

PIECE OF JEWELLERY COMPRISING A MOBILE PART

The present invention generally concerns pieces of jewellery of generally curved or annular shape, and which include a mobile part. The present invention concerns in particular finger rings and bracelets comprising a mobile part, and more specifically watch bracelets or wristbands comprising a mobile part.

5 Pieces of jewellery of annular shape that comprise a mobile part are already known. In particular, US Patent Nos. 1,830,929 and 1,936,604 both disclose a finger ring that includes concentric rings of different diameters. These rings are assembled to each other via two pivots diametrically arranged opposite each other. These pivots are provided to allow the rings to pivot relative to each
10 other between a tilted position, in which the outer surface of the smallest ring is visible, and a nesting position, in which the largest ring covers and conceals the outer surface of the smallest ring. These two finger rings are both further fitted with fastening means provided for holding them in the nesting position.

 The pieces of jewellery disclosed in these first two prior art documents are
15 not intended to be worn in the tilted position, or in other words, the open position. Even if the wearer of such a piece of jewellery decides to wear it in the open position, the piece of jewellery must be expected to close again, at least partially, very soon. Indeed, no means is provided for preventing this movement of the mobile part. Yet, it seems desirable to offer the wearer of a piece of jewellery
20 provided with a mobile part, the possibility of wearing the same in several different positions if he so desires.

 French Patent No. 2,715,806 discloses an annular shaped piece of jewellery which is intended to be worn in two different positions. This piece of jewellery comprises an annular shaped inner part and an outer part in the shape of
25 a ring portion. The two parts are assembled by two coaxial pivots, arranged to allow the outer part to pivot. The piece of jewellery further comprises an elastic element, secured to one of the parts, and arranged for cooperating in abutment inside one or other of two housings made in the other part. This arrangement allows the outer part to be maintained selectively in a first position, wherein the two
30 parts are fitted one inside the other, or in a second position wherein they are tilted.

 The piece of jewellery disclosed in this third prior art document has certain

drawbacks. Indeed, in order for the elastic element to have the possibility of cooperating in abutment inside a housing of the other part, the document teaches that the inner part and the outer part have to remain at least partially superposed. In such conditions, the width of the outer surface of the inner part is never entirely
5 visible. Moreover, using a deformable element secured to one of the parts, capable of being compressed between the two parts, makes the piece of jewellery relatively complex to make.

It is an object of the present invention to provide a piece of jewellery comprising at least two rings, or ring portions, that can nest inside each other,
10 capable of changing configuration by pivoting relative to each other about an axis common to both rings, and which does not suffer from the limitations that have just been mentioned. The present invention achieves this object by providing a piece of jewellery in accordance with claim 1.

According to the present invention, a pin secured to a first ring cooperates
15 with one edge of an aperture in a second ring. One advantage of the present invention is that, unlike the deformable element of the prior art, the pin does not need a housing. In such conditions, the indexing means of the present invention can be both simpler and more compact, which, for example, means they can be arranged in proximity to the pivoting means.

20 Other features and advantages of the present invention will appear upon reading the following description, given solely by way of non-limiting example with reference to the annexed drawings, in which:

- Figure 1a is a perspective view of a wristwatch corresponding to a particular embodiment of a piece of jewellery according to the present invention;

25 - Figure 1b is a perspective view of the wristwatch of Figure 1a with the outer ring in the tilted position;

- Figure 1c is a perspective view of the wristwatch of Figure 1a and 1b with the outer ring and intermediate ring in the tilted position;

- Figure 2 is an exploded diagram of the bracelet of the watch of Figure 1;

30 - Figure 3 is a cross-section of the two buttons for assembling the rings of the bracelet of Figure 2;

- Figure 4 is a top view of one of the two depressed portions which are arranged in the surface of the outer ring;

- Figure 5a is a perspective view of a wristwatch corresponding to a second
35 embodiment of a piece of jewellery according to the present invention;

- Figure 5b is a perspective view of the wristwatch of Figure 5a with the

outer ring and the intermediate ring in a first tilted configuration;

- Figure 5c is a perspective view of the wristwatch of Figure 5a and 5b with the outer ring and the intermediate ring in a second tilted configuration;

- Figure 6 is a top view of one of the two depressed portions which are
5 arranged in the surface of the outer ring of the bracelet shown in Figures 5a, 5b and 5c.

The wristwatch shown in Figures 1a, 1b and 1c comprises three concentric rings able to nest within each other. In the following description, these rings will be called inner ring 2, intermediate ring 3 and outer ring 4. The three rings are
10 assembled in two pivoting zones, only one of which (referenced 9) is visible in Figures 1a, 1b and 1c. The second pivoting zone between the rings is located diametrically opposite zone 9. The rings are provided for pivoting in relation to each other about a rotational axis passing through the aforementioned two pivoting zones. In the example shown in Figure 1, a watch 5, comprising a dial 6 and hour
15 and minute hands 8a, 8b, is integrated in inner ring 2, such that the watch crystal 7 is flush with the outer surface of said ring. The dial and time indication are thus visible through the outer surface of inner ring 2. Watch 5 occupies, on inner ring 2, a position substantially midway between the two pivoting zones 9.

It can be seen in Figure 1a that the three rings 2, 3 and 4 are shown in the
20 completely nested position. The rings are thus all three in the same orientation. In this configuration, intermediate ring 3 and outer ring 4 completely cover the outer surface of inner ring 2. Dial 6 and hands 8, forming the display of watch 5, are thus completely concealed.

Figure 1b shows the same wristwatch with these rings in a second
25 configuration. Outer ring 4 has thus been pivoted through 30° relative to the other two rings which are superposed. When the bracelet is worn with the rings in this second configuration, the appearance thereof is very different from that of the bracelet of Figure 1a. However, the configuration shown in Figure 1b still does not allow the time indication to be seen. It should be specified that the watch shown in
30 this example is intended also to be worn in another configuration similar to that which has just been described, but wherein the ring tilted at 30° is intermediate ring 3, whereas the ring that conceals the time indication is outer ring 4.

Finally, in Figure 1c, outer ring 4 and intermediate ring 3 are both tilted at
30° relative to inner ring 2. It can be seen that the outer ring and the intermediate
35 ring occupy positions which are symmetrical relative to inner ring 2. It can also be seen that, in this configuration, the part of inner ring 2 that carries the watch is

totally visible.

It will also be understood that various changes and improvements evident to those skilled in the art could be made to the embodiment that forms the subject of the present description, without departing from the scope of the present invention defined by the annexed claims. In particular, one could choose to use rings that do not close completely upon each other. There is known, particularly in the case of bracelets or necklaces, that such "incomplete" or "partial" rings, often have the advantage of being able to move apart slightly to allow them to be put on or taken off more easily. Moreover, one could choose to use a partial outer ring covering only one part of the circumference of the inner ring. One could also choose to use indexing means for maintaining the rings in more than two relative positions.

The rings could also have, for example, different widths or have a cut out portion giving the piece of jewellery a peculiar aesthetic appearance. By way of example, Figures 5a, 5b and 5c show a wristwatch that possesses this latter feature. As in the example of Figures 1a, 1b and 1c, the wristwatch of the present example comprises three rings 102, 103 and 104, which are shown in the nesting position in Figure 5a. This Figure shows that outer ring 104 has a rounded cut out portion 131 in one of the sides thereof. This cut out portion could itself form a decorative design.

Figure 5b shows the bracelet in a first tilted configuration wherein intermediate ring 103 and outer ring 104 occupy symmetrical positions tilted at 15° relative to the inner ring carrying the watch. It can be seen in this view that intermediate ring 103 also has a cut out portion (referenced 132) similar to that of the outer ring. It can also be seen that the cut out portions 131 and 132 have complementary shapes and that, in the configuration shown in Figure 5b, they join together to form a decorative design. In the present example, the decorative design is a heart whose contours are outlined by the edges of the aperture between the rings 103 and 104. In this configuration, the watch dial is partially covered by each of rings 103, 104. Only the presence of the heart-shaped cut out portion 131, 132, makes it possible to read the time. Finally, in Figure 5c, the bracelet is seen in a second tilted configuration wherein intermediate ring 103 and outer ring 104 occupy symmetrical tilted positions at 30° relative to the inner ring carrying the watch. This last configuration is similar to that already described in relation to Figure 1c. The cut out portions 131 and 132 are too far away from each other here to join together to form a single design which could be obviously

recognised.

The exploded view of Figure 2 shows the inner ring 2, intermediate ring 3 and outer ring 4 shown in Figures 1a, 1b and 1c. It can be seen in the Figure that each ring is pierced with three apertures at the place corresponding to pivoting zone 9. In the case of inner ring 2, these three apertures are circular holes. There is an axial aperture 10a and two lateral apertures 11a and 12a. Intermediate ring 3 also has three apertures, one axial aperture 10b and two lateral apertures 11b and 12b. However, as will be seen hereafter, these last two apertures are not circular, but of a more complex shape. It should also be noted that outer ring 4 has apertures 10c, 11c and 12c entirely similar to those of the intermediate ring.

Figure 2 also shows a depressed portion 13 of generally circular shape arranged in the outer surface of intermediate ring 3, at pivoting zone 9. apertures 10b, 11b and 12b are arranged in the flat bottom of this depressed portion 13. A second entirely similar depressed portion 14 is arranged in the outer surface of outer ring 4. Apertures 10c, 11c and 12c of the outer ring are arranged in this depressed portion 14. Two other flat-bottomed depressed portions (not shown) are respectively arranged in intermediate ring 3 and outer ring 4 on the second pivoting region diametrically opposite region 9. Figure 2 also shows circular apertures 20a, 21a and 22a which are arranged in inner ring 2 at the place corresponding to the second pivoting zone. It will also be understood that, three apertures symmetrical to apertures 10b, 11b and 12b are arranged in the second depressed portion of intermediate ring 3 (only one of these apertures referenced 21b is visible in the drawing). Finally, three other apertures (not shown), symmetrical to apertures 10c, 11c and 12c are arranged in outer ring 4.

Two identical buttons referenced 15 and 16 can also be seen in Figure 2. Figure 3 is a cross-section of one of these two buttons. It can be seen in Figures 2 and 3 that buttons 15 and 16 comprise a head 24 having the general shape of a disc and three substantially parallel pins 25, 26 and 27. Head 24 is sized to be able to be inserted in one of the circular depressed portions 14 which are arranged in the surface of outer ring 4. The central pin 25 of button 15 is provided for extending through circular apertures 10c and 10b of rings 4 and 3 and to be driven into aperture 10a of inner ring 2. Likewise, the central pin of button 16 is provided for passing through rings 4 and 3 and to have the end thereof driven into aperture 20a of ring 2. Outer ring 4 and intermediate ring 3 are provided for pivoting about the two central pins 25 of buttons 15 and 16. It will be clear that the two central pins have the function of an axis of rotation for outer ring 4 and

intermediate ring 3. These central pins 25 thus form the pivoting means allowing the rings to pivot relative to each other. Moreover, since each of pins 25 is secured to inner ring 2 by one end, and ends in a head 24 at the other end, the three rings 2, 3 and 4 are kept assembled. In particular, mobile rings 3 and 4 are not
5 liable to become detached from their axis of rotation. In light of the foregoing, central pins 25 of buttons 15 and 16 will be called the "assembly pins" in the following description.

In accordance with the views of Figures 2 and 3, buttons 15 and 16 also carry two lateral pins respectively referenced, 26 and 27 which are arranged, on
10 either side of assembly pin 25. Lateral pins 26 and 27 of button 15 are respectively provided for passing through apertures 11c and 12c of outer ring 4 and through apertures 11b and 12b of intermediate ring 3 prior to being driven via the end thereof into apertures 11a and 12a of inner ring 2. Likewise, the two lateral pins of
15 button 16 pass through rings 4 and 3, and the end thereof is driven into aperture 21a and into aperture 22a of ring 2. It will be clear from the foregoing that buttons 15 and 16 are secured to inner ring 2 in rotation.

Figure 4 is a top view of depressed portion 14, which is arranged in the surface of outer ring 4. It can be seen in Figure 4 that, as already mentioned, the flat bottom of depressed portion 14 has three apertures 10c, 11c and 12c. The
20 circular aperture 10c is arranged for receiving assembly pin 25, whereas the lateral apertures 11c and 12c are arranged for receiving lateral pins 26 and 27. In order to facilitate comprehension of the discussion that follows, Figure 4 also shows lateral pins 26 and 27 engaged in apertures 11c and 12c.

Aperture 11c, like aperture 12c, extends substantially along a U-shape (an
25 upside down U in Figure 4). The two branches of the U (referenced 17 and 18) are parallel and extend in the arc of a circle. Lateral pin 26 penetrates frontally the branch 17 of aperture 11c. This branch 17 forms a slide way in which pin 26 can move transversely when outer ring 4 pivots relative to assembly pin 25. Thus, when outer ring 4 pivots through 30° in one direction or another, the pin moves
30 between the two positions identified by the reference numbers 26a and 26b, which are separated by an arc of 30°. It can also be seen that branch 17 extends beyond position 26a via a narrowed end part. As a whole, the general U-shape of aperture 11c defines, in the material of outer ring 4, a long strip (referenced 30)
35 which extends between the two arms of the U. This strip 30 is shaped so as to have certain radial elasticity, and it is arranged for cooperating with pin 26, a little like a jumper spring. The function of strip 30 is to maintain the pin, either in

position 26a, or in position 26b.

Upon reading the foregoing, it will be clear that pin 26 only moves in the portion of slide way 11c which separates the two positions 26a and 26b. In particular, the other arm of the U (referenced 18) never receives pin 26. This latter
5 aperture forms a slot that is arranged for providing the space necessary for the radial movement of strip spring 30.

As will be realised, aperture 12c is the symmetrical counterpart of aperture 11c. Aperture 12c forms a slide way arranged for receiving the later pin 27. Moreover, it should be noted that, when pin 26 is maintained by strip
10 spring 30 in position 26a, pin 27 is retained in position 27b. Conversely, when pin 26 is retained in position 26b, pin 27 is in position 27a. This arrangement has the advantage of substantially equalising the force necessary for passing from one position to the other or vice versa. However, those skilled in the art will understand that, instead of being symmetrical, aperture 12c could, in a substantially equivalent
15 manner, be rotated by 180° relative to aperture 11c. It would also be possible to use buttons 15 and 16 comprising only one pin 26 or 27. In such conditions, it would be possible also to remove the corresponding aperture (either aperture 11c or aperture 12).

Figure 4 shows depressed portion 14 in which button 15 is inserted.
20 However, it should be recalled that another depressed portion for receiving button 16 is arranged in a diametrically opposite position on outer ring 4. In this embodiment, the apertures made in the second depressed portion are entirely similar to those shown in Figure 4. The only thing that distinguishes them is that they are the symmetrical image of the apertures of depressed portion 14 relative to
25 the plane of inner ring 2. However, those skilled in the art will understand that another possible choice, for example, would be to only provide button 15 with lateral pins. In such case, button 16 only carries central pin 25 and the U-shaped apertures for receiving pins 26 and 27 of button 16 are no longer necessary.

The surface of intermediate ring 3 also has two depressed portions (one
30 referenced 13 in Figure 2), which carry apertures 10b, 11b and 12b, which are of similar shapes to the apertures made in outer ring 4. Indeed, like apertures 11c and 12c of the outer ring, apertures 11b and 12b are provided for cooperating with pins 26 and 27 for maintaining the intermediate ring in one of two angular positions separated by 30°. However, it was seen in relation to Figure 1c that when outer
35 ring 4 and intermediate ring 3 are tilted symmetrically relative to inner ring 2. For this reason, the shape of the apertures made in depressed portion 13 is

symmetrical with the shape of that made in depressed portion 14.

Figure 6 is a top view of one of the two depressed portions 114, which are arranged in the surface of outer ring 104 of the wristwatches shown in Figures 5a, 5b and 5c. It can be seen that, unlike the case of the example of Figure 4, the flat
5 bottom of depressed portion 114 has only two apertures 110c and 111c. The circular aperture 110c is provided for receiving an assembly pin 25, whereas the single lateral aperture 111c is provided for receiving a pin 26. As in the example of Figure 4, aperture 111c extends substantially in a U-shape. As in the first example, the two branches of the U (referenced 117 and 118) are parallel and extend in the
10 arc of a circle. Pin 26 penetrates branch 117 in a frontal manner and can slide transversely therein. The edges of branch 117 are shaped to able to maintain pin 26 selectively in three different positions (respectively referenced 126a, 126b and 126c). Two arcs of 15° separate positions 126a, 126b and 126c from each other. In accordance with the description given with reference to Figure 4, the U-
15 shape of aperture 111c defines in the material of outer ring 104 a long strip (referenced 130), which extends between the two arms of the U. The function of strip 130 is to maintain the pin selectively in one of positions 126a, 126b and 126c. When outer ring 104 (shown in Figures 5a, 5b and 5c) pivots by 15° from the superposed position thereof, pin 26 passes from position 126a to 126b. When the
20 ring pivots by an additional 15° to be tilted by 30°, pin 26 passes from position 126b to 126c.

CLAIMS

1. Piece of jewellery including at least one inner ring (2) and one complete or partial outer ring (4), said rings being able to nest inside each other and the piece of jewellery including pivoting means (25, 10a, 10b, 10c) arranged for varying the degree of nesting of the rings by pivoting said rings relative to each other about an axis common to the two rings, characterized in that the piece of jewellery further includes indexing means (26, 27, 11b, 12b, 11c, 12c) arranged for selectively maintaining the rings in a plurality of relative positions, said plurality of relative positions comprising at least a first position wherein the rings are nesting and a second position wherein the rings are tilted, said indexing means including a pin (26) secured to a first ring (2) and a first elongated aperture (11c) arranged in a second ring (4), said pin being engaged in said aperture and being provided to move transversely therein when said first ring is pivoted relative to said second ring, one edge of said aperture being provided for cooperating with the pin so as to selectively immobilise the pin in a plurality of relative positions.
2. Piece of jewellery according to claim 1, characterized in that the pivoting means include first and second assembly pins (25), said pins being secured to said first ring (2) and arranged to engage in first (10c) and second (20c) axial apertures arranged in said second ring (4) so as to allow said second ring to pivot about said assembly pins.
3. Piece of jewellery according to claim 1, characterized in that said first ring is the inner ring (2) and in that said second ring is the outer ring (4).
4. Piece of jewellery according to claim 1, characterized in that it further comprises an intermediate nesting ring (3), the diameter of which is intermediate between that of the outer ring (4) and that of the inner ring (2).
5. Piece of jewellery according to claim 3, characterized in that it further includes an intermediate nesting ring (3), the diameter of which is intermediate between that of the outer ring (4) and that of the inner ring (2) and in that said indexing means (26, 27, 11b, 12b, 11c, 12c) further comprise a second elongated aperture (11b) arranged in the intermediate ring (3), said pin (26) being engaged in said second aperture (11b) and arranged for moving transversely therein when said intermediate ring is pivoted relative to said inner ring, one edge of said aperture being arranged for cooperating with the pin so as to selectively immobilise the pin in a plurality of relative positions.
6. Piece of jewellery according to claim 2, characterized in that one of

said assembly pins (25) is arranged in proximity to said pin (26), and in that the assembly pin and the pin are joined at the end thereof by a head (24) arranged for preventing said second ring (4) from disengaging from said assembly pin.

7. Piece of jewellery according to claim 1, characterized in that the edge
5 (130) of said aperture (11c) is arranged for cooperating with the pin (26) so as to selectively immobilise the pin in at least three relative positions.

8. Piece of jewellery according to claim 4 or 5, characterized in that in said second position, the outer ring (4) and the intermediate ring (3) are tilted substantially symmetrically relative to the inner ring (2).

9. Piece of jewellery according to claim 4 or 5, characterized in that one edge of the outer ring (104) and one edge of the intermediate ring (103) each comprises a cut out portion (131, 132) and in that in one of said plurality of relative positions, the cut out portions are opposite each other and form a decorative design.