

WRISTWATCH WITH AN UNFOLDING CASE

Field of the invention

The present invention concerns a wristwatch displaying the current time in a "normal" position and possibly a second piece of information, which may or may not be time related the control and reading of which is facilitated by unfolding the case containing the control and display members, without necessarily detaching it from the wristband or bracelet, which is held on the wrist by a clasp.

Background of the invention

In the following description, a "normal position" display designates a display wherein the case is solidly connected to the wristband holding the wristwatch on the wrist and wherein the information displayed is read on the side of the back of the hand.

The case may occupy an entirely usual position by being permanently fixed to the wristband and thus have a display visible on the side of the back of the hand, while being substantially parallel to the latter. The case can also move away from this position slightly by tipping and/or pivoting in order to provide a better view of the display and/or to allow access to a second display located in the back cover of the case.

US Patent No. 1 804 048 discloses a device wherein the case swivels about a hinge when a push button passing through the middle part is pressed. In CH Patent No. 161 610, the device is formed of two hinged cases totally concealing a display oriented towards the back cover of the case connected to the wristband and making it the display visible when swivelled by at least 90°, when one wishes to access the information displayed.

In the "Tank basculante" model by Cartier, the case is pivotably mounted in a support, which is itself hinged via a hinge to a fixed case, which enables the mobile case to be turned over completely and provides access to a second display located in

the back cover of the mobile case when the latter is returned to the normal position. In all of these devices of the prior art, the mobile case maintains a strong mechanical link with the wristband, and only allows the display to be read on the side of the back of the hand.

Summary of the invention

The present invention provides a new and innovative solution for reading information carried by a display that can be completely moved from its normal position, while maintaining a "safety" link with the wristband.

The invention therefore concerns a wristwatch with an unfolding case including a wristband or bracelet made in a single piece for totally encircling the wrist of the wearer, and closed by a clasp connecting the two wristband strands at 6 o'clock and at 12 o'clock. The wristband indirectly carries a case containing at least one watch movement for the display of time information and at least another piece of information which may or may not be time related. The invention is essentially characterized in that the case is mounted at the end of an additional flexible strand, the other end of which is pivotably fixed to one of the wristband strands. Via locking/unlocking means between the additional strand and the wristband, the case can occupy a normal position and a second position wherein it can be unfolded for positioning in the hand, i.e. for reading the display and manipulating the control members in an opposite position to the normal position.

The additional strand can be made in one part or in several parts, which will determine the position of the pivoting point on the wristband so that the display is oriented in the proper direction when the case is fixedly mounted on the additional strand and it is held in the hand. When the additional strand is in only one part, the pivoting point must be located on the 6 o'clock strand; when it is in two parts, connected to each other by a second pivoting point, it must be located on the 12 o'clock strand.

If the second alternative is selected for the pivoting point, the display will be reversed, a drawback that can be easily removed by rotatably mounting the case so that it can be turned over 180°.

When the additional strand is in two parts, a hinge can replace one pivoting

point, with the exception of that located on the wristband. When the number of parts forming the additional strand is even, a pivoting pin must be provided along the length of said additional strand so that the case can be turned over when it is unfolded in the hand.

Brief description of the drawings

Other advantages and features of the present invention will appear more clearly in the following description of various embodiments, given by way of non-limiting illustration, with reference to the annexed drawings, in which:

- Figures 1 and 2 show a first embodiment of a wristwatch according to the invention, worn on the wrist in the normal position and in the flat, opened out position;
- Figures 3 and 4 show the same wristwatch as that of Figures 1 and 2 in the position where it is unfolded into the hand, and in the flat opened out position;
- Figures 5 to 12 show top views of four other embodiments, with the wristband in the opened out flat position and, respectively, the normal position in the odd numbered Figures, and in the unfolded position in the even numbered Figures;
- Figures 13 and 14 show perspective views of a sixth embodiment, respectively in the normal position and in the unfolded position;
- Figures 15 and 16 show a top view with the wristband opened out flat, a seventh embodiment respectively in the normal position and in the unfolded position, and
- Figures 17 and 18 show perspective views of variants of the preceding embodiments, respectively in the normal position and in the semi-unfolded position.

Detailed description of the invention

The following embodiments are more specifically illustrated by an analogue display wristwatch whose case 3 contains a movement for, on the one hand display the current time on a display 7, and on the other hand for driving a chronograph mechanism controlled by push buttons 2a and 2b, arranged on either side of a crown 4, for displaying the timing information on the same display 7 as the current time.

It is clear that, without departing from the scope of the invention, display 7 could be of liquid crystal analogue type.

Referring first of all to Figures 1 to 4, a first embodiment showing the basic principle of the invention will be described hereinafter, wherein case 3 can occupy a normal position while being held on the wrist by an encircling wristband 5 closed by a clasp 8 (Fig. 1) and a second position wherein it is unfolded outside wristband 5 so as to be able to be positioned in the hand (Fig. 3). Clasp 8 will be illustrated hereinafter by a simple buckle and tongue 8a secured to the end of strand 12 of wristband 10 located at 12 o'clock. It is clear that other types of clasps could be used.

As can be seen more easily in Figure 2, when clasp 8 is open and the wristwatch is placed flat on a table, case 3 is fixedly mounted at the end of an additional flexible strand 10 made in a single piece 14. The other end of strand 14 includes a pivoting point 15 on strand 6 of wristband 10 located at 6 o'clock. This pivoting point 15 can be achieved by any known means, for example by means of riveting with play. Part 14, forming additional strand 10, and thus also case 3, are held in the normal position (Figures 1 and 2) by locking/unlocking means 19 between strand 12 and additional strand 10, as can be seen in Figure 4 showing the wristwatch unfolded flat. These locking/unlocking means can be of any known type, such as a pressure type device as shown, or a pusher-bolt device.

Figures 5 and 6 show in top views, with the wristwatch unfolded flat, a second embodiment, which differs from the preceding one in that the pivoting point 15 of additional strand 14 is positioned on 12 o'clock, strand 12 of wristband 5. When case 3 is unfolded, as shown in Figure 6, it is clear that the display 7 will be turned over. Case 3 is therefore rotatably mounted on the end of additional strand 14 about a point of rotation 9. It is then possible to turn case 3 over through 180° in order to read display 7 normally when case 3 is positioned in the hand.

As in the first embodiment, additional strand 14 may be flexible, but not extendable lengthways. According to a variant that is also shown in Figures 5 and 6, additional strand 14 can also be extendable lengthways so as to allow the user to have better positioning in the palm of his hand, or in his fingers. In the example shown, additional strand 14 is formed by a hollow sheath 14a into which a tongue 14b can slide. Equally, but in a non-limiting manner, strand 14 could be formed of spring loaded links, or be made of an elastic material. This variant is evidently applicable to the first embodiment in addition to other embodiments that will now be described.

Figures 7 and 8 show in top views, with the wristwatch unfolded flat, a third embodiment that differs from the preceding ones in that the additional flexible strand 10 is made in two parts 14, 16, which are hinged to each other by a second pivoting point 25. The first part 14 includes at the end thereof the first pivoting point 15 on wristband 5, said pivoting occurring, in this embodiment, on the 12 o'clock strand 12.

The end of the second part 16 carries the fixedly mounted case 3. The dual pivoting case 3 means that its display 7 is in the usual reading position when case 3 is unfolded into the hand. When case 3 is in the normal position (Figure 7) the first part 14 is held on wristband 5 as previously by a first locking/unlocking device 19 and the second part 16 by a second locking/unlocking device 29 provided between the end of second part 16 and first part 14. It will be observed that the first locking/unlocking device 19 can advantageously be associated with the second pivoting device 25, so as to reduce the number of parts to be assembled.

Likewise, by making one or other of parts 14, 16 of additional strand 10 extendable, the variant provided in the second embodiment would allow pivoting points 15, 25 to be brought closer to the centre of the wristband, if only for aesthetic purposes.

Figures 9 and 10 show a fourth embodiment, having all the features of the preceding embodiment, but which differs therefrom in that the first part 14 of additional strand 10 is pivotably mounted on the 6 o'clock strand 6 of wristband 5. As in the second embodiment, this assumes that case 3 can be reoriented by rotation about a rotation point 9. This embodiment will not therefore be described any further.

Figures 11 and 12 show a fifth embodiment, along the same principle as the third and fourth embodiments, but which differs therefrom in that the junction between parts 14, 16 of additional strand 10 is achieved by means of a hinge 22. In such conditions, after case 3 has been unfolded, the first display 7 is located opposite the palm of the hand and is not therefore visible. However, this embodiment allows a second display 7 to be provided in the back cover of case 3. In the example shown, this is a compass, but one could image any other type of display ranging from a simple vanity mirror to the keyboard of a calculator, telephone, diary etc. In this latter case, displays 7 and 17 should of course be read in reverse, or case 3 should be rotated, as in the second and fourth embodiments. It will be observed that the basic pivoting

point 15 may be located on either of strands 6, 12 of wristband 5.

Figures 13 and 14 show in perspective a sixth embodiment which differs from the preceding one in that the junction between parts 14 and 16 of additional strand 10 is also achieved by means of a pivoting pin 23 along the length of second part 16, which is then formed of two disjoint parts 16a, 16b. Equally, this pivoting 24 could occur on the first part 14 of additional strand 10. This construction has the advantage of allowing either one of displays 7 and 17 to be read when the case is unfolded in the hand.

In the embodiments that have just been described, the additional flexible strand 10 is made in one or two parts 14, 16. Figures 15 and 16 show a seventh embodiment wherein the additional strand 10 is made in more than two parts, namely in this example, in three parts 14, 16 and 18. The first part 14 comprises, as in the preceding examples, a pivoting point 15 on wristband 5. The second part 16 comprises, as in the fifth embodiment, a hinge 22 for connecting the latter to first part 14. The third part 18 is connected to second part 16 by a second hinge 24 and supports case 3. These three parts 14, 16, 18 can be held in place in the normal position by three locking/unlocking means of the type of those previously described, with accordion type folding for concealing them, or almost, underneath case 3. When one wishes to place case 3 in the hand, the dual swivelling about hinges 22, 24 allows display 7 to take a usual reading position.

It will also be observed, according to the variant shown, that the third part 18 can be merged with case 3, hinge 24 then being formed by a bar 20 at position 6 of display 7.

Moreover, bar 20 or, as shown for improved comprehension portions 20a extending beyond horns 3a of case 3, can also form the locking/unlocking means by snapping into studs 21 secured to strand 6 of wristband 5. The same arrangement can be provided at 6 o'clock, such that the number of locking/unlocking means can be brought back to two.

Figures 17 and 18 show, in a condensed way, variants applicable to the preceding embodiments. These Figures show the possibility of fitting case 3 into a rigid housing 13 provided at the end of additional strand 10 (in this case part 16) for example by means of an S shaped spring that fits into a slot 11a of said housing 13.

This allows, for example, the chronograph to be detached from the wristband and secured to a link worn around the neck.

Likewise, rigid housing 13 or case 3 can be fitted into another rigid housing 23 secured to first part 14 when the additional strand 10 is in two parts, or directly to wristband 5 when additional strand 10 is in a single part. Rigid housing 23 can thus be substituted for one of the locking/unlocking means.

Of course, these variants could be combined or implemented separately, whatever the embodiment, and other embodiments could be envisaged by those skilled in the art without departing from the scope of the present invention.

CLAIMS

1. Wristwatch with an unfolding case (3) including a wristband or bracelet (5) in a single piece secured around the user's wrist by a clasp (8) connecting the strands (6, 12) at 6 o'clock and 12 o'clock, said case (3) carrying at least one watch movement and at least one display (7, 17) for the current time and for access to other time related or non-time related information, characterized in that it includes an additional flexible strand (10), in one or in several parts (14, 16, 18), one end of which has a pivoting point (15) on one of the strands (6, 12) of the wristband (5), said pivoting occurring about an axis perpendicular to the plane of the strands (6, 12), and the other end of which carries the case (3), either for holding said case in the normal position on the side of the back of the hand by locking/unlocking means (19, 29), or for unfolding said case in the hand, by acting on the unlocking means (19, 29).

2. Wristwatch according to claim 1, characterized in that the additional strand (10) is in a single part (14) and includes the pivoting point (15) on the strand (6) of the wristband (5) located at 6 o'clock, the case (3) being fixedly mounted on the other end of the part (14) of the additional strand (10).

3. Wristwatch according to claim 1, characterized in that the additional strand (10) is in a single part (14) and includes the pivoting point (15) on the strand (12) of the wristband (5) located at 12 o'clock, the case (3) being rotatably mounted on the other end of the part (14) of the additional strand (10), so as to be able to pivot 180°.

4. Wristwatch according to claim 1, characterized in that the additional flexible strand (10) is made in two parts (14, 16) connected to each other by a second pivoting point (25) about an axis perpendicular to the plane of the parts (14, 16) of the additional strand (10), the first part (14) including at the end thereof the pivoting point (15) on the wristband (5), and at the other end a first locking/unlocking means (19), and the second part (16) carrying the case (3) at the end thereof and a second locking/unlocking means (29).

5. Wristwatch according to claim 4, characterized in that the pivoting point (15) on the wristband (5) is located underneath the strand (12) at 12 o'clock, the

case (3) being fixedly mounted on the end of the second part (16) of the additional strand (10).

6. Wristwatch according to claim 4, characterized in that the pivoting point (15) on the wristband (5) is located on the strand (6) at 6 o'clock, the case (3) being rotatably mounted on the end of the second part (16) of the additional strand (10).

7. Wristwatch according to claim 1, characterized in that the additional flexible strand (10) is made in two parts (14, 16) connected to each other by a hinge (22), the first part (14) including at the end thereof the pivoting point (15) on the wristband (5) and the second part (16) carrying at the end thereof a fixed case (3) having a first display (7) of at least the current time in the normal position, and on the opposite face thereof a second display (17) of another time related or non-time related piece of information.

8. Wristwatch according to claim 7, characterized in that the junction between the two parts (14, 16) of the additional strand (10) further includes a pivoting pin (23) along the length of said additional strand (10).

9. Wristwatch according to claim 7 or 8, characterized in that the case (3, 13) is also rotatably mounted on the end part (16) of the additional strand (10).

10. Wristwatch according to claim 1, characterized in that the additional flexible strand (10) is made in three parts (14, 16, 18), the first part (14) comprising at the end thereof the pivoting point (15) on the wristband (5), the second part (16) being connected to the first part (14) by a hinge (22) and the third part (18) being connected to the second part (16) by a second hinge (24) while carrying a fixed case (3).

11. Wristwatch according to claim 10, characterized in that the case (3) includes bars (20), one of said bars being merged with the second hinge (24) and forming a first locking/unlocking means by fitting into studs (21) secured to the wristband (5), the other bar forming the second locking/unlocking means by fitting into other studs (21) also secured to the wristband (5).

12. Wristwatch according to claim 1, characterized in that at least one of the parts (14, 16, 18) of the additional flexible strand (10) is also extendable lengthways.

13. Wristwatch according to claim 1, characterized in that the case (3) is secured to a housing (13), which is itself secured to the additional strand (10).

14. Wristwatch according to claim 13, characterized in that the case (3) can be separated from the housing (13).

15. Wristwatch according to any of claims 1 to 14, characterized in that the case (3) includes external control members (2a, 2b) for a chronograph function.

16. Wristwatch according to claim 15, characterized in that the control members (2a, 2b) are positioned at 12 o'clock.

17. Wristwatch according to any of claims 1 to 14, characterized in that the second display corresponds to a telephone function.