Automatische Übersetzung vom Original (Deutsch).

Automatic translation from the original (german).

Reversing mechniasm, setting mechanism and a movement for a reversible clock, as well as a reversible clock

Technical field of the invention

The present invention concerns an inverting device, which can be used to playfully turn a flip watch. The present invention also relates to a setting mechanism for the separate setting of two dials of a reversible watch. Especially the invention relates to a setting device for a reversible clock, in the case of which is the alternative coupling between the crown shaft of the watch and a of the dials due to the orientation of the watch in relation to gravity is achievable. The present invention also relates to a clockwork and a watch comprising an setting mechanism according to the invention and/or a invention-related turning device.

State of the art

Reversible watches comprising two dials have long been and for example from EP 0 608 535 A1, EP 0 504 623 A1, CH 351 223 or EP
0 633 514 A1 known. These watches are particularly attractive because they allow display of two different times. A special and well-known challenge of reversible watches is the setting device of the two dials. Until now only very complicated adjusting devices are known, all of which are based on a displacement of the crown shaft from a first position, in which a first dial adjustable, to a second position in which the second dial can be adjusted. With these known setting devices the users always think about the position of the crown shaft first to to be able to set the currently facing dial. The known devices are therefore at least regarding this aspect not satisfactory. Other known devices use for adjustment of the dials two separate crowns which is also not a satisfying solution.

A different and well-known challenge with reversible watches represents the turning device. Known turning devices are very complicated and require several successive manipulations by the user. None of the known devices therefore allows a simple but at the same time satisfyingly playful turning the watch.

Based on the state of the art, the present invention the task of overcoming predicted disadvantages and to create a to propose an environment device that provides the user with a simple and playful turning of the clock is possible. A further task of the the present invention is to propose an adjustment device which requires no shifting of the crown shaft and with which the currently facing dial is adjustable.

Summary of the invention

According to the present invention, these objectives are mainly achieved through the elements of the four independent claims. Further advantageous forms of execution are also derived from the dependent claims and the description.

In particular, the objectives of the present invention are a turning device for turning around a turning axis of a reversible watch, wherein the turning device comprises a drive unit comprising a drive unit which is rotationally fixed to the housing of the watch. An internally toothed housing gear, wherein the housing gear wheel is aligned coaxially to the axis of rotation, and a rotary bodies rotatable coaxially with the housing gearwheel, wherein the body of rotation has a toothed drive means that engages with the housing gear wheel, whereby by rotation of the body of rotation with the gearwheel in engagement with the housing gearwheel toothed drive means a turning of the housing around the reversal axis can be effected.

Thanks to an inventive turning device, the turning over the housing by simply rotating the rotation body can be driven.

In a first preferred version of the turning device of the invention, the toothed drive means is a outside the body of rotation drive rack. Since the rack can be driven either within or outside the body of rotation, it is possible to drive the housing only with one impulse in rotation and provide that after this impulse the housing can rotate freely. The user can thus be repeating impulses drive the housing in rotation again and again. The Turning the clock over thus becomes a playful event for the user.

In another preferred version of the turning device the present invention, the rack is spring-loaded in the body of rotation stored. This means that after an impulse the rack automatically returns to the Inside the body of rotation back. In another preferred version of the reversal device of the present invention, the reversal axis is the longitudinal axis of the crown shaft of the reversible watch. This allows the watch to be turned by the longitudinal axis of the crown shaft must be reversed.

In another preferred version of the inverting device of the present invention, comprises the crown shaft of watch a crown drive wheel by means of which the rack can be moved outside the body of rotation is drivable. This allows the clock to be turned over by means of rotation of the crown shaft. Advantageous is the crown shaft movable along its longitudinal axis. This allows the crown drive wheel meshing with the rack of the rotation body and separated from it again after turning it over.

In yet another preferred version of the turning device of the present invention, comprising the an inverting device comprising a locking unit, wherein the locking unit comprises a locking ring through which a detachable connection between the housing and a non-rotating frame of the watch can be created. With the locking unit is guaranteed, that the housing is lockable against a fixed frame of the watch and cannot simply turn freely. Thus, the housing remains in a certain position until the

turning device is driven. After the reversal of the watch, the housing is locked again by means of a locking unit.

In another preferred version of the device for turning the present invention, comprising the Locking unit a coaxially to the axis of rotation rotatable locking disc, whereby by a rotation of the locking disc, the locking ring is deformable in such a way that the connection between the housing and the non-rotating frame. This allows loosening the connection between the housing and the frame, which creates a reversing of the clock possibility. When the locking disc is turned back the locking ring takes on a shape that allows it to lock the housing again.

In another preferred version of the turning device of the present invention, the locking disc spring-mounted. This causes the locking disc to return to its original position back, after which it is necessary to move the connection between the housing and the frame has been turned.

In yet another preferred version of the turning device of the present invention, is the locking disk can be rotated by the crown shaft of the watch. This not only allows the drive unit, but also the locking unit of the turning device can be driven with the crown shaft.

In yet another preferred version of the turning device of the present invention, comprising the turning device a coupling unit for the coupling of the drive unit with the locking unit, wherein the coupling unit is configured in such a way, that the gear rack of the drive unit engages with the housing gear only when the locking disk is moved by an angle greater than 10°, advantageously greater than 20°, preferably greater than 30°, around axis is rotated. This ensures that first the connection between housing and frame is released before the rotation impulse can be given to the housing.

In another preferred version of the device of the present invention, comprises such means as for example of a microgenerator, with which the rotational energy of rotating body and/or the housing can be converted into electrical energy is. This allows the angular momentum or the moment of inertia of body of rotation and/or the housing can be used to create or charge several batteries from one or more plants. Through the movement between rotating body and/or housing relative to the frame the rotation can be transferred to a micro generator via the reversal axis which ensures the charging of the batteries. The objectives of the present invention are also achieved by a setting device for setting a reversible watch comprising a first dial and a second dial. The first dial and the second dial are individually adjustable, whereby the setting mechanism a crown shaft and an setting mechanism rotationally fixed to the crown shaft connected face gear, wherein the setting mechanism comprises a first changeover unit, which is connected to the gear train of the hand play of the first dial and by means of which the first dial can be adjustable, and a second changeover unit, which is connected to the gear train of the play of the hands of the second dial is at least engageable, and by means of which the second dial is adjustable,

whereby the first changeover unit and the second changeover unit vertically opposite the ıongitudinal axis of the crown shaft at least partially translatable where, depending on the orientation of the setting mechanism in reference to gravity either the first changeover unit or the second the crown wheel must be engaged with the crown wheel. Thanks to the inventive adjustment device, the crown wave with the first number ball or with the second dial due to the alignment of the setting mechanism in relation to gravity in engagement brought. In contrast to the adjustment device, which needs to be the crown shaft is not displaced by any of the devices known to technology. With of the setting device according to the invention is achieved by turning the clock the crown wave with the dial, which is on top the dial that the user is looking at is coupled. This means that the dial currently facing the user can be adjusted. To set the other dial, the watch only needs to be turned over. In a first preferred version of the setting device of the invention, the crown shaft is movable. This allows the crown shaft for operating other elements, for example a calendars, a clock are needed.

In another preferred version of the setting device of the invention, the setting mechanism comprises a crown shaft connected to the crown shaft non-rotating mainspring barrel wheel, which is connected to the main reversible watch can be engaged. This allows the crown shaft to winding of the mainspring barrel of the watch, which makes it possible to use the inventive setting device in hand-wound watches. Due to a possible additional use of the torque for manual winding can be used to turn the watch in parallel, which is in accordance with winding the mainspring barrel provides an additional playful aspect and the manual transfer of energy is additionally illustrated.

The objectives of the present invention are also achieved by a movement comprising a setting device according to the invention and by a reversible watch incorporating a setting device according to the invention and/or an invention-related turning device.

In a preferred version of the reversible watch of the 30 present invention, the two dials of two separate movements driven.

Further details of the invention are given in the following description of the preferred embodiments of the invention, which are shown in the enclosed drawings. From the description the further advantages of the present invention can also be seen as well as suggestions and proposals as to how the subject matter of the invention can be of the claim could be modified or even further developed.

Brief description of the drawings

Figure 1 shows a side view of an invention Setting device according to a first preferred design;

Figure 2 shows a perspective view of an inventive step
Setting device according to the first preferred design;

Figure 3 shows a sectional view of a reversible watch according to a preferred form of execution;

Figure 4 shows a side section view of the drive unit of a turning device according to a preferred design;

Figure 5 shows a side view of the locking unit of the
Turning device according to the preferred design;

Figure 6 shows a perspective view of a coupling unit of
Turning device according to the preferred design;

Figure 7 shows a top view of an invention
setting mechanism according to a second preferred design, whereby the setting mechanism is in an idle position;

Figure 8 shows a top view of an invention setting mechanism according to the second preferred design, where the setting device is located in a position suitable for setting a calendar the intended position;

Figure 9 shows a top view of an invention
setting mechanism according to the second preferred design, where the setting device is located in a position suitable for setting the dial the intended position;

Figure 10 shows a side view of a setting mechanism according to the second preferred design, where the setting mechanism is in an idle position; and

Figure 11 shows a side view of an invention setting mechanism according to the second preferred design, where 10 the setting device is located in a position suitable for setting the dial the intended position.

Preferred embodiments of the invention

Figure 1 shows a side view of an adjuster 100 for a reversible watch according to a first preferred version of the first aspect of the present invention. The setting mechanism 100 comprises a first movement shaft 101 and a second movement shaft 102. The first Movement shaft 101 is equipped in a way known to the specialist with a first gear train of a first movement (not shown here). The second movement shaft 102 with a second gear train of a second movement (not shown here). The first movement shaft 101 and the second movement shaft 102 are connected to the corresponding first and second movements are connected in such a way that when the first movement is turned movement shaft 101 a first dial 3a (not shown here) of the first movement can be set and when the second movement shaft 102 a second dial 3b (not shown here) of the second clockwork can be set.

As can be seen in figure 1, the first
Movement shaft 101 with a first movement shaft wheel 103 and the second

Movement shaft 102 connected to a second movement shaft wheel 104. The first and second movement shaft gears 103,104 are advantageously toothed and can be adjusted by means of a first dial 105, respectively second adjusting wheel 106, can be driven into rotation independently of each other.

The setting device 100 also includes double angular gear 107 comprising a first bevel gear 108 and a second bevel gear 109, which is driven by a crown wheel 110 of crown shaft 112 in rotation drives. In this design, the first bevel gear 108 and the second bevel gear 109 always meshes with crown wheel 110. consequently, rotation of the crown shaft 112 and correspondingly of the crown drive gear 111 always to a rotation of the first bevel gear 108 and the second bevel gear 109. The rotation of the first bevel gear 108 drives a first bevel gear shaft 113 in rotation. Analogously, the rotation of the second bevel gear 109 to rotate a second bevel gear shaft 114.

On the first bevel gear shaft 113, respectively on the second bevel gear shaft 114, are translatory along the longitudinal axis of the bevel gear shafts a first gravitational wheel 115, respectively a second Gravitational wheel 116, sliding mounted. The first gravitational wheel 115 and the second gravitational wheel 116 have the lateral toothing 115a,respectively 116a. It is important to note that even if the first Gravitational wheel 115 and the second gravitational wheel 116 move along the respective bevel gear shafts, the gravitational wheels are moved
115 and 116 by means of a bevel gear shaft 113, respectively a bevel gear shaft 114, always driven in rotation.

Due to their own weights and gravity, the first gravitational wheel 115 and the second gravitational wheel 116, which are Figures 1 and 2 show layers when gravity is applied in the direction of the arrow G is aligned in figures 1 and 2. The lateral toothing 115a of the first gravitational wheel 115 with the lateral teeth 105a of the first setting wheel 105 on. In the position shown in Figure 1, a rotation now causes the crown shaft 112 via the double angular gear 107, the first gravitational wheel 115, the

first dial 105, the first movement shaft wheel 103 and finally the first movement shaft 101 a setting of the first Dial 3a of the first movement. As can be seen in figures 1 and 2 the second gravitational wheel 116 is located in a new position due to gravity position along the second bevel gear shaft 114 so that a rotation does not drive the second dial 106. In the position of the figures 1 and 2 a rotation of the crown shaft 112 thus causes only the first dial 3a and not the second dial 3b. This means that the current dial is always dial facing the user, which is normally on top, adjustable. To be able to set the other dial, the watch must be can only be turned over.

If the watch were to be turned so that the second movement would be located at the top of Figures 1 and 2, the lateral teeth would be 116a of the second gravitational wheel 116 with the lateral teeth 106a of the second engage setting wheel 106. In contrast, the first gravity wheel 115 along the first bevel gear shaft 113 so that the side tooth 115a no longer matches side tooth 105 of the first the setting wheel is engaged. In this position a rotation of the crown shaft 112 the setting of only the second dial of the second movement and not the first dial of the first movement.

As can be understood from the description of figures 1 and 2, the adjustment device comprises a first adjustment unit 100a comprising the first movement shaft wheel 103, the first setting wheel 105, the first gravitational wheel 115 and the first bevel gear 108, as well as a second Changeover unit 100b, comprising the second movement shaft wheel 104, the second setting wheel 106, the second gravity wheel 116 and the second bevel gear 109. Depending on the alignment of the setting mechanism 100 in relation to the gravity, either the first changeover unit 100a or the second changeover unit 100b in engagement with crown wheel 110 of crown shaft 112 brought. Thus the user can always see the dial, which is currently "above", without the crown shaft 112 being in a certain position. position must be moved.

It is important to note that in the context of the present invention an setting mechanism 100 can be provided, in which the Crown gear 110 only after shifting the crown shaft 112 with the first and second bevel gears 107, 108 are engaged. This allows the crown wheel 110 can be brought into a position in which a rotation of the crown shaft 112 does not cause adjustment of the first or second dials. It could provide that in such a position a rotation of the crown shaft the rotation of a mainspring barrel and thus the winding of a hand winding watch would cause.

As explained above, the present invention does not only concern an setting device 100 for a reversible watch, but also a turning device 200.

Figure 3 shows a schematic sectional view of a reversible Clock 1 with fixed frame 2 and rotating case 3, whereby the case 3 which includes two dials 3a and 3b. In this version the housing 3 can be rotated around the longitudinal axis of the crown shaft 112 attached. The clock 1 includes a turning device 200 for the Turning over the housing according to a preferred design of this aspect of the present invention. The turning device 200 comprises in turn a drive unit 300 and a locking unit 400. drive unit 300, the housing 3 can be rotated in relation to the frame 2 driven around the

longitudinal axis of crown shaft 112. The Locking unit 400 in turn ensures that the housing 3 can be locked against frame 2, if it is not straight is turned over.

Even if not shown in figure 3, it is obvious that one bearing 2 opposite drive and locking units in the non-rotating frame can be provided to ensure safe rotation of the housing 3 to guarantee.

Figure 4 shows a side section view of the drive unit 300, which has an internally toothed gear system firmly connected to the housing 3. housing gearwheel 301. Inside the housing gearwheel 301 is a body of rotation 302, which has a first rack 303 and a second gear rack 304. The first and second racks 303,304 are mounted in the body of rotation 302 so that they can be moved in translation and can thus be driven outside the body of rotation the first Rack spring 303a and the second rack spring 304a act against a translational displacement of the first and second gear rack 303,304 and ensure that after a shift of the racks, these return to their original positions. In figure 4 also the crown drive wheel 111 of crown shaft 112 (see Figs. 1 and 2), which is dimensioned to fit into the rotation body 302 and between the racks 303,304 are inserted and engaged with them can. With a rotation of the crown shaft 112 and consequently the crown drive gear 111, the first and second racks 303,304 translationally displaced from the rotation body 302 until the Rack nose 303b, or 304b, with the housing gear 301 are in intervention. A further rotation of the crown shaft 112, or of the crown drive wheel 111, thus causes a rotation of the housing 3.

With the drive unit 300 it is therefore possible to combine the housing 3 with a rotational impulse to the crown shaft 112. As soon as the crown shaft 112 is no longer actively rotated, the first and second second gear rack 303, 304 back into the rotation body 302 and stand no longer engages with the housing gearwheel 301. After an initial rotation impulse thus rotates the housing 3 around the longitudinal axis of crown shaft 112 further free. Thus the drive unit 300 releases the turning over the case 3 gives the user a certain playful aspect. For example, the housing 3 can be equipped with successive pulses be driven in rotation again and again. The turning over is used for the user to a playful event.

It is important to note that in the context of the present invention a further variant without spring is also possible. Here the rack or the toothed drive means after the rotation impulse by the housing is automatically turned back into the central position within the body of rotation. With the design of a toothed rack or a toothed driving means with a tooth or tip (as in figure 4) could also be mounted on a spring for centering can be waived. As soon as the rack stops because the impulse initiated by the crown shaft stops, the still rotating housing can push the rack back in from behind.

So that after half a turn the housing 3 is locked against frame 2, the clock 1 and specifically the frame 2 have the Turning device 200 via a locking unit 400.

Figure 5 shows a side section view of the Locking Unit 400, which has a locking disk 401, which rotates around the longitudinal axis of the crown shaft 112 can be driven, and an elastic locking ring 402, which is dimensioned in such a way that it can be relaxed state, as shown in figure 3, partly in a groove of the housing 3 and partly located in a groove of frame 2. In the when in the relaxed state, the locking ring 402 thus blocks rotation of the Housing 3 opposite the non-rotating frame 2.

When the locking disk 401 is turned, the locking ring 402 thanks to the shape of the locking disc 401 in such a way deforms so that it fits completely into the groove of frame 2. In this When the locking ring 402 is clamped, the housing 3 can be example by means of drive unit 300, then turned over.

So that the locking unit 400 and drive unit 300 can be the bypass device 200 is configured in this way, that first only one turn of the locking disk 401, which in turn deformation of the elastic locking ring 402 is caused by before the crown shaft and with it the crown drive wheel 111 can start rotating. is driven, which causes the drive unit 300 to be triggered. The delayed drive of the drive unit 300 can be controlled by the coupling unit 201, which is shown in Figure 6 as an example. Here the coupling unit 201 via a coupling rod 212, which is attached to the crown shaft 112 is mounted rotating. The coupling unit 201 also includes the bolt 213 and the spring 214. Thanks to the coupling unit 201, first a rotation of the coupling rod 212 and a corresponding rotation of the 401, which in turn causes the deformation of the elastic locking ring 402 before the crown shaft 112 and the crown drive wheel 111 is driven in rotation, which allows the drive unit 300.

As soon as the crown shaft 112 is no longer rotated, the Locking disk 401, thanks to the locking disk springs 403, and the restore the locking ring 402 to its original positions. Thus the Locking ring 402 into the groove of housing 3 after half a turn of the housing 3 again, which locks the housing 3 again.

It should be noted that other forms of execution of locking unit would be possible within the scope of the present invention. In particular, a locking unit would be possible, which is not changing the radius of the locking disc a deformation of the locking ring, but parallel to the crown axis a or several bolts are pressed in or released. This could for example be caused by the changing thickness of the locking disc can be achieved. When rotating the crown axis and the locking disc then move the bolts parallel to the crown axis and the housing can be rotated. Spring-loaded Funds could also be earmarked here for a return to the starting position become.

It is important to note that even if the displayed design of the turning device 200 is designed so that the Let the housing 3 rotate in both directions relative to the frame 2, forms of execution are conceivable within the scope of the present invention, which would allow the housing 3 to be turned in one direction only.

Figures 7 to 11 show a setting device 500 for a reversible watch according to a second preferred design. The adjustment device 500 is, in contrast to the adjustment device 100 according to first preferred design, designed to be preferably works with one watch, which has a single movement but two dials, which can be adjusted in different ways.

As shown in figures 7 to 11, the setting device 500 comprises a crown shaft 501 with crown wheel 502, a first lever unit 503a, a second lever unit 504b, a first changeover unit 504a, a second change-over unit 504b and a change-over mass 505. As in the figures 10 and 11 are indicated by the arrow H, the switching mass 505, especially due to gravity, perpendicular to the longitudinal axis of the move crown shaft 501 translatorily, which also results in a translatory Movement of the first switching unit 504a and the second switching unit 504b leads.

In the figures 7 to 11 there is also a gear train on pointer play 506 which is provided in standard movements and is not shown in the following is described in more detail. An expert will easily understand how the Setting mechanism 500 can be adapted to standard movements. Also if only one gear train 506 is shown in figures 7 to 11, it is understood of course that a second set of gears is to be provided in order to move the second dial 3b.

Figures 7 to 9 show the top view of the setting mechanism 500 in three different positions. In the position of figure 7 the crown shaft 501 and there is no connection between the first changeover unit 504a and the gear train 506. As seen from the side view in Figure 10, the Setting Tool 500 also has a elevator wheel 507, which is designed to be connected to the Expertly known manual winding mechanism of a mechanical watch can work together. In the position shown in Figs. 7 and 10, the elevator wheel 507 engages with the manual winding mechanism 4 of watch 1. In this position, it is possible to turn the crown shaft 501 to adjust the watch 30 without adjusting the dials 3a or 3b. In the position shown in Figure 8, the crown shaft 501 was positioned opposite position of figure 7 to a first setting position.

In this position, the 506 gear train is in engagement with a gear that has been known calendar adjustment device (not shown here). About thanks to the first lever unit 503a, the first change-over unit 504a is shifted in such a way that one rotation of the crown shaft 501 causes one rotation of the gear train 506 and thus causes the date to be set. If the crown shaft 501 is moved to a second setting position, as shown in figure 9, the first lever unit 503a is used to move the first changeover unit 504a and the gear train 506 towards the center of the movement moved. In this position a rotation of the crown shaft 501 the first switching unit 504a, which makes it easier to set the dial 3a, which is "above" in figures 10 and 11.

As shown in figures 10 and 11, the setting device 500 via the two changeover units 504a and 504b and two lever units 503a and 503b, which are at least partly located within the 505 are provided. As shown in figures 10 and 11 the setting mechanism 500 is designed in such a way that due to gravity the Switching mass 505 and with it the first and second switching units 504a, 504b and the first and second lever units

503a,503b a certain Assume position opposite the longitudinal axis of the crown shaft 501, in which controls the crown wheel 502 with only one changeover unit (the first changeover unit 504a in Figs. 10 and 11) is engaged. In the position of figure 11, a rotation of the crown shaft 501 causes the adjustment 25 of the first dial 3a but not of the second dial 3b. If now the clock upside down so that the second dial 3b is "up", the switching mass 505 with respect to the longitudinal axis of the crown shaft 501 in this way, that the crown wheel 502 is in engagement with the second changeover unit 504b. In this position, the crown shaft 501 can be rotated to position the second dial 3b can be set.

Finally, it should be pointed out again, that the exemplary described design forms only realization possibilities of the ideas according to the invention and in no way as limiting should be viewed. The professional will understand that there are other implementations of the invention and other elements are possible without that the essential features of the invention are neglected. In particular, a professional will naturally understand that the different units and devices only schematically and by no means are described restrictively. An expert is of course able to units and devices to familiar movements. It is important to note that even if the different units and fixtures 100, 200, 300, 400 and 500 as, at least partially, cooperatively described, is possible, only one of these units or devices into a known movement to be applied.

In addition, the turning device of the present invention may also be designed so that the housing can be of the impulse cannot rotate freely, but undergoes a controlled rotation, so that no too high rotation speed is reached. This can be used for Example by a translation, advantageously between crown and body of rotation, can be achieved.

Claims

1. Turning device (200) for reversing by one
An inverting axis of an inverting watch (1), wherein the inverting device (200) comprises a drive unit (300),

characterized in that

the drive unit (300) is rotationally fixed to the housing of the watch internally toothed housing gear (301), wherein the housing gear (301) is aligned coaxially with the axis of rotation, and a rotation body (302) rotatable coaxially to the housing gear wheel (301), wherein the body of rotation (302) is driven by a toothed drive means (303,304), which can be brought into engagement with the housing gear (301), wherein, by a rotation of the body of rotation (302) with the body of rotation engaged with the toothed drive means standing in front of the housing gear wheel (301) the reversal of the housing around the reversal axis.

2. Turning device (200) according to claim 1, whereby the toothed drive means a drive unit which can be driven outside the body of rotation gear rack (303,304).

3. Turning device (200) according to claim 2, whereby the rack (303,304) is spring-mounted in the rotation body (302).

4. Turning device (200) according to one of claims 1 to 3, where the axis of reversion is the longitudinal axis of the crown wave of the reversible watch (1).

5. Turning device (200) according to claim 4, whereby the crown shaft of the watch includes a crown drive wheel by means of which the gear rack (303, 304) can be driven outside the rotation body (302).

6. Turning device (200) according to one of claims 1 to 5, comprising a locking unit (400), wherein the locking unit (400) comprises an elastic locking ring (402) through which a releasable Connection between the housing (3) and one of the housing (3) surrounding non-rotating frame (2) of the watch (1).

7. Turning device (200) according to claim 6, comprising alocking disc (410) rotatable coaxially to the axis of rotation, wherein by turning the locking disk (410), the elastic
locking ring (402) is deformable such that the connection between the housing (3) and the non-rotating frame (2).

8. Turning device (200) according to claim 7, whereby the Locking disk (410) is spring-mounted.

9. Turning device (200) according to one of claims 6 or 7,
wherein the locking disc (410) is rotatable by means of the crown shaft of the watch (1).

10. Turning device (200) according to one of claims 6 to 9,comprising a coupling unit (201) for coupling the drive unit (300) with the locking unit (400), wherein the coupling unit (201) is arranged such that is configured so that the rack (303, 304) of the drive unit (300) is in engagement with the housing gear wheel (301) only when the Locking disk (402) by an angle greater than 10°, advantageously greater than 20°, preferably greater than 30°, around the axis of rotation is turned.

11. Turning device (200) according to one of the claims 1 to 10, comprising means, such as a microgenerator, by which the rotational energy of the rotating body and/or the housing into electrical energy is convertible.

12. setting mechanism (100, 500) for adjusting a reversible watch, which has a first dial (3a) and a second dial (3b), the first dial (3a) and the second dial (3b) comprising individually adjustable, wherein the setting mechanism (100, 500) comprises a crown shaft (112, 501) and an setting mechanism (100, 500) which is rotationally fixed to the crown shaft (112, 501). connected crown wheel (110, 502),

characterized in that

the adjustment device (100, 500) comprises a first changeover unit (100a, 504a) which can at least be brought into engagement with the gear train of the backlash of the hands of the first dial (3a) and by means of which the first dial (3a) can be adjusted, and a second changeover unit (100b, 504b) which can at least be brought into engagement with the gear train of the backlash of the hands of the second dial (3b) and by means of which the first dial (3a) can be adjusted, and a second changeover unit (100b, 504b) which can at least be brought into engagement with the gear train of the backlash of the hands of the second dial (3b) and by means of which the second dial (3b) is adjustable,

wherein the first changeover unit (100a, 504a) and the second Changeover unit (100b, 504b) vertical to the longitudinal axis of the Crown shaft (112, 501) can be at least partially translated, where, depending on the orientation of the setting mechanism (100, 500) in 15 Reference to gravity either the first changeover unit (100a, 504a) or the second changeover unit (100b, 504b) engages with the crown wheel (110, 502) is brought.

13. setting mechanism (100, 500) according to claim 12, whereby the crown shaft (112, 501) can be moved parallel to its longitudinal axis.

14. setting mechanism (500) according to claim 13, comprising a
the mainspring barrel wheel which is non-rotatably connected to the crown shaft (501) and which is
The spring barrel of the reversible watch (1) can be engaged.

15. movement comprising a setting device (100,500) according to one of the claims 12 to 14.

16. reversible watch comprising a setting device (100,500) according to one of claims 12 to 14 and/or a turning device according to one of the claims 1 to 11.

17. reversible watch according to claim 16 comprising twoDials that are individually adjustable.

18. reversible watch according to claim 17, whereby the twodials are driven by two separate movements.

Summary

This one concerns a turning device (200) for the reversing about a reversal axis of a reversible watch (1), wherein the Turning device (200) comprises a drive unit (300), wherein the drive unit (300) a drive unit (300) connected to the housing of the watch internally toothed housing gear (301), wherein the housing gear (301) coaxially to the axis of rotation, and a coaxial housing gear (301) comprises a rotatable body of rotation (302), wherein the body of rotation (302) has a toothed drive means (303,304), which can be brought into engagement with the housing gear wheel (301), and wherein by means of a rotation of the body of rotation (302) with the rotation body in engagement with the (301) of the housing gear wheel (301), the toothed drive means housing around the reversal axis. The present invention also concerns a setting device for a reversible watch, which does not shifting of the crown shaft is required and with which the currently facing dial can be adjusted. The present invention concerns also a movement and a clock, which has an inventive adjustment device and/or an inverting device according to the invention include.

(Fig. 3)