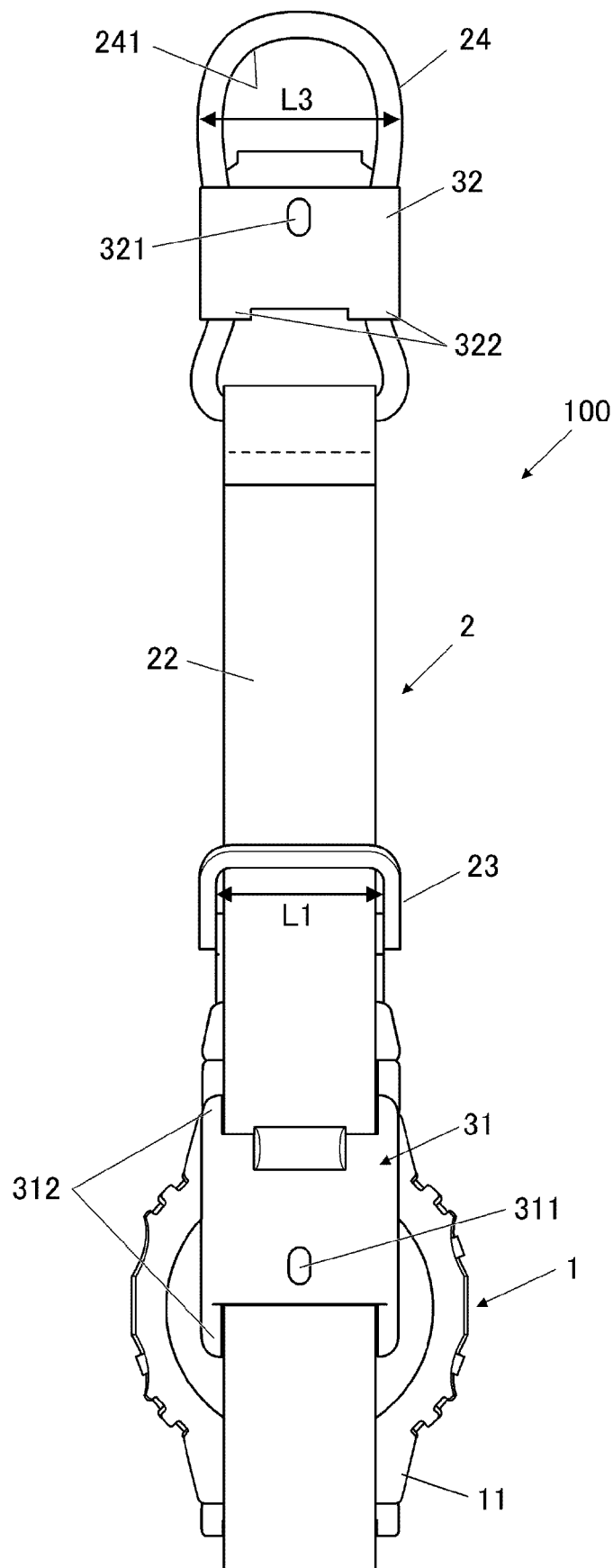


FIG.3

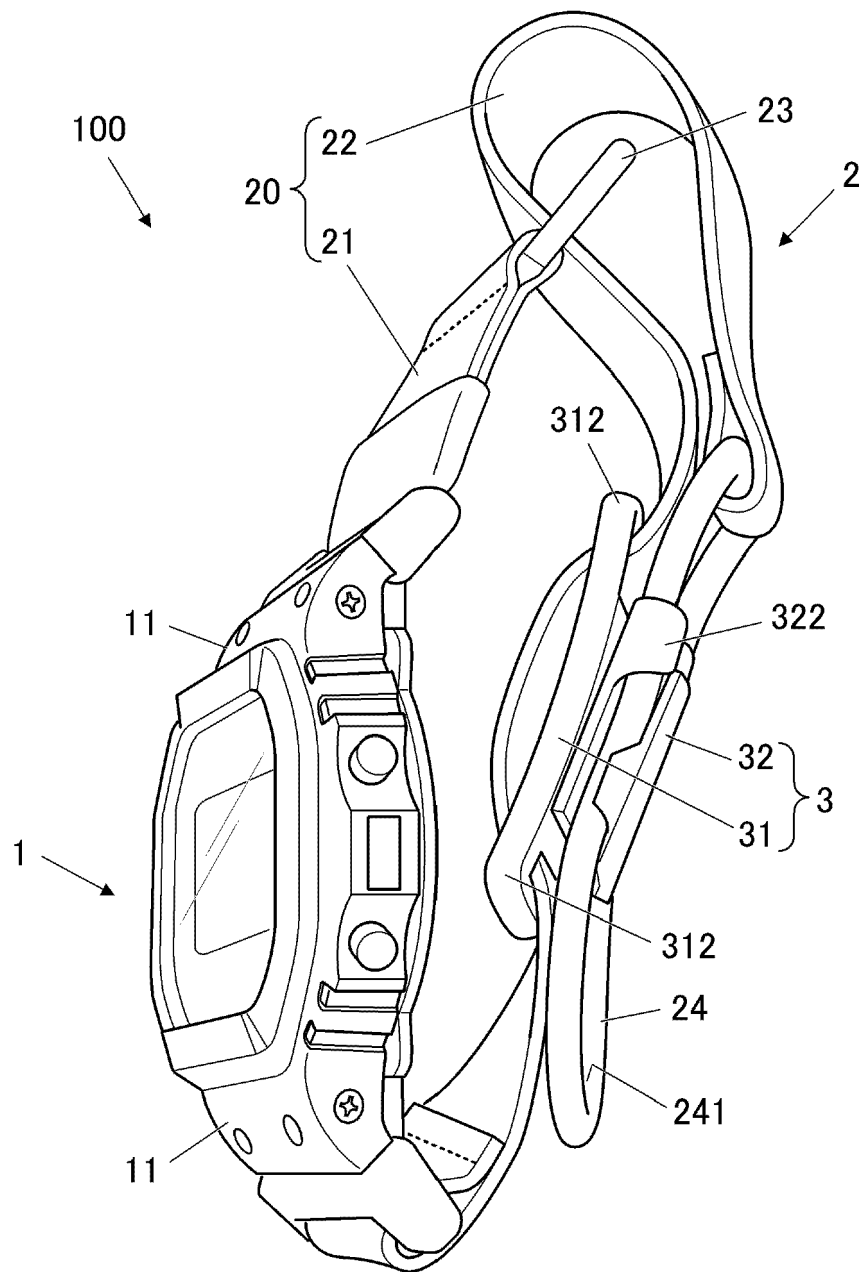


FIG.4

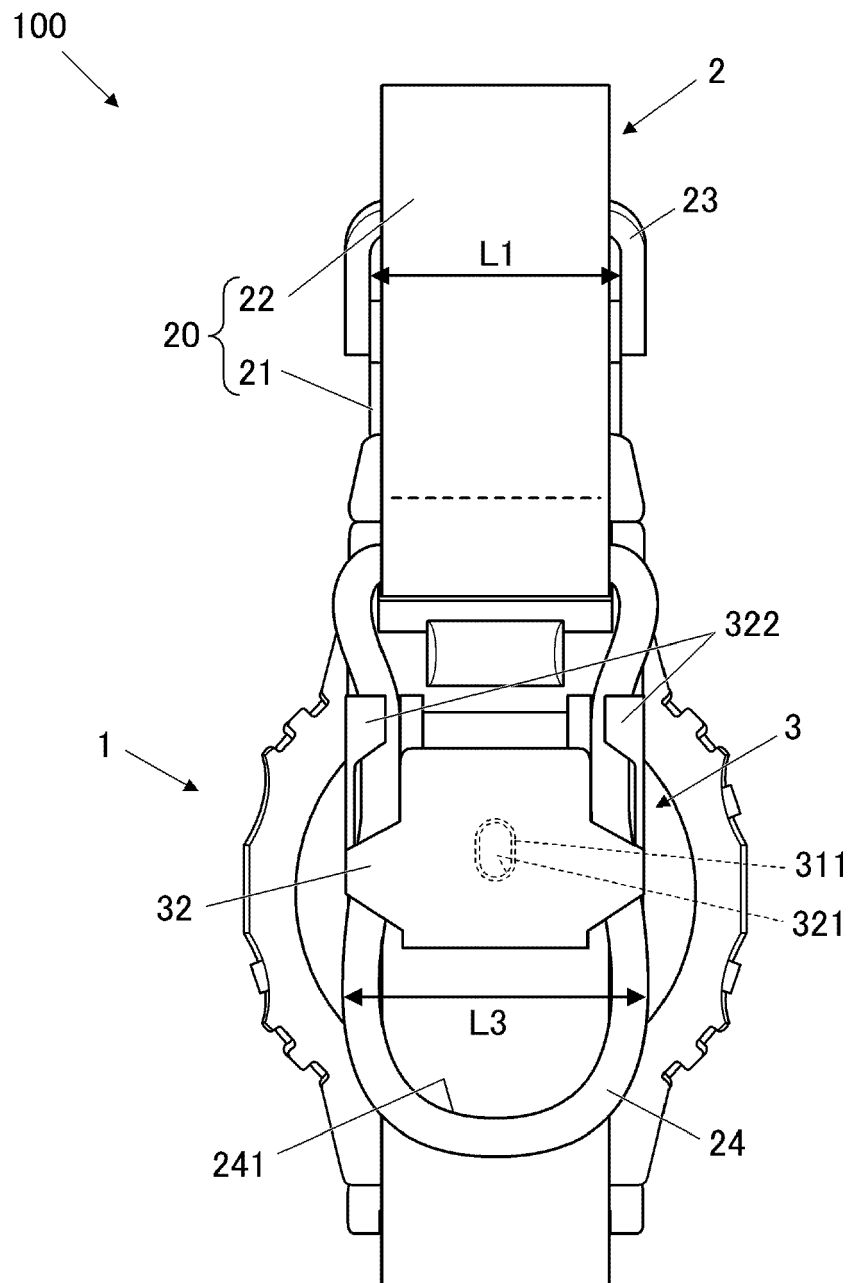


FIG.5A

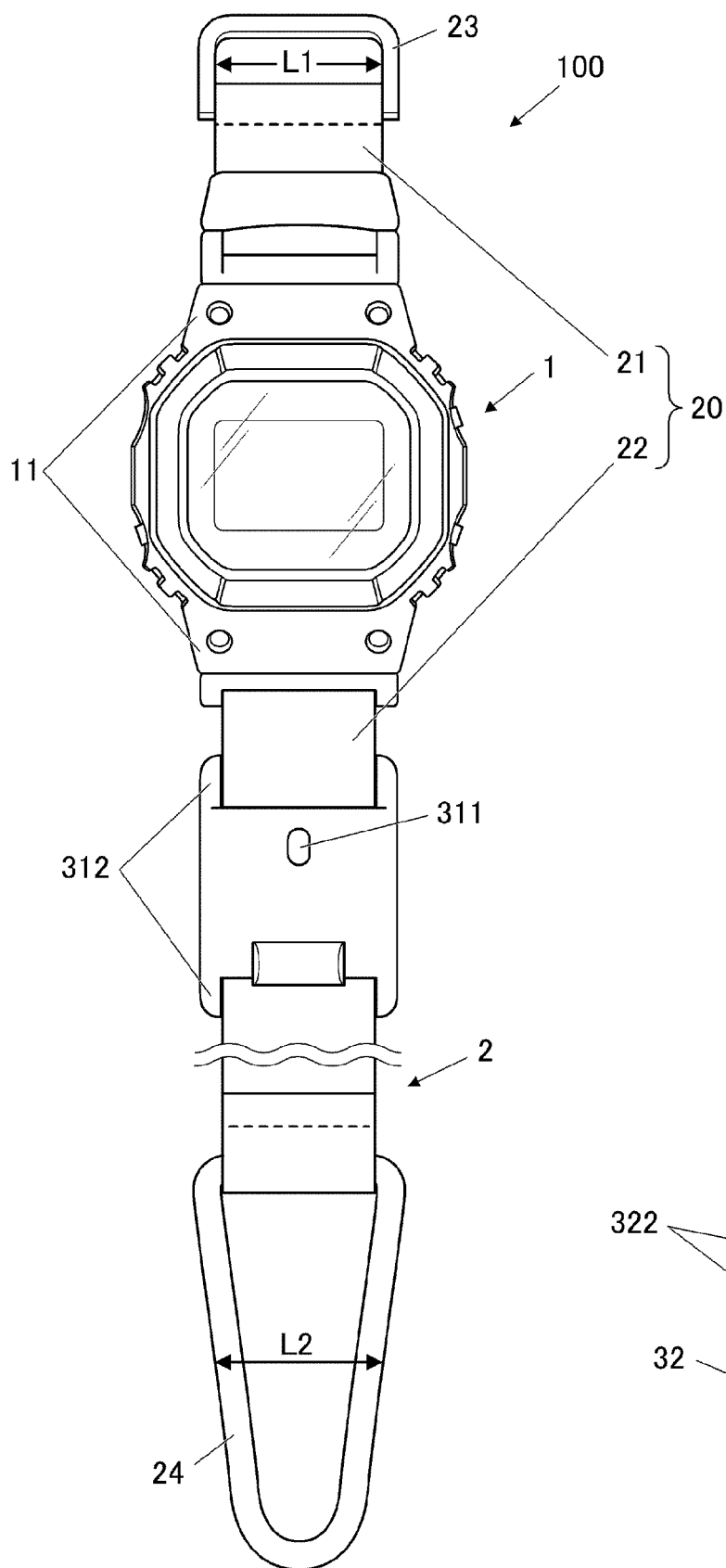


FIG.5B

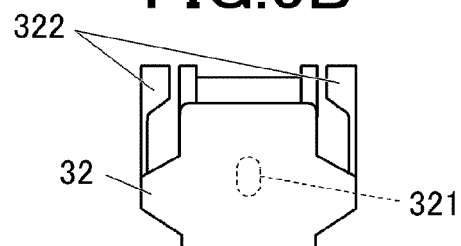


FIG.6

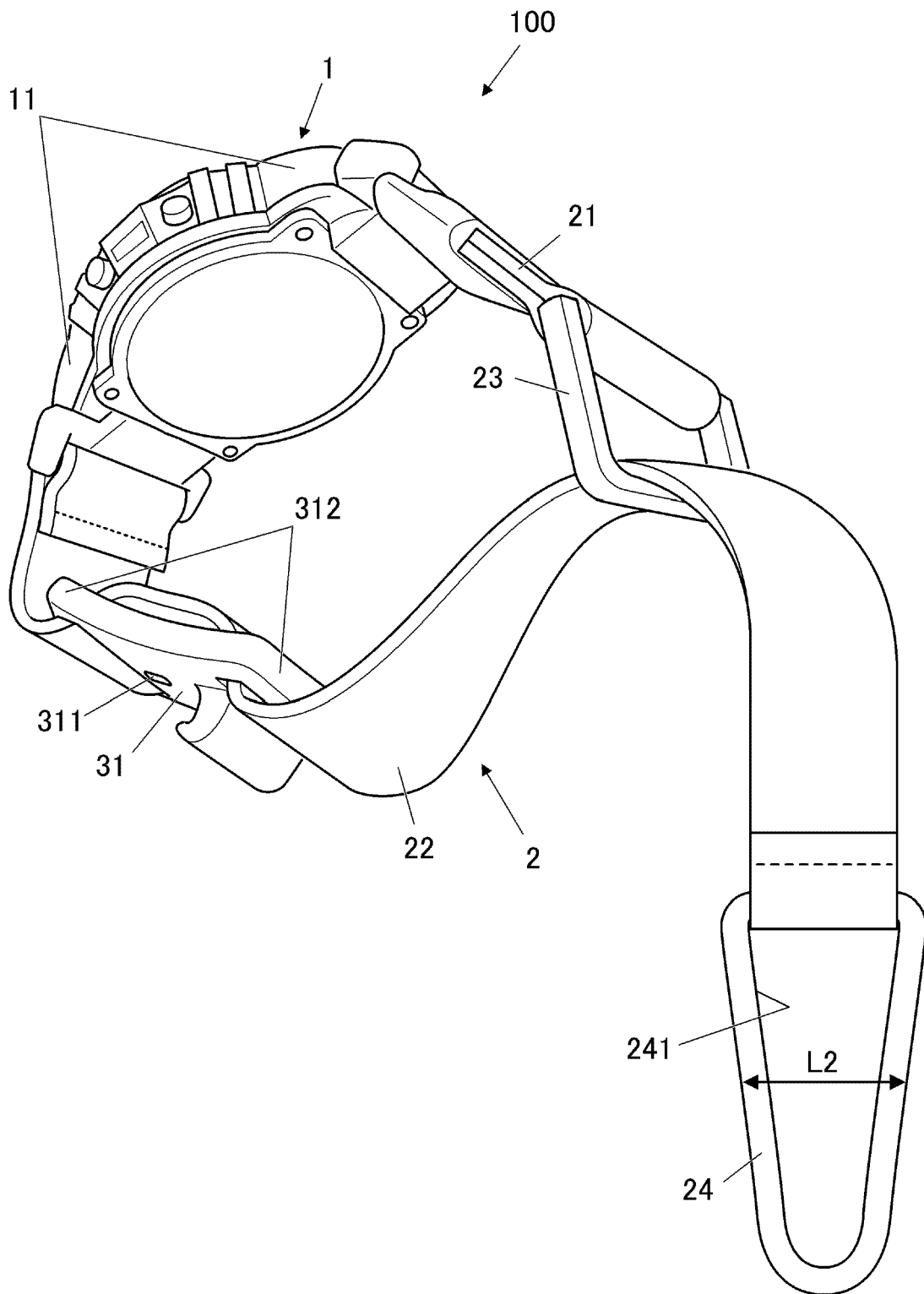
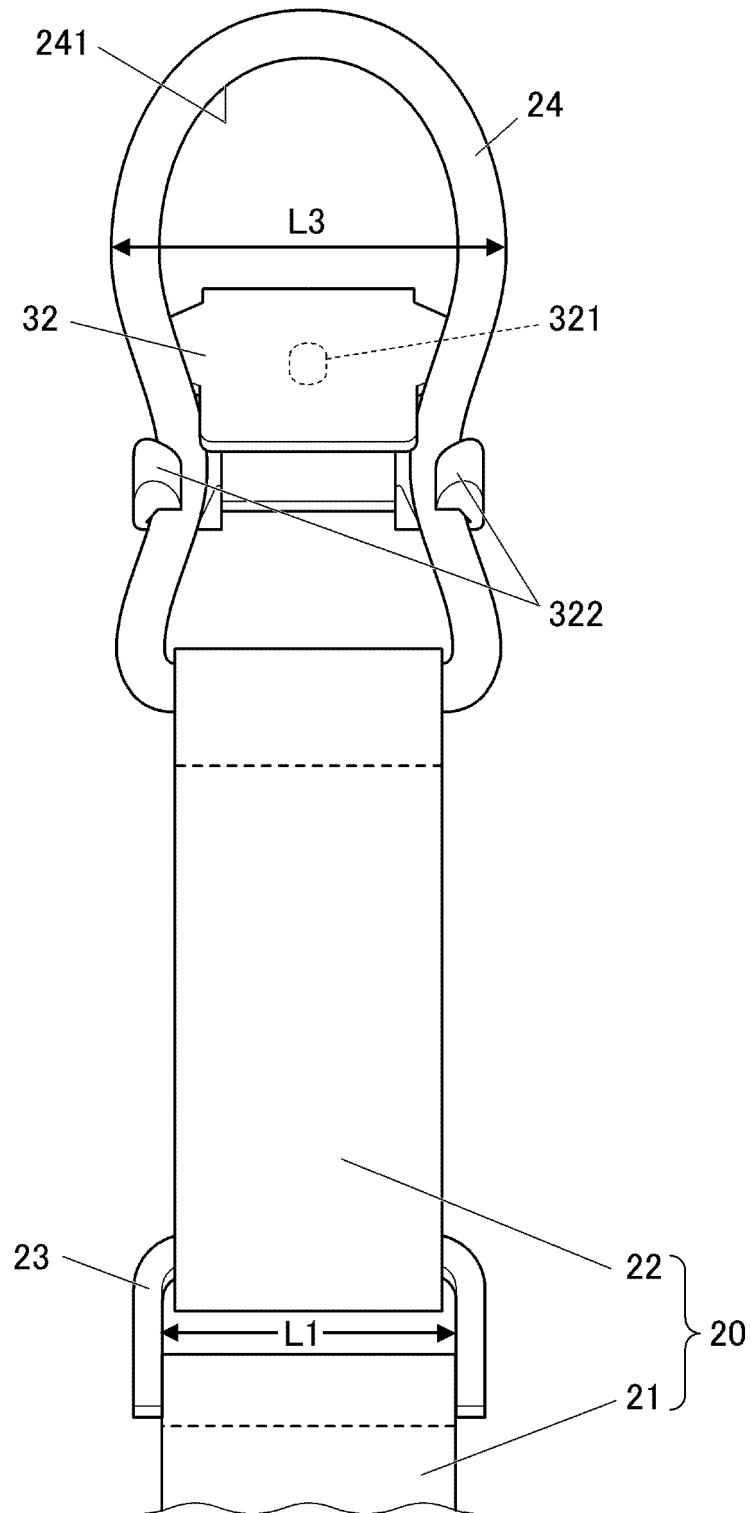


FIG.7





EUROPEAN SEARCH REPORT

Application Number

EP 24 16 1118

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2 467 204 A (GREENBERG CHARLES B) 12 April 1949 (1949-04-12) * the whole document *	1-10	INV. A44C5/22
X	US 692 595 A (BALLIETT BYRON J [US]) 4 February 1902 (1902-02-04) * figures *	1,2	
X	US 1 479 130 A (FOSTER THEODORE W) 1 January 1924 (1924-01-01) * the whole document *	1,2	
			TECHNICAL FIELDS SEARCHED (IPC)
			A44C A44B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		2 July 2024	Debard, Michel
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 24 16 1118

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02 - 07 - 2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2467204 A	12 - 04 - 1949	NONE	
US 692595 A	04 - 02 - 1902	NONE	
US 1479130 A	01 - 01 - 1924	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2022530911 W [0003] [0006]