

DEVICE FOR CONTROLLING A TIME FUNCTION OR NON-TIME-
RELATED FUNCTION AND TIMEPIECE INCLUDING THE SAME

The present invention concerns a device for controlling a time function or non-time related function and a timepiece including said control device.

5 The number of time functions with which a timepiece of the mechanical or electromechanical wristwatch type may be equipped is usually limited by the place available on the sides of the middle part of the watch for arranging the buttons used to control these functions. The problem is accentuated when the watch concerned is of small dimensions, such as a woman's model.

10 The problem linked to lack of space is particularly felt when one wishes to protect the control buttons by means of covers or caps which cover the buttons in a conventional manner. The external diameter of these covers is necessarily greater than that of the control buttons they cover and sufficient space must therefore be provided for the covers between two
15 successive buttons.

Finally, although additional functions may be added to a watch, in order to save money, it is still sought to use a conventional timepiece movement. Measures must therefore be taken so that the control buttons for the additional functions can act on the timepiece movement in the
20 desired manner.

Figure 1 annexed to the present Patent Application is a top view of a mechanical watchcase including a chronograph mechanism. Designated as a whole by the general reference numeral 1, this watch case includes in a conventional manner a winding stem 2, arranged at three o'clock and a

push-button 4 for starting the chronograph function and a push-button 6 for stopping and resetting to zero the same chronograph function. As can be seen upon examining the drawing, push-button 4 for starting the chronograph function is offset at an angle anti-clockwise relative to winding stem 2, arranged substantially at two o'clock, whereas push-button 6 for stopping and resetting the chronograph function to zero is offset at an angle clockwise relative to winding stem 2 and is arranged substantially at four o'clock. It is clear that with this arrangement of winding stem 2 and push-buttons 4 and 6, it is difficult to envisage adding an additional control member in the midday-six o'clock half of middle part 8 or protecting push-buttons 4, 6 by means of covers.

It is an object of the present invention to overcome the aforementioned drawbacks, in addition to others, by providing a device for controlling a time function or non-time-related function that allows substantial space saving to be achieved.

The present invention therefore concerns a device for controlling a time function or non-time-related function for a timepiece, said control device including at least two push-buttons each provided with a stem and a head, characterized in that the stems of the two push-buttons extend side by side, parallel to each other.

Owing to these features, the present invention provides a control device including a double push-buttons whose two stems are arranged in parallel, side by side, such that the space requirement of this double push-button is reduced to a minimum. Place is therefore available for adding another control member or for installing this double push-button more easily in a watch of small dimensions.

According to a complementary feature of the present invention, the two pusher stems slide inside the same tube engaged in a through aperture made in the middle part of the watch.

The effect of this other feature is to limit both the number of machining operations to be carried out on the middle part and the number of parts employed for making the double push-button, which achieves substantial savings.

- 5 According to yet another feature of the invention, the heads of the two push-buttons have complementary shapes such that, when the two heads are in their non-pushed-in rest state, they form a circular external perimeter.

- 10 The present invention also concerns a timepiece fitted with a push-button of the type described above, characterized in that the double push-button is arranged in the three o'clock-six o'clock dial quarter of the watch.

 According to another feature of the invention, the timepiece further includes an additional control member arranged in the twelve o'clock-six o'clock dial quarter of the watch.

- 15 Other features and advantages of the present invention will become clear from the following detailed description of an embodiment of the control device according to the invention, this example being given purely by way of non-limiting illustration with reference to the annexed drawing, in which:

- 20 - Figure 1, already mentioned, is a top view of a mechanical watch case including a chronograph mechanism,

 - Figure 2 is a top view of a watch case fitted with a control device according to the invention,

- 25 - Figure 3A is a horizontal top view of the watch case shown in Figure 2, the cross-section passing through the control device according to the invention,

 - Figure 3B is a larger scale detailed view of the region surrounded by a circle in Figure 3A, and

 - Figure 4 is a front view of the control device according to the invention.

The present invention proceeds from the general inventive idea that consists in providing a control device for time function or non-time-related functions, which is formed of two pusher stems arranged in parallel, side by side, so as to free space on the middle part of a watch for adding an additional control button or for installing this double push-button more easily
5 in a watch of smaller dimensions, such as a woman's model.

The watch according to the invention is shown schematically in a top view in Figure 2. Designated as a whole by the general reference numeral 10, it includes, in a conventional and non-limiting manner, a
10 crystal 12 held securely in position by a bezel 14, which is itself secured to a middle part 16. Middle part 16 is extended at midday and six o'clock by two pairs of horns 18 for securing the middle part to a wristband or bracelet that is not shown.

In the example shown, it is assumed that watch 10 is a mechanical
15 watch including a winding stem 20 (see Figure 3A) extended, at the end thereof located outside circular case 22 of watch 10, by a winding crown 24. This winding stem 20 is used in a conventional manner for winding the mainspring (not shown) of watch 10. As is visible in Figure 2 and better still in Figure 3A, winding stem 20 is arranged along a radius of circular case 22
20 of watch 10, in the twelve o'clock-three o'clock dial of said watch 10. More specifically, the axis of symmetry A-A of winding stem 20 forms an angle α of 15° with the three o'clock-nine o'clock axis of watch 10 in the anticlockwise direction. If one wishes to use a standard market movement M, this movement M must therefore be pivoted at the desired angle in
25 case 22 of watch 10 such that the winding stem can drive the gear train, which kinematically connects the stem to the mainspring. Of course, the example of winding stem 20 has been given purely by way of illustration and one could envisage any other type of push-button type control device if watch 10 was, for example, of the electromechanical type, i.e. if the
30 movement thereof was powered by a battery.

According to the invention, watch 10 is fitted with a second control device 26 formed (see Figure 3) of two push-buttons 28a and 28B each including a pusher stem 30A and 30B extended at the free end thereof by a pusher head 32A and 32B respectively. As can be seen upon examining
5 Figure 2 and better still in Figure 3, control device 26 is arranged along a radius of circular case 22 of watch 10, in the three o'clock-six o'clock dial quarter of said watch 10. More specifically, the axis of symmetry B-B of control device 26 according to the invention forms and angle β of 15° with the three o'clock-nine o'clock axis of watch 10 in the clockwise direction.

10 As can be seen in Figure 2, the winding crown 24 and control device 26 are each covered by a cover or cap 34 and 36 respectively, these covers 34 and 36 being connected to middle part 16 of watch 10 via two articulated hinges 34A and 36A respectively. As will be seen in more detail below, covers 34A and 36A are mounted to rotate freely at the free ends of
15 hinges 34A and 36A so that they can be screwed in and unscrewed.

We will now examine in detail the structure of control device 26 according to the invention with reference to Figures 3A and 3B. This control device 26 essentially includes a tube 38 inside which pushers 28A and 28B are able to slide axially. This tube 38 is engaged in a through hole 73 made
20 in middle part 16 of watch 10 and secured to said middle part 16 for example by being driven or screwed therein. More specifically, tube 38 is a staged tube including a first part 38A whose inner diameter D_1 is greater than the inner diameter D_2 of the second part 38B of tube 38. According to a feature of the invention, heads 32A and 32B of pushers 28A and 28B
25 have complementary shapes such that, when the two heads are not pushed in, they form a circular external perimeter $\underline{D}$ (see Figure 4). It will be clear that the inner diameter D_1 of the first part 38A of tube 38 is equal to or slightly greater than the external perimeter $\underline{D}$ so as to allow heads 32a and 32B of pushers 28A and 28B to slide inside said first part 38A of tube 38
30 while being guided axially.

At the centre of the second part 38B of tube 38 there is a separating wall 40, which delimits two cylindrical passages 42 and 44 whose inner diameters are adapted to the diameters of stems 30A and 30B of pushers 28A and 28B. A sealing gasket 46 is housed at the bottom of the
5 second part 38B of tube 38 with a spring 48 inserted between said gasket 46 and the lower face 50A, 50B of the pusher heads 32A, 32B. The two pushers 28A, 28B are retained axially by two key bolts 52A, 52B mounted at the end of pusher stems 30A, 30B outside tube 38. The two pushers 28A and 28b are thus free to move in translation between a first rest position in
10 which they are held by key bolts 52A, 52B against the elastic return force of spring 48, and a second activated position in which they are pressed, via the bottom faces 50A, 50B thereof, against an inner shoulder 54 of tube 38.

Pusher 28B acts on a control member 56B for a time function or non-time related function via a lever 58B hinged to pivot at *i*.

15 Pusher 28A acts on a control member 56A of a time function or non-time-related function via a first lever 58A₁, hinged to pivot at *ii* and which is itself mounted to pivot on a second lever 58A₂ that can pivot and move in translation about a pivot 60 housed in an oblong hole 62 made in the second lever 58A₂.

20 The external periphery of first part 38A of tube 38 has a thread 64 for cooperating with an inner thread 66 provided in cover 36. Cover 36 also has a circular groove 68 which houses a sealing gasket 70.

Winding stem 20 is mounted to rotate freely in a tube 72 secured to middle part 16, for example by being driven or screwed therein. The bottom
25 face 74 of the winding stem 24 of said stem abuts against a shoulder 76 of tube 72. Winding stem 20 has a circular groove 78 which houses a sealing gasket 80. Likewise, cover 34 has a circular inner groove 82 which houses a sealing gasket 84. Finally, the external periphery of tube 72 has a thread 86 for cooperating with a thread 88 provided on the inner periphery of
30 cover 34.

Thus, owing to the present invention, by grouping two push-buttons at the same place, sufficient space is freed on the middle part of a watch to provide, for example, an additional push-button, or as described above, to provide covers to cover the control member according to the invention and,
5 for example, a winding crown.

It goes without saying that the present invention is not limited to the embodiment that has just been described and that various simple modifications and variants could be envisaged by those skilled in the art without departing from the scope of the invention as defined by the annexed
10 claims. In particular, the double push-button according to the invention could be used to control any type of time function or non-time-related function. By way of preferred but non-limiting example, the two push-buttons could be used to control a chronograph mechanism, one push-button being used to start the mechanism, while the other push-button is
15 used to stop and reset said chronograph mechanism to zero. The present invention could apply to any type of portable object such as, in a non-limiting manner, a portable telephone, an electronic diary, a camera or apparatus. Preferably, the present invention will be applied to a wristwatch type timepiece which may be either purely mechanical, electromechanical
20 or purely electronic.

CLAIMS

1. Device for controlling a time function or non-time related function for a portable object (10) including a lateral wall called the middle part (16), said device (26) including at least two push-buttons (28A, 28B) each provided with a stem (30A, 30B) and a head (32A, 32B), said push-
5 buttons (28A, 28B) being able to move axially between a first inactive rest position and a second position in which said push-buttons control the function, characterized in that the stems (30A, 30B) of the two push-buttons (28A, 28B) extend side by side, parallel to each other.
- 10 2. Control device according to claim 1, characterized in that the two pusher stems (30A, 30B) slide inside the same tube (38) engaged in a through hole (73) arranged in the middle part (16).
3. Control device according to claim 2, characterized in that the tube (38) is a staged tube including a first part (38A) whose inner diameter
15 (D1) is greater than the inner diameter (D2) of a second part (38B) of the tube (38), the heads (32A, 32B) of the pushers (28A, 28B) being able to slide inside the first part (38A) of said tube (38) while being guided axially, whereas the stems (30A, 30B) slide while being guided axially in the second part (38B) of the tube (38) that has a reduced diameter.
- 20 4. Control device according to claim 3, characterized in that the centre of the second part (38B) of the tube (38) has a separating wall (40), which delimits two cylindrical passages (42, 44) in which the stems (30A, 30B) of the push-buttons (28A, 28B) slide.
- 25 5. Control device according to claim 4, characterized in that a sealing gasket (46) is housed at the bottom of the second part (38B) of the tube (38) with a spring (48) inserted between said gasket (46) and a bottom face (50A, 50B) of the pusher heads (32A, 32B).

6. Control device according to claim 5, characterized in that the pushers (28A, 28B) act on control members (56A, 56B) for a time function or non-time related function via at least one lever (58A₁, 58A₂; 58B).

7. Control device according to any of claims 2 to 6, characterized
5 in that the external periphery of the tube (38) has a thread (64) for cooperating with an inner thread (66) provided in a cover (36) which covers the heads (32A, 32B) of the push-buttons (28A, 28b) in a removable manner.

8. Control device according to any of claims 1 to 7, characterized
10 in that the heads (32A, 32B) of the pushers (28A, 28B) have complementary shapes such that, when said pushers (28A, 28B) are in an inactive position, the heads form a circular external periphery (D).

9. Timepiece including a control device (26) according to any of claims 1 to 8.

15 10. Timepiece according to claim 9, further including an additional control member (20) arranged in the twelve o'clock-three o'clock dial quarter of the timepiece, whereas the control device (26) is arranged in the three o'clock-six o'clock dial quarter of said timepiece, characterized in that the control member (20) and the control device (26) are both covered in a
20 removable manner by a cover (34, 36).