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(54) **CONNECTION MEMBER, BAND AND TIMEPIECE**

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(57) **ABSTRACT**

A connection member including a cylindrical member, a connection portion which is inserted into at least one end portion of the cylindrical member, and a spring member which is arranged in the cylindrical member and forces the connection portion toward outside of the cylindrical member, in which the spring member is formed of a corrosion-resisting material.

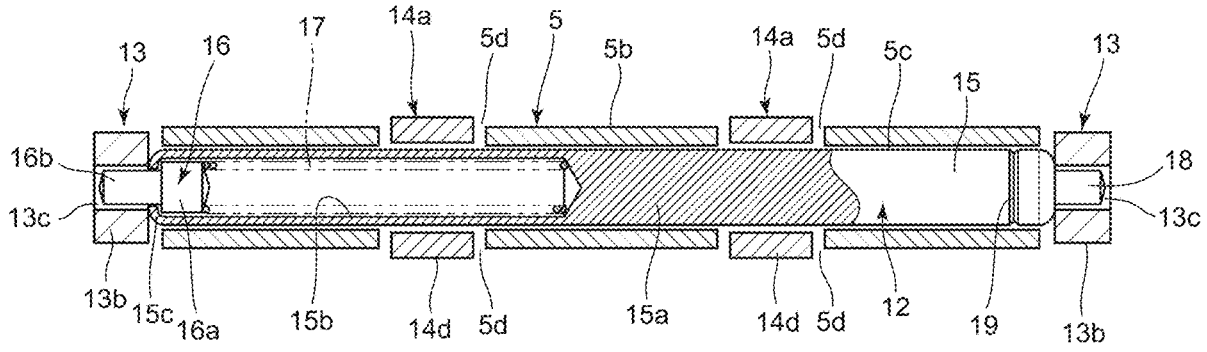


FIG. 1

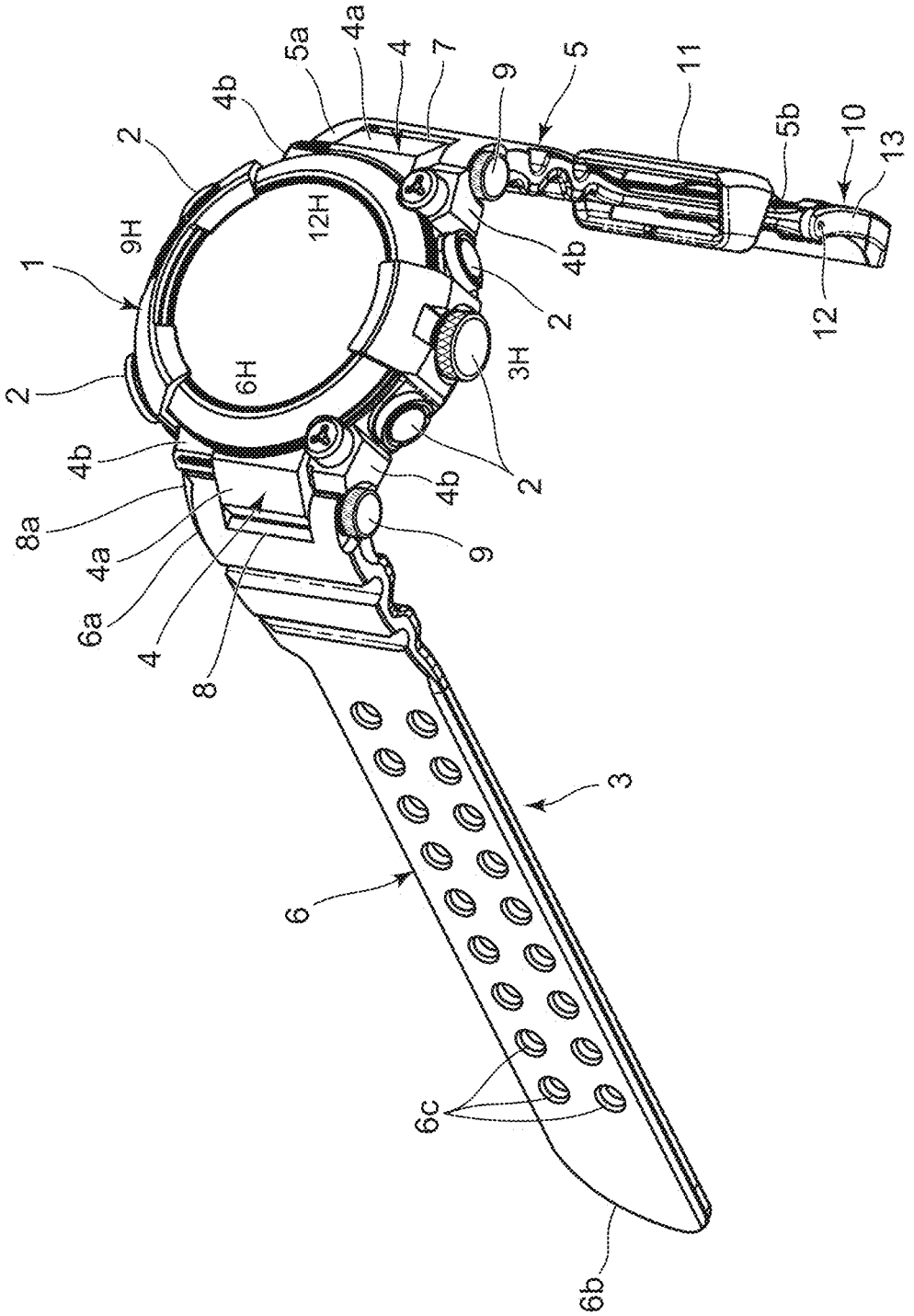

1
2
2
2
2
2
3
4
4
4a
4a
4b
4b
4b
4b
5
5a
5b
6
6a
6b
6c
7
8
8a
9
9
9H
10
11
12
12H
13
2
3H
4b
6H

FIG. 2

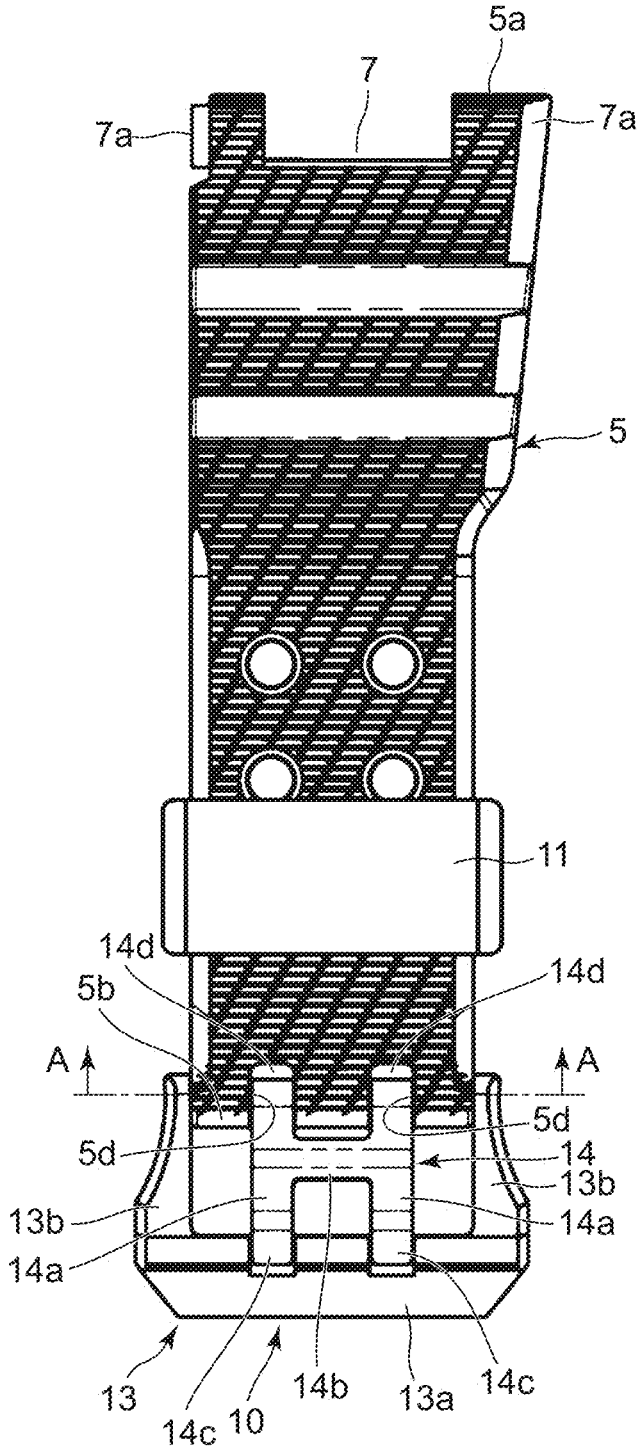

5a
7
7a
7a
5
11
14d
5b
14d
A
A
5d
5d
14
13b
13b
14a
14a
13
14c
10
14b
13a
14c

FIG. 3

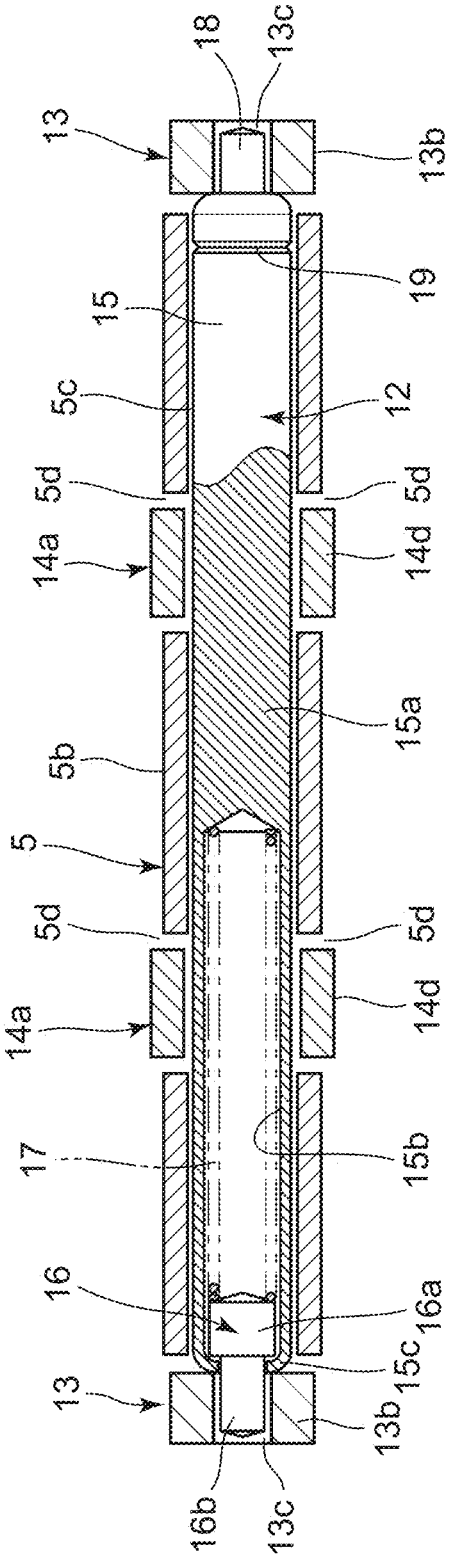

18
13c
13
13b
19
15
5c
12
5d
5d
14a
14d
15a
5b
5
5d
5d
14a
14d
17
15b
16
16a
15c
13
13b
16b
13c

FIG. 4

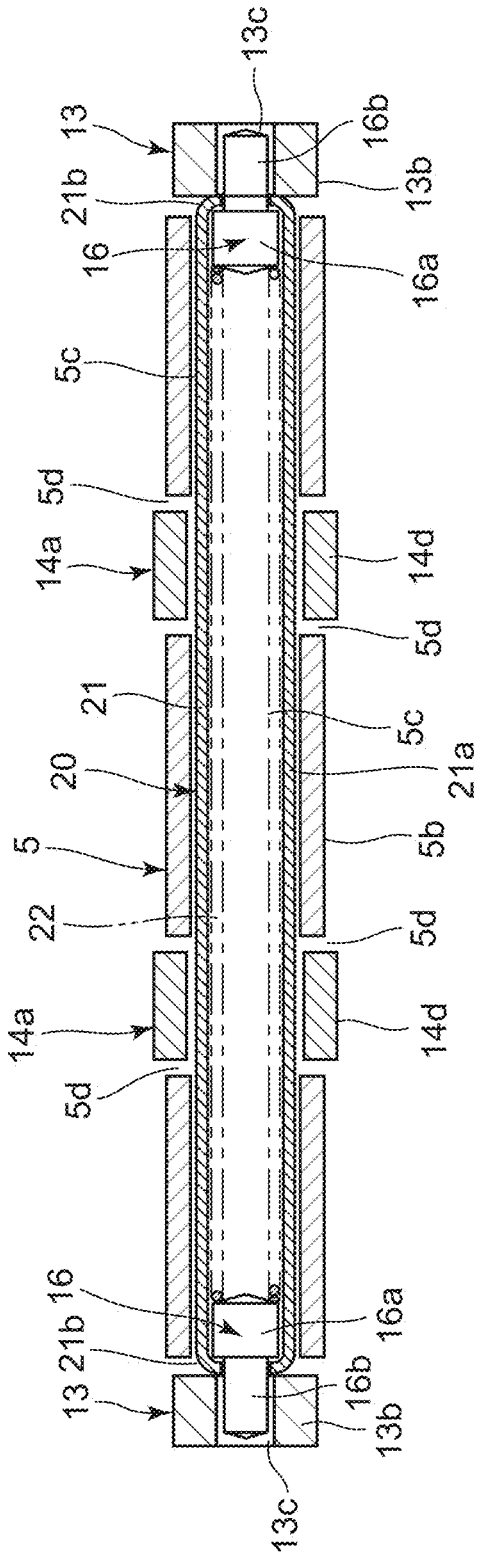
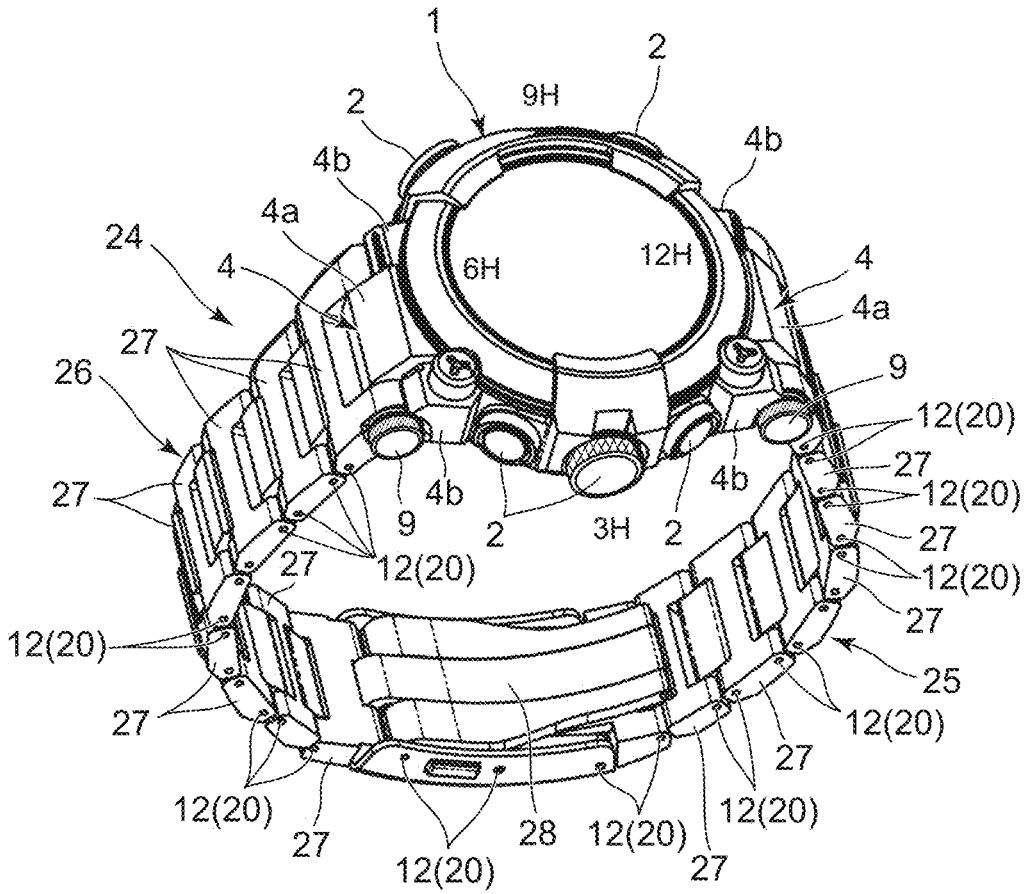

13c
13
16b
21b
13b
16
16a
5c
5d
14a
14d
5d
21
5c
20
21a
5
5b
22
5d
14a
14d
5d
16
16a
21b
13
16b
13b
13c

FIG. 5


1
2
9H
2
4b
4b
4a
24
4
6H
12H
4
4a
27
26
9
12(20)
27
27
12(20)
4b
4b
9
2
3H
2
27
12(20)
27
12(20)
27
12(20)
25
27
12(20)
27
12(20)
28
12(20)
12(20)
27
27

CONNECTION MEMBER, BAND AND TIMEPIECE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is based upon and claims the benefit of priority from the prior Japanese Patent Application No. 2023-086011, filed May 25, 2023, the entire contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The present invention relates to a connection member for wristwatches, clothes, handbags, briefcases, and the like, a band equipped with the connection member, and a timepiece equipped with the band.

2. Description of the Related Art

[0003] Japanese Patent Application Laid-Open (Kokai) Publication No. 2019-060844 discloses a wristwatch in which bands are attached to band attachment sections provided on the twelve o'clock side and six o'clock side of a wristwatch case by connection members called spring bars.

SUMMARY

[0004] An embodiment of the present invention is a connection member comprising: a cylindrical member; a connection portion which is inserted into at least one end portion of the cylindrical member; and a spring member which is arranged in the cylindrical member and forces the connection portion toward outside of the cylindrical member, wherein the spring member is formed of a corrosion-resisting material.

[0005] The above and further objects and novel features of one embodiment will more fully appear from the following detailed description when the same is read in conjunction with the accompanying drawings. It is to be expressly understood, however, that the drawings are for the purpose of illustration only and are not intended as a definition of the limits of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. **1** is a perspective view showing a first embodiment of a wristwatch in which the present invention has been applied;

[0007] FIG. **2** is an enlarged front view of a first band main body on the twelve o'clock side of the wristwatch shown in FIG. **1**;

[0008] FIG. **3** is an enlarged cross-sectional view of a connection member attached to the first band main body and taken along the A-A arrow view in FIG. **2**;

[0009] FIG. **4** is an enlarged cross-sectional view of a connection member attached to the first band main body in a second embodiment of the wristwatch in which the present invention has been applied; and

[0010] FIG. **5** is a perspective view showing a modification example of the wristwatch in which the present invention has been applied.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

First Embodiment

[0011] A first embodiment of a wristwatch in which the present invention has been applied will hereinafter be described with reference to FIG. **1** to FIG. **3**.

[0012] This wristwatch includes a wristwatch case **1**, as shown in FIG. **1**. On the two o'clock side, three o'clock side, four o'clock side, eight o'clock side, and ten o'clock side of the wristwatch case **1**, switch sections **2** are provided.

[0013] Conventionally, there is a wristwatch in which bands are attached to band attachment sections provided on the twelve o'clock side and six o'clock side of a wristwatch case by connection members called spring bars.

[0014] Each connection member of this type of wristwatch is structured such that connecting pins are inserted into both ends of a cylinder section, a coiled spring member is arranged inside the cylinder section, and the connecting pins are forced toward the outside of the cylinder section by the spring force of the spring member. The spring member of this connection member is made of a cobalt-nickel alloy which is a non-magnetic material so that a magnetic sensor mounted in the wristwatch is not affected thereby.

[0015] However, the connection member of this wristwatch has a problem in that, since the spring member is made of a cobalt-nickel alloy which is a non-magnetic material, the spring member is easily corroded by seawater or the like when the wristwatch is used in the sea, etc.

[0016] An object of the present invention is to improve this situation and solve the problem by increasing corrosion resistance so as to prevent corrosion.

[0017] On the twelve o'clock side and six o'clock side of the wristwatch case **1**, band attachment sections **4** are provided to which bands **3** are attached, as shown in FIG. **1**. In the present embodiment, the bands **3** include a first band main body **5** which is attached to the band attachment section **4** on the twelve o'clock side and a second band main body **6** which is attached to the band attachment section **4** on the six o'clock side, which are made of synthetic leather or synthetic resin such as urethane resin.

[0018] On a middle portion of the band attachment section **4** of the twelve o'clock side in a transverse direction perpendicular to a longitudinal direction of the first band main body **5**, an attachment projection section **4***a* is provided, as shown in FIG. **1**. This attachment projection section **4***a* on the twelve o'clock side is formed such that its projecting length from the wristwatch case **1** is longer than those of attachment side sections **4***b* located to its sides in the transverse direction of the first band main body **5**.

[0019] Similarly, on a middle portion of the band attachment section **4** of the six o'clock side in a transverse direction perpendicular to a longitudinal direction of the second band main body **6**, an attachment projection section **4***a* is provided, as shown in FIG. **1**. This attachment projection section **4***a* on the six o'clock side is formed such that its projecting length from the wristwatch case **1** is longer than those of attachment side sections **4***b* located to its sides in the transverse direction of the second band main body **6**.

[0020] In one end section **5***a* of the first band main body **5** on the twelve o'clock side, or more specifically, in the one end section **5***a* of the first band main body **5** which is attached to the band attachment section **4** on the twelve o'clock side, an attachment recess section **7** where the

attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side is inserted and arranged is formed, as shown in FIG. **1** and FIG. **2**. As a result, the first band main body **5** on the twelve o'clock side is attached to the band attachment section **4** by a screw member **9** with the attachment projection section **4***a* of the band attachment section **4** being inserted into and arranged in the attachment recess section **7** in the one end section **5***a*. That is, the first band main body **5** on the twelve o'clock side is structured such that band side sections **7***a* located to the sides of the attachment recess section **7** are attached to the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side by the screw member **9**.

[0021] Similarly, In one end section **6***a* of the second band main body **6** on the six o'clock side, or more specifically, in the one end section **6***a* of the second band main body **6** which is attached to the band attachment section **4** on the six o'clock side, an attachment recess section **8** where the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side is inserted and arranged is formed, as shown in FIG. **1**. As a result, the second band main body **6** on the six o'clock side is attached to the band attachment section **4** by a screw member **9** with the attachment projection section **4***a* of the band attachment section **4** being inserted into and arranged in the attachment recess section **8** in the one end section **6***a*. That is, the second band main body **6** on the six o'clock side is structured such that band side sections **8***a* located to the sides of the attachment recess section **8** are attached to the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side by the screw member **9**.

[0022] Although not shown in the drawings, the screw member **9** on the twelve o'clock side in the present embodiment is constituted by two types of members, which are a first screw member having a male screw portion and a second screw member having a female screw portion into which the male screw portion is screwed. In the case of the screw member **9** on the twelve o'clock side, the first screw member is structured to be inserted into the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side through one of the band side sections **7***a* located to the sides of the attachment recess section **7** of the first band main body **5** on the twelve o'clock side, as shown in FIG. **1**. In addition, the second screw member is structured to be inserted into the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side through the other one of the band side sections **7***a* located to the sides of the attachment recess section **7** of the first band main body **5** on the twelve o'clock side.

[0023] Also, the screw member **9** on the twelve o'clock side is structured such that the male screw portion of the first screw member is screwed into the female screw portion of the second screw member with the male screw portion of the first screw member and the female screw portion of the second screw member being arranged in the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side, as shown in FIG. **1**. As a result, the screw member **9** on the twelve o'clock side attaches the band side sections **7***a* located to the sides of the attachment recess section **7** of the first band main body **5** on the twelve o'clock side to the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side of the wristwatch case **1**.

[0024] Similarly, although not shown in the drawings, the screw member **9** on the six o'clock side is constituted by two types of members, which are a first screw member having a male screw portion and a second screw member having a female screw portion into which the male screw portion is screwed. In the case of the screw member **9** on the six o'clock side as well, the first screw member is structured to be inserted into the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side through one of the band side sections **8***a* located to the sides of the attachment recess section **8** of the second band main body **6** on the six o'clock side, as shown in FIG. **1**. In addition, the second screw member is structured to be inserted into the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side through the other one of the band side sections **8***a* located to the sides of the attachment recess section **8** of the second band main body **6** on the six o'clock side.

[0025] Also, the screw member **9** on the six o'clock side is structured such that the male screw portion of the first screw member is screwed into the female screw portion of the second screw member with the male screw portion of the first screw member and the female screw portion of the second screw member being arranged in the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side, as shown in FIG. **1**. As a result, the screw member **9** on the six o'clock side attaches the band side sections **8***a* located to the sides of the attachment recess section **8** of the second band main body **6** on the six o'clock side to the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side of the wristwatch case **1**.

[0026] To the other end section **5***b* of the first band main body **5** on the twelve o'clock side, that is, to the other end section **5***b* located on the opposite side of the one end section **5***a* of the first band main body **5** on the twelve o'clock side which is provided with the attachment recess section **7**, a buckle **10** and a band keeper **11** are attached, as shown in FIG. **1** and FIG. **2**. The buckle **10** is a metal fitting for connecting the other end section **5***b* side of the first band main body **5** on the twelve o'clock side and the other end section **6***b* side of the second band main body **6** on the six o'clock side to each other.

[0027] More specifically, the buckle **10** includes a buckle main body **13** which is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side by a connection member **12** called a spring bar, and a locking pin **14** which is attached to the connection member **12**, as shown in FIG. **1** and FIG. **2**. The buckle main body **13** is a metal fitting into which the other end section **6***b* of the second band main body **6** on the six o'clock side is inserted while overlapping with the other end section **5***b* of the first band main body **5** on the twelve o'clock side. This buckle main body **13** is a frame member acquired by side portions of a stick-shaped member being bent in the same direction so as to achieve a U-shape, and includes a locking main body section **13***a* and locking side sections **13***b* located on side portions of the locking main body section **13***a*.

[0028] This buckle main body **13** is structured such that the locking side sections **13***b* on its side portions are attached to the sides of the other end section **5***b* of the first band main body **5**, which is located on the twelve o'clock side, in the transverse direction by the connection member **12**, as shown in FIG. **2** and FIG. **3**. That is, this buckle main body **13** is

structured such that the locking side sections **13***b* on its sides are arranged on the other end section **5***b* of the first band main body **5**. In the present embodiment, the locking side sections **13***b* on the side portions of the buckle main body **13** are provided with lock attachment holes **13***c* into which a pin section **16***b* of a later-described connecting pin **16** of the connection member **12** and a connection projection section **18** of the connection member **12** are inserted.

[0029] As a result, the buckle main body **13** is structured such that, with the locking side sections **13***b* on its side portions being arranged on the other end section **5***b* of the first band main body **5** on the twelve o'clock side as shown in FIG. **2** and FIG. **3**, the pin section **16***b* of the connecting pin **16** of the connection member **12** attached to the other end section **5***b* of the first band main body **5** and the connection projection section **18** of the connection member **12** are inserted into the lock attachment holes **13***c* formed in the locking side sections **13***b* on the side portions of the buckle main body **13**, whereby the buckle main body **13** is attached to the other end section **5***b* of the first band main body **5**.

[0030] The locking pin **14** is a pin acquired by two pin lock sections **14***a* being connected in an H-shape by a connection piece **14***b*, as shown in FIG. **2**. These two pin lock sections **14***a* are structured to be inserted into two band holes **6***c* located adjacent to each other in the transverse direction of the second band main body **6** among a plurality of band holes **6***c* formed in two lines in the second band main body **6** on the six o'clock side of the wristwatch case **1**, as shown in FIG. **1** and FIG. **2**.

[0031] As a result, the locking pin **14** is structured such that, with lock attachment ring sections **14***d* on end portions of the two pin lock sections **14***a* on the opposite side of tip end sections **14***c* that are the other end portions of the two pin lock sections **14***a* being attached to a later-described cylindrical member **15** of the connection member **12** as shown in FIG. **2** and FIG. **3**, the tip end sections **14***c* of the two pin lock sections **14***a* come in contact and engage with the locking main body section **13***a* of the buckle main body **13**. In the present embodiment, each lock attachment ring section **14***d* on the end portions of the pin lock sections **14***a* has a ring shape into which the cylindrical member **15** of the connection member **12** is inserted, as shown in FIG. **3**.

[0032] In the use of the bands **3**, the other end section **6***b* of the second band main body **6** on the six o'clock side of the wristwatch case **1** is inserted into the buckle main body **13**. Here, the two pin lock sections **14***a* of the locking pin **14** are inserted into two band holes **6***c* located adjacent to each other in the transverse direction of the second band main body **6** among the plurality of band holes **6***c* formed in the second band main body **6** on the six o'clock side. As a result, the buckle **10** connects the other end section **5***b* side of the first band main body **5** on the twelve o'clock side of the wristwatch case **1** and the other end section **6***b* side of the second band main body **6** on the six o'clock side to each other such that they overlap with each other.

[0033] On the other hand, the band keeper **11** is to restrict a space that causes the slippage or the like of the other end section **6***b* of the second band main body **6** on the six o'clock side of the wristwatch case **1**, and is attached to the first band main body **5** on the twelve o'clock side in a manner to be movable in the longitudinal direction, as shown in FIG. **2**. This band keeper **11** is structured such that, when the other end section **6***b* of the second band main body **6** on the six o'clock side of the wristwatch case **1** is overlapped with and attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side by the buckle **10**, this other end section **6***b* of the second band main body **6** on the six o'clock side is inserted into the band keeper **11**.

[0034] The connection member **12** includes the cylindrical member **15** which is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side in the transverse direction of the first band main body **5**, the connecting pin **16** which is a connection section to be inserted into one end of the cylindrical member **15**, and a spring member **17** which is arranged in the cylindrical member **15** and forces the connecting pin **16** toward the outside of the cylindrical member **15**, as shown in FIG. **3**. The cylindrical member **15** is inserted into and attached to a cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** while extending in the transverse direction of the first band main body **5**.

[0035] The cylindrical member **15** includes a cylinder main body section **15***a* having a round bar shape, as shown in FIG. **3**. In one end side of this cylinder main body section **15***a*, a housing hole **15***b* in which the connecting pin **16** and the spring member **17** are housed is formed in an axial direction. More specifically, the housing hole **15***b* is formed extending from one end of the cylinder main body section **15***a* to a middle portion thereof in the axial direction. That is, the length of the housing hole **15***b* is substantially half the length of the cylinder main body section **15***a* in the axial direction. Also, on the other end of the cylinder main body section **15***a*, the connection projection section **18** having a pin shape is formed.

[0036] The connecting pin **16** includes a slide section **16***a* which is slidably inserted into the housing hole **15***b* in the cylinder main body section **15***a* of the cylindrical member **15**, and the pin section **16***b* which is formed on one end of the slide section **16***a* and retractably project toward the outside of the cylinder main body section **15***a*, as shown in FIG. **3**. The slide section **16***a* is formed such that its outer diameter is substantially equal to the inner diameter of the housing hole **15***b*, and its axial length is slightly shorter than the length of the inner diameter of the housing hole **15***b*.

[0037] The pin section **16***b* is formed such that its outer diameter is substantially half the outer diameter of the cylindrical member **15**, and its axial length is longer than the axial length of the slide section **16***a* and substantially equal to the length of the outer diameter of the cylindrical member **15**, as shown in FIG. **3**. In the present embodiment, on one end of the cylinder main body section **15***a*, or more specifically, on one end of the cylinder main body section **15***a* on the opening side of the housing hole **15***b*, a stopper section **15***c* having a ring shape is formed toward the medial side of the housing hole **15***b* by swaging.

[0038] As a result, the connecting pin **16** is structured such that, when the pin section **16***b* is pressed by the spring force of the spring member **17** toward the outside of the cylinder main body section **15***a* through the ring-shaped stopper section **15***c*, the outer side surface of the slide section **16***a* comes in contact with the inner surface of the stopper section **15***c* so that the slide section **16***a* does not slip out of the housing hole **15***b* of the cylinder main body section **15***a*, as shown in FIG. **3**.

[0039] Also, the pin-shaped connection projection section **18** of the cylinder main body section **15***a* is formed such that its outer diameter is substantially equal to the outer diameter

of the pin section **16***b* of the connecting pin **16**, as shown in FIG. **3**. The axial length of this pin-shaped connection projection section **18** is substantially equal to the axial length of the pin section **16***b* of the connecting pin **16** projecting from the cylinder main body section **15***a*.

[0040] In the present embodiment, on the outer circumferential surface of the other end side of the cylinder main body section **15***a*, a mark **19** for distinguishing the pin-shaped connection projection section **18** is provided, as shown in FIG. **3**. This mark **19** is a V-shaped groove and annularly formed in the outer circumferential surface of the cylinder main body section **15***a*. In addition, this mark **19** is provided not to be seen from the outside when the buckle main body **13** is attached to the other end section **5***b* of the first band main body **5** by the cylindrical member **15** with the cylinder main body section **15***a* being arranged in the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5**.

[0041] The spring member **17**, which is a coil spring, is formed such that its outer diameter is substantially equal to the inner diameter of the housing hole **15***b* formed in the cylinder main body section **15***a* of the cylindrical member **15**, as shown in FIG. **3**. The axial length of the spring member **17** in a free state is equal to or longer than the axial length of the housing hole **15***b*. This spring member **17** is arranged in a compressed state in the housing hole **15***b*, and forces the slide section **16***a* of the connecting pin **16** toward the outside of the cylinder main body section **15***a* by the spring force of the spring member **17** so as to press the pin section **16***b* toward the outside of the cylinder main body section **15***a*.

[0042] In the present embodiment, the spring member **17** is formed of a corrosion-resisting material. More specifically, this spring member **17** is formed of a titanium alloy having a spring property, that is, β titanium alloy whose crystal structure is a body-centered cubic structure called β-phase. This β titanium alloy is a material whose strength is highest among all the titanium alloys, and corrosion resistance level and workability level are high. Here, the titanium has a high corrosion resistance level by a strong titanium oxide coating being formed on the material surface.

[0043] Also, the cylindrical member **15** having the connection projection section **18** provided on the cylinder main body section **15***a* and the connecting pin **16** are formed of a high-strength titanium alloy. More specifically, the cylindrical members **15** and the connecting pin **16** are formed of α-β titanium alloy where aluminum (Al) and vanadium (V) have been mixed at a ratio of about 6:4 (JIS60 species). This α-β titanium alloy, which is 64 titanium alloy, has properties of both α titanium alloy and titanium alloy, and has a two-phase system where ductility and strength are especially well-balanced. Note that the α titanium alloy herein refers to a titanium alloy whose crystal structure is a hexagonal close packed structure called α-phase.

[0044] Next, the mechanical property and physical property of titanium are described. Firstly, the tensile strength (MPa) in descending order is α-β titanium alloy (64 titanium alloy, JIS60 species) ≥895, β titanium alloy ≥800, pure titanium (JIS2 species) ≥340. Secondly, the proof stress (MPa) in descending order is α-β titanium alloy (64 titanium alloy, JIS60 species) ≥828, β titanium alloy ≥690, pure titanium (JIS2 species) ≥210. Thirdly, the hardness (Hv) in descending order is α-β titanium alloy (64 titanium alloy, JIS60 species) ≥320, β titanium alloy ≥270, pure titanium (JIS2 species) ≥130.

[0045] As such, the tensile strength (MPa), the proof stress (MPa), and the hardness (Hv) in descending order are all α-β titanium alloy (64 titanium alloy), β titanium alloy, pure titanium. Thus, when 64 titanium alloy is used for the connecting pin **16** and the cylindrical member **15**, and β titanium alloy is used for the spring member **17**, the tensile strength (MPa), the proof stress (MPa), and the hardness (Hv) of the connecting pin **16** are equal to those of the cylindrical member **15**, and the tensile strength (MPa), the proof stress (MPa), and the hardness (Hv) of the spring member **17** are smaller than those of the cylindrical member **15** and the connecting pin **16**.

[0046] Next, the thermal conductivity [W/(mK)] in descending order is pure titanium (JIS2 species) 17.0, β titanium alloy 8.1, and α-β titanium alloy (64 titanium alloy, JIS60 species) 7.5. The degree of elongation (%) in descending order is pure titanium (JIS2 species) ≥23, β titanium alloy 212, and α-β titanium alloy (64 titanium alloy, JIS60 species) ≥10.

[0047] As such, the thermal conductivity [W/(mK)] and the degree of elongation (%) in descending order are all pure titanium, β titanium alloy, and α-β titanium alloy (64 titanium alloy). Thus, when β titanium alloy is used for the spring member **17** and 64 titanium alloy is used for the connecting pin **16** and the cylindrical member **15**, the thermal conductivity [W/(mK)] and the degree of elongation (%) of the connecting pin **16** are equal to those of the cylindrical member **15**, and the thermal conductivity [W/(mK)] and the degree of elongation (%) of the spring member **17** are larger than those of the cylindrical member **15** and the connecting pin **16**.

[0048] Next, a procedure for attaching the bands **3** to the wristwatch case **1** is described.

[0049] In this procedure, first, the band keeper **11** is fitted around the other end section **5***b* side of the first band main body **5** on the twelve o'clock side, and the buckle **10** is attached to the other end section **5***b* of the first band main body **5** by the connection member **12**. Here, before this attachment, the connection member **12** is assembled. In the assembly of the connection member **12**, first, the coiled spring member **17** is arranged in the housing hole **15***b* formed on one end side of the cylinder main body section **15***a*.

[0050] Then, the slide section **16***a* of the connecting pin **16** is inserted into the housing hole **15***b* of the cylinder main body section **15***a* with the spring member **17** being compressed. In this state, one end portion of the cylinder main body section **15***a* located on the opening side of the housing hole **15***b* is swaged so as to form the ring-shaped stopper section **15***c* on this one end of the cylinder main body section **15***a*. As a result, the slide section **16***a* of the connecting pin **16** is pressed against the stopper section **15***c* by the spring force of the spring member **17**, and the pin section **16***b* of the connecting pin **16** is pushed out of the one end of the cylinder main body section **15***a*, whereby the assembly of the connection member **12** is ended.

[0051] Next, the buckle **10** is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side by the connection member **12** assembled as described above. Here, the connection member **12** is attached to the cylinder attachment hole **5***c* formed in the

other end section **5***b* of the first band main body **5** on the twelve o'clock side while extending in the transverse direction of the first band main body **5**, and the locking pin **14** of the buckle **10** is attached to this connection member **12**. Here, before this attachment, the lock attachment ring sections **14***d* provided on the two pin lock sections **14***a* of the locking pin **14** are arranged in cutout sections **5***d* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side while extending across the cylinder attachment hole **5***c*, as shown in FIG. **3**.

[0052] In this state, the cylinder main body section **15***a* of the connection member **12** is inserted into the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side. Here, the cylinder main body section **15***a* is inserted into the lock attachment ring sections **14***d* of the two pin lock sections **14***a* of the locking pin **14** arranged in the cutout section **5***d* of the other end section **5***b* of the first band main body **5** on the twelve o'clock side. As a result, the cylindrical member **15** is inserted into the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side, and the locking pin **14** is rotatably attached to the cylinder main body section **15***a* of the cylindrical member **15**.

[0053] In addition, the pin section **16***b* of the connecting pin **16** protruding from one end of the cylinder main body section **15***a* of the cylindrical member **15** is arranged protruding from one side of the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side. At the same time, the pin-shaped connection projection section **18** provided on the other end of the cylinder main body section **15***a* of the cylindrical member **15** is arranged protruding from the other side of the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side.

[0054] In this state, the buckle main body **13** of the buckle **10** is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side. In this attachment, first, the connection projection section **18** on the other end of the cylinder main body section **15***a* which is protruding from the other side of the cylinder attachment hole **5***c* in the other end section **5***b* of the first band main body **5** on the twelve o'clock side is inserted into the lock attachment hole **13***c* formed in one of the locking side sections **13***b* of the side portions of the buckle main body **13**, as shown in FIG. **3**.

[0055] In this state, the pin section **16***b* of the connecting pin **16** of the connection member **12** protruding from the one side of the cylinder attachment hole **5***c* in the other end section **5***b* of the first band main body **5** on the twelve o'clock side is pressed against the spring force of the spring member **17** toward the inside of the housing hole **15***b* of the cylinder main body section **15***a*. Then, the pin section **16***b* of the connecting pin **16** of the connection member **12** pressed toward the inside of the housing hole **15***b* of the cylinder main body section **15***a* is positioned corresponding to the lock attachment hole **13***c* formed in the other one of the locking side sections **13***b* of the side portions of the buckle main body **13**.

[0056] As a result, the pin section **16***b* of the connecting pin **16** of the connection member **12** is pressed by the spring force of the spring member **17** toward the outside of the housing hole **15***b* of the cylinder main body section **15***a*. Accordingly, the pin section **16***b* of the connecting pin **16** pressed thereby is inserted into the lock attachment hole **13***c* formed in the other one of the locking side sections **13***b* of the side portions of the buckle main body **13**, as shown in FIG. **3**.

[0057] As a result, the pin-shaped connection projection section **18** of the connection member **12** is inserted into the lock attachment hole **13***c* in one of the locking side sections **13***b* of the buckle main body **13**, and the pin section **16***b* of the connecting pin **16** of the connection member **12** is inserted into the lock attachment hole **13***c* in the other one of the locking side sections **13***b* of the buckle main body **13**, as shown in FIG. **3**. Consequently, the buckle main body **13** is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side by the connection member **12**.

[0058] Then, the first band main body **5** which is on the twelve o'clock side and to which the buckle **10** and the band keeper **11** have been attached is attached to the band attachment section **4** on the twelve o'clock side of the wristwatch case **1**. Here, the attachment recess section **7** formed in the one end section **5***a* of the first band main body **5** on the twelve o'clock side is positioned corresponding to the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side, and the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side is arranged in the attachment recess section **7** of the first band main body **5**. In this state, the first band main body **5** is attached to the band attachment section **4** on the twelve o'clock side by the corresponding screw member **9**.

[0059] In this attachment, the first screw member which constitutes the screw member **9** on the twelve o'clock side is inserted into the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side through one of the band side sections **7***a* located to the sides of the attachment recess section **7** of the first band main body **5**, and the second screw member which also constitutes the screw member **9** is inserted into the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side through the other one of the band side sections **7***a* located to the sides of the attachment recess section **7** of the first band main body **5** on the twelve o'clock side.

[0060] Then, with the male screw portion of the first screw member of the screw member **9** on the twelve o'clock side and the female screw portion of the second screw member thereof being positioned in the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side, the male screw portion of the first screw member is screwed into the female screw portion of the second screw member. As a result, the band side sections **7***a* located to the sides of the attachment recess section **7** of the first band main body **5** on the twelve o'clock side is attached to the attachment projection section **4***a* of the band attachment section **4** on the twelve o'clock side of the wristwatch case **1** by the screw member **9** on the twelve o'clock side.

[0061] Similarly, the second band main body **6** on the six o'clock side is attached to the band attachment section **4** on the six o'clock side of the wristwatch case **1**. Here, before this attachment, the band holes **6***c* into which the tip end sections **14***c* of the two pin lock sections **14***a* of the locking pin **14** of the buckle **10** are inserted are formed in two lines in the second band main body **6** on the six o'clock side in a manner to extend in the longitudinal direction of the second band main body **6**. Then, the attachment recess section **8**

formed in the one end section **6***a* of the second band main body **6** on the six o'clock side is positioned corresponding to the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side.

[0062] In this state, the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side is arranged in the attachment recess section **8** of the second band main body **6** on the six o'clock side. Then, the second band main body **6** on the six o'clock side is attached to the band attachment section **4** on the six o'clock side by the corresponding screw member **9**. In this attachment, the first screw member which constitutes the screw member **9** on the six o'clock side is inserted into the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side through one of the band side sections **8***a* located to the sides of the attachment recess section **8** of the second band main body **6** on the six o'clock side, and the second screw member which also constitutes the screw member **9** is inserted into the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side through the other one of the band side sections **8***a* located to the sides of the attachment recess section **8** of the second band main body **6** on the six o'clock side.

[0063] Then, with the male screw portion of the first screw member of the screw member **9** on the six o'clock side and the female screw portion of the second screw member thereof being positioned in the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side, the male screw portion of the first screw member is screwed into the female screw portion of the second screw member. As a result, the band side sections **8***a* located to the sides of the attachment recess section **8** of the second band main body **5** on the six o'clock side is attached to the attachment projection section **4***a* of the band attachment section **4** on the six o'clock side of the wristwatch case **1** by the screw member **9** on the six o'clock side.

[0064] Next, a procedure for using this wristwatch is described.

[0065] In the use of this wristwatch, first, the wristwatch case **1** is worn on an arm by the bands **3**. Here, the other end section **6***b* of the second band main body **6** on the six o'clock side is inserted into the buckle main body **13** of the buckle **10** attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side, with the wristwatch case **1** being arranged on the arm. Then, the other end section **6***b* side of the second band main body **6** on the six o'clock side is arranged on top of the other end section **5***b* side of the first band main body **5** on the twelve o'clock side.

[0066] In this state, the other end section **6***b* of the second band main body **6** on the six o'clock side is pulled toward the twelve o'clock side of the wristwatch case **1** so that the wristwatch case **1** tightly comes in contact with the arm. Then, the leading end sections **14***c* of the two pin lock sections **14***a* of the locking pin **14** of the buckle **10** provided on the other end section **5***b* of the first band main body **5** on the twelve o'clock side is inserted into two band holes **6***c* aligned in the transverse direction of the second band main body **6**, among the plurality of band holes **6***c* formed in the second band main body **6** on the six o'clock side which has been inserted into the buckle main body **13**.

[0067] Then, the leading end sections **14***c* of the two pin lock sections **14***a* of the locking pin **14** of the buckle **10** are pressed against the lock body section **13***a* of the buckle main body **13** with the other end section **6***b* side of the second band main body **6** on the six o'clock side being arranged on top of the other end section **5***b* side of the first band main body **5** on the twelve o'clock side. Consequently, the other end section **5***b* side of the first band main body **5** on the twelve o'clock side and the other end section **6***b* side of the second band main body **6** on the six o'clock side are connected to each other. In this state, the other end section **6***b* of the second band main body **6** on the six o'clock side is inserted into in the band keeper **11** provided on the first band main body **5** on the twelve o'clock side so that a space that causes the slippage or the like of the other end section **6***b* of the second band main body **6** on the six o'clock side is restricted. As a result, the wristwatch case **1** is worn on the arm by the bands **3**.

[0068] In the case of this wristwatch, even when the user dives in the sea with the wristwatch being worn on his or her arm, the wristwatch can be used in a good condition. That is, since the spring member **17** of the connection member **12** which attaches the buckle **10** to the other end section **5***b* of the first band main body **5** on the twelve o'clock side of the wristwatch is made of a corrosion-resisting material, this spring member **17** is highly resistant to corrosion, and thereby favorably prevented from being corroded by sea water or the like.

[0069] In the present embodiment, the spring member **17** is formed of a titanium alloy having a spring property, that is, β titanium alloy whose crystal structure is a body-centered cubic structure called β-phase. This β titanium alloy is a material whose strength is highest among all the titanium alloys, and corrosion resistance level and workability level are high. Here, by a strong titanium oxide coating being formed on the material surface, the titanium achieves high corrosion resistance.

[0070] Also, in the case of the connection member **12**, the cylindrical member **15** having the connection projection section **18** provided on the cylinder main body section **15***a* and the connecting pin **16** are formed of a high-strength titanium alloy, whereby high corrosion resistance is achieved with high strength. More specifically, the cylindrical members **15** and the connecting pin **16** are formed of α-β titanium alloy (64 titanium alloy) where aluminum (Al) and vanadium (V) have been mixed at a ratio of about 6:4, whereby the corrosion resistance level and the strength are further increased.

[0071] As described above, the connection member **12** of this wristwatch includes the cylindrical member **15**, the connecting pin **16** which is a connection section to be inserted into at least one end portion of the cylindrical member **15**, and the spring member **17** which is arranged in the cylindrical member **15** and forces the connecting pin **16** toward the outside of the cylindrical member **15**. In addition, the spring member **17** is formed of a corrosion-resisting material. Accordingly, the corrosion resistance is enhanced, whereby corrosion is reliably and favorably prevented.

[0072] That is, in the case of the connection member **12** of this wristwatch, the spring member **17** is formed of a titanium alloy having a spring property, whereby this spring member **17** reliably has a spring property. In addition, since this spring member **17** is formed of a titanium alloy, the corrosion resistance of the spring member **17** is reliably enhanced, whereby the corrosion of the spring member **17** is reliably prevented. In the present embodiment, by a strong titanium oxide coating being formed on the material surface, the titanium achieves high corrosion resistance.

[0073] Also, in the case of the connection member **12** of this wristwatch, the spring member **17** is formed of a titanium alloy whose crystal structure is a body-centered cubic structure, which further raises the corrosion resistance level of the spring member **17**. In addition, since the workability of the spring member **17** is excellent, the spring member **17** can be easily and favorably manufactured.

[0074] Moreover, in the case of the connection member **12** of this wristwatch, the connecting pin **16** is inserted into one end portion of the cylindrical member **15** and the connection projection section **18** is formed on the other end portion of the cylindrical member **15**. As a result of this structure, in the manufacture of the connection member **12**, it is only required that the housing hole **15***b* is formed in the one end portion of the cylindrical member **15**, and the connecting pin **16** and the spring member **17** are inserted into this housing hole **15***b*. Accordingly, the connection member **12** of this wristwatch can be easily manufactured having the simple structure with a few components. In addition, this connection member **12** can be attached to the first band main body **5** by merely one end of the connecting pin **16** being operated, which simplifies the attachment.

[0075] In the connection member **12** of this wristwatch in the present embodiment, the mark **19** for distinguishing the pin-shaped connection projection section **18** is provided on the other end side of the cylindrical member **15**. Accordingly, although the shape of the pin section **16***b* of the connecting pin **16** on the movable side and that of the connection projection section **18** on the fixed side are the same, the fixed side can be easily distinguished by the mark **19**, which enhances the attachment workability. Also, this mark **19** is provided in a manner not to be seen from the outside when the cylindrical member **15** is inserted into the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5**, which enhances the design.

[0076] Also, in the case of the connection member **12** of this wristwatch, the cylindrical member **15** having the connection projection section **18** provided on the cylinder main body section **15***a* and the connecting pin **16** are formed of a high-strength titanium alloy, which enhances the corrosion resistance and strength of the cylindrical member **15** and the connecting pin **16**. As a result of this structure, the strength of the cylindrical member **15** and the connecting pin **16** is ensured.

[0077] More specifically, in the connection member **12** of this wristwatch, the cylindrical member **15** having the connection projection section **18** provided on the cylinder main body section **15***a* and the connecting pin **16** are formed of α-β titanium alloy (64 titanium alloy) where aluminum (Al) and vanadium (V) have been mixed at a ratio of about 6:4. Thus, the connection member **12** of this wristwatch has properties of both α titanium alloy and βtitanium alloy, in which ductility and strength are especially well-balanced. As a result, the strength and the corrosion resistance level are further increased.

Second Embodiment

[0078] Next, a second embodiment in which the present invention has been applied in a wristwatch is described with reference to FIG. **4**. Note that sections that are the same as those of the first embodiment shown in FIG. **1** to FIG. **3** are described using the same reference numerals.

[0079] This wristwatch has a substantially same structure as the first embodiment except that a connection member **20** which is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side has a structure different from the structure of the connection member **12** in the first embodiment.

[0080] More specifically, the connection member **20** includes a cylindrical member **21** having a pipe shape, connecting pins **16** which are connection sections to be inserted into both ends of the cylindrical member **21**, and a spring member **22** which is arranged in the cylindrical member **21**, and forces the connecting pins **16** in the end portions toward the outside through the sides **10** of the cylindrical member **21**, as shown in FIG. **4**.

[0081] In the present embodiment, the cylindrical member **21** includes a cylinder main body section **21***a* having a cylindrical shape. On the ends of this cylinder main body section **21***a*, stopper sections **21***b* are formed as with the first embodiment, as shown in FIG. **4**. As a result, the connection member **20** is structured such that, even when the connecting pins **16** inserted into the end portions of the cylinder main body section **21***a* are forced in directions to be pressed outward by the spring force of the spring member **22** arranged inside the cylinder main body section **21***a*, the connecting pins **16** do not slip out of the end portions of the cylinder main body section **21***a* by the stopper sections **21***b* formed on the ends of the cylinder main body section **21***a*.

[0082] Here, the spring member **22** is formed such that its outer diameter is substantially equal to the inner diameter of the cylinder main body section **21***a*, as shown in FIG. **4**. Also, the axial length of the spring member **22** in a free state is equal to or longer than the axial length of the cylinder main body section **21***a*. As a result of this structure, when being arranged in the cylinder main body section **21***a*, the spring member **22** is in a compressed state. Then, by the spring force, the spring member **22** forces the connecting pins **16** on both sides in directions in which the connecting pins **16** are pressed outward.

[0083] This spring member **22** of the connection member **20** is formed of a corrosion-resisting material, as with the first embodiment. More specifically, this spring member **22** is formed of a titanium alloy having a spring property, that is, β titanium alloy whose crystal structure is a body-centered cubic structure called β-phase. This β titanium alloy is a material whose strength is highest among all the titanium alloys, and corrosion resistance level and workability level are high. In this embodiment as well, the titanium has a high corrosion resistance level by a strong titanium oxide coating being formed on the material surface.

[0084] Also, the connecting pins **16** are formed of a high-strength titanium alloy, whereby high corrosion resistance is achieved with high strength, as with the first embodiment. More specifically, each connecting pin **16** is formed of α-β titanium alloy (64 titanium alloy) where aluminum (Al) and vanadium (V) have been mixed at a ratio of about 6:4, and therefore has properties of both α titanium alloy and β titanium alloy, in which ductility and strength are especially well-balanced so as to further increase the corrosion resistance level and the strength.

[0085] On the other hand, the cylindrical member **21** is formed of titanium whose purity is high, that is, pure titanium (JIS2 species). This pure titanium is single-phase titanium constituted by only-phase where the crystal structure is a hexagonal close packed structure. The cylindrical member **21** formed of this pure titanium is inexpensive, and has a high corrosion resistance level with high strength.

[0086] Thus, when 64 titanium alloy is used for the connecting pins **16**, β titanium alloy is used for the spring member **22**, and pure titanium is used for the cylindrical member **21**, the tensile strength (MPa), the proof stress (MPa), and the hardness (Hv) in descending order are the connecting pins **16**, the spring member **22**, and the cylindrical member **21**. Also, the thermal conductivity [W/(mK)] and the degree of elongation (%) in descending order are the cylindrical member **21**, the spring member **22**, and the connecting pins **16**.

[0087] Next, a procedure for attaching the bands **3** to the wristwatch case **1** is described.

[0088] In this attachment, the band keeper **11** is inserted into the other end section **5***b* side of the first band main body **5** on the twelve o'clock side, and the buckle **10** is attached to the other end section **5***b* of the first band main body **5** by the connection member **20**, as with the first embodiment. Here, before this attachment, the connection member **20** is assembled. In the assembly of the connection member **20**, first, the coiled spring member **22** is arranged in the cylinder main body section **21***a* of the cylindrical member **21**.

[0089] Then, the slide sections **16***a* of the two connecting pins **16** are inserted into the ends of the cylinder main body section **21***a* while the spring member **22** is being compressed. In this state, the open ends of the cylinder main body section **21***a* are swaged so as to form the ring-shaped stopper sections **21***b* on the ends of the cylinder main body section **21***a*. As a result, the slide sections **16***a* of the two connecting pins **16** are pressed against the stopper sections **21***b* on the ends of the cylinder main body section **21***a* by the spring force of the spring member **22**, and the pin sections **16***b* of the connecting pins **16** are pushed out of the ends of the cylinder main body section **21***a*, whereby the assembly of the connection member **20** is ended.

[0090] Next, the buckle **10** is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side by the connection member **20** assembled as described above. Here, the connection member **20** is attached to the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side while extending in the transverse direction of the first band main body **5**, and the locking pin **14** of the buckle **10** is attached to this connection member **20**, as with the first embodiment. In the present embodiment as well, before this attachment, the lock attachment ring sections **14***d* provided on the two pin lock sections **14***a* of the locking pin **14** are arranged in the cutout sections **5***d* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side while extending across the cylinder attachment hole **5***c*.

[0091] In this state, the cylinder main body section **21***a* of the connection member **20** is inserted into the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side, as with the first embodiment. Here, the cylinder main body section **21***a* is inserted into the lock attachment ring sections **14***d* of the two pin lock sections **14***a* of the locking pin **14**. As a result, the cylindrical member **21** is inserted into the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side, and the locking pin **14** is rotatably attached to the cylinder main body section **21***a* of the cylindrical member **21**.

[0092] In addition, the pin sections **16***b* of the connecting pins **16** protruding from the ends of the cylinder main body section **21***a* are arranged protruding from the sides of the cylinder attachment hole **5***c* formed in the other end section **5***b* of the first band main body **5** on the twelve o'clock side. In this state, the buckle main body **13** of the buckle **10** is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side. In this attachment, the pin sections **16***b* of the connecting pins **16** of the connection member **20** protruding from the sides of the cylinder attachment hole **5***c* of the other end section **5***b* of the first band main body **5** on the twelve o'clock side are pressed into the cylinder main body section **21***a* against the spring force of the spring member **22**.

[0093] In this state, the pin sections **16***b* of the connecting pins **16** of the connection member **20** pressed into the cylinder main body section **21***a* is positioned corresponding to the lock attachment holes **13***c* formed in the locking side sections **13***b* on the side portions of the buckle main body **13**. As a result, the pin sections **16***b* of the connecting pins **16** of the connection member **20** are pressed by the spring force of the spring member **22** toward the outside of the cylinder main body section **21***a*. Accordingly, the pin sections **16***b* of the connecting pins **16** pressed thereby are inserted into the lock attachment holes **13***c* formed in the locking side sections **13***b* of the side portions of the buckle main body **13**.

[0094] Consequently, the buckle main body **13** is attached to the other end section **5***b* of the first band main body **5** on the twelve o'clock side by the connecting pins **16** of the connection member **20**. Then, the first band main body **5** which is on the twelve o'clock side and to which the buckle **10** and the band keeper **11** have been attached is attached to the band attachment section **4** on the twelve o'clock side of the wristwatch case **1** by the same procedure as the first embodiment. Similarly, the second band main body **6** on the six o'clock side is attached to the band attachment section **4** on the six o'clock side of the wristwatch case **1** by the same procedure as the first embodiment. This wristwatch where the bands **3** have been attached to the wristwatch case **1** as described above can be used in the same manner as the first embodiment.

[0095] As described above, the connection member **20** of this wristwatch includes the cylindrical member **21**, the connecting pins **16** which are connection sections to be inserted into end portions of the cylindrical member **21**, and the spring member **22** which is arranged in the cylindrical member **21** and forces the connecting pins **16** in the end portions toward the outside of the cylindrical member **21**. In addition, the spring member **22** is formed of a corrosion-resisting material. Accordingly, the spring member **22** enhances the corrosion resistance, whereby corrosion is reliably and favorably prevented, as with the first embodiment.

[0096] That is, in the case of the connection member **20** of this wristwatch, the spring member **22** is formed of a titanium alloy having a spring property, whereby this spring member **17** reliably has a spring property, as with the first embodiment. In addition, since this spring member **22** is formed of a titanium alloy, the corrosion resistance is reliably enhanced, whereby corrosion is reliably prevented. In this embodiment as well, by a strong titanium oxide coating being formed on the material surface, the titanium achieves high corrosion resistance.

[0097] Also, in the case of the connection member **20** of this wristwatch, the spring member **22** is formed of a titanium alloy whose crystal structure is a body-centered

cubic structure, which further raises the corrosion resistance level of the spring member **22**, as with the first embodiment. In addition, since the workability of the titanium alloy whose crystal structure is a body-centered cubic structure is excellent, the spring member **22** can be easily and favorably manufactured. Here, since the spring member **22** is formed such that its axial length is equal to or longer than the axial length of the cylindrical member **21**, the design and manufacture can be easily achieved as compared to a case where the axial length is short.

[0098] Also, in the case of the connection member **20** of this wristwatch, the connecting pins **16** are inserted into both ends of the cylindrical member **21**. As a result of this structure, same components can be used for the connecting pins **16** that are inserted into the ends of the cylindrical member **21**, which simplifies the structure and assembly work.

[0099] Moreover, in the case of the connection member **20** of this wristwatch, the cylindrical member **21** is formed of titanium whose purity is high, that is, pure titanium, and therefore has a high corrosion resistance level with high strength. That is, by being formed using the pure titanium which is single-phase titanium constituted by only α-phase where the crystal structure is a hexagonal close packed structure, the cylindrical member **21** is inexpensive, and has a high corrosion resistance level with high strength.

[0100] Furthermore, in the case of the connection member **20** of this wristwatch, the connecting pins **16** are formed of a high-strength titanium alloy which enhances the corrosion resistance and strength of the connecting pins **16**, as with the first embodiment. As a result of this structure, the strength of each connecting pin **16** is ensured.

[0101] In the case of the connection member **20** of this wristwatch as well, the connecting pins **16** are formed of α-β titanium alloy (64 titanium alloy) where aluminum (Al) and vanadium (V) have been mixed at a ratio of about 6:4. Thus, the connecting pins **16** have properties of both α titanium alloy and βtitanium alloy, in which ductility and strength are especially well-balanced. As a result, in the case of the connection member **20** of this wristwatch, the strength and the corrosion resistance level are further increased.

[0102] In the above-described first and second embodiments, the connection member **12** or **20** is used to attach the buckle **10** to the other end section **5***b* of the first band main body **5** on the twelve o'clock side. However, the present invention is not limited thereto. For example, a structure may be adopted in which the connection member **12** in the first embodiment or the connection member **20** in the second embodiment is used in place of the screw member **9** on the twelve o'clock side which attaches the first band main body **5** on the twelve o'clock side to the band attachment section **4** on the twelve o'clock side of the wristwatch case **1**, or the screw member **9** on the six o'clock side which attaches the second band main body **6** on the six o'clock side to the band attachment section **4** on the six o'clock side of the wristwatch case **1**.

[0103] Also, in the above-described first and second embodiments, the first band main body **5** and the second band main body **6** are formed of a synthetic resin such as synthetic leather or urethane resin. However, the present invention is not limited thereto. For example, a structure may be adopted in which the above-described bands are metal bands **24** including a first band main body **25** and a second band main body **26**, as shown in a modification example of FIG. **5**.

[0104] In this modification example, the first band main body **25** and the second band main body **26** have structures where a plurality of metal band pieces **27** have been sequentially connected by the connection member **12** in the first embodiment being plurally used or the connection member **20** in the second embodiment being plurally used, as shown in FIG. **5**. In this modification example as well, a metal connection fitting **28** which connects an end of the first band main body **25** and an end of the second band main body **26** to each other is attached to the first band main body **25** and the second band main body **26** by the connection member **12** in the first embodiment being plurally used or the connection member **20** in the second embodiment being plurally used.

[0105] In this modification example as well, the connection member **12** in the first embodiment or the connection member **20** in the second embodiment may be used in place of the screw member **9** on the twelve o'clock side which attaches the first band main body **25** on the twelve o'clock side to the band attachment section **4** on the twelve o'clock side of the wristwatch case **1**, or the screw member **9** on the six o'clock side which attaches the second band main body **26** on the six o'clock side to the band attachment section **4** on the six o'clock side of the wristwatch case **1**.

[0106] Also, in the above-described first and second embodiments, the locking pin **14** of the buckle **10** includes the two pin lock sections **14***a*, and the plurality of band holes **6***c* into which the two pin lock sections **14***a* are inserted is formed in two lines in the second band main body **6** while extending in the longitudinal direction. However, the present invention is not limited thereto. For example, a structure may be adopted in which the locking pin **14** of the buckle **10** includes only one pin lock section, and the plurality of band holes **6***c* into which this one pin lock section is inserted is formed in a line in the second band main body **6** while extending in the longitudinal direction.

[0107] Moreover, in the above-described first and second embodiments, the cross-sectional shape of the cylindrical member **15** in the first embodiment and the cross-sectional shape of the cylindrical member **21** in the second embodiment are circular. However, in the case of the present invention, the cross-sectional shape of the cylindrical member **15** or **21** is not necessarily required to be circular, and may be polygonal such as quadrilateral, pentagonal, and hexagonal.

[0108] Furthermore, in the above-described first and second embodiments, the spring members **17** and **22** are formed of β titanium alloy. However, the present invention is not limited thereto, and the material of the spring members **17** and **22** may be any material as long as its corrosion resistance level is high. For example, the spring members **17** and **22** may be formed using gold, platinum, chromium, etc.

[0109] Still further, in the above-described first and second embodiments and the modification example, the present invention has been applied to in a wristwatch. However, the present invention is not limited thereto, and the specific configuration, structure, and positional relationship shown in the first embodiment, the second embodiment, and the modification example may be appropriately changed within the scope of the present invention. In addition, the present

invention is not necessarily required to be applied in wristwatches and may be applied in bands for clothes, handbags, and briefcases.

[0110] While the present invention has been described with reference to the preferred embodiments, it is intended that the invention be not limited by any of the details of the description therein but includes all the embodiments which fall within the scope of the appended claims.

What is claimed is:

1. A connection member comprising:

a cylindrical member;

a connection portion which is inserted into at least one end portion of the cylindrical member; and

a spring member which is arranged in the cylindrical member and forces the connection portion toward outside of the cylindrical member,

wherein the spring member is formed of a corrosion-resisting material.

2. The connection member according to claim **1**, wherein the connection portion and the cylindrical member are equal in at least one of strength, proof stress, and hardness.

3. The connection member according to claim **1**, wherein the spring member is lower in at least one of tensile strength, proof stress, and hardness than the connection portion and the cylindrical member, or is lower in at least one of tensile strength, proof stress, and hardness than the connection portion and higher in at least one of tensile strength, proof stress, and hardness than the cylindrical member.

4. The connection member according to claim **1**, wherein the connection portion and the cylindrical member are equal in at least one of conductivity and degree of elongation.

5. The connection member according to claim **1**, wherein the spring member is higher in at least one of thermal conductivity and degree of elongation than the connection portion and the cylindrical member, or is lower in at least one of thermal conductivity and degree of elongation than the cylindrical member and higher in at least one of thermal conductivity and degree of elongation than the connection portion.

6. The connection member according to claim **1**, wherein the spring member is formed of a titanium alloy having a spring property.

7. The connection member according to claim **1**, wherein the spring member is formed of a titanium alloy whose crystal structure is a body-centered cubic structure.

8. The connection member according to claim **6**, wherein the spring member is formed of a titanium alloy whose crystal structure is a body-centered cubic structure.

9. The connection member according to claim **1**, wherein the connection portion is inserted into the one end portion of the cylindrical member.

10. The connection member according to claim **9**, wherein a connection projection portion is formed on an other end portion of the cylindrical member.

11. The connection member according to claim **10**, wherein a mark for distinguishing the connection projection portion is provided on the other end portion side of the cylindrical member.

12. The connection member according to claim **10**, wherein the cylindrical member provided with the connection projection portion and the connection portion are formed of a high-strength titanium alloy.

13. The connection member according to claim **11**, wherein the cylindrical member provided with the connection projection portion and the connection portion are formed of a high-strength titanium alloy.

14. The connection member according to claim **1**, wherein the connection portion is plurally inserted into both end portions of the cylindrical member.

15. The connection member according to claim **2**, wherein the connection portion is plurally inserted into both end portions of the cylindrical member.

16. The connection member according to claim **3**, wherein the connection portion is plurally inserted into both end portions of the cylindrical member.

17. The connection member according to claim **14**, wherein the cylindrical member is formed of titanium whose purity is high.

18. The connection member according to claim **15**, wherein the connection portion is formed of a high-strength titanium alloy.

19. A band comprising the connection member according to claim **1**.

20. A timepiece comprising the band according to claim **19**.

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