United States Patent [19]

Aeschmann

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[45] **June 24, 1975**

[54] **WATCH STEM INTERMEDIATE SETTING POSITION WITH FUNCTIONS DETERMINED BY WHETHER INTERMEDIATE POSITION WAS ACHIEVED BY PUSHING STEM IN OR PULLING STEM OUT**

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[73] Assignee: **Ebauches S.A.**, Switzerland

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[21] Appl. No.: **492,855**

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July 9, 1974	Switzerland	9409/74
July 9, 1974	Switzerland	9410/74

[52] **U.S. Cl.** **58/57.5**; 58/58; 58/68

[51] **Int. Cl. G04b 23/12**; G04b 19/24; G04b 27/04

[58] **Field of Search** 58/57.5, 58, 68, 85.5

[56] **References Cited**

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Primary Examiner—George H. Miller, Jr.
Attorney, Agent, or Firm—Robert E. Burns; Emmanuel J. Lobato; Bruce L. Adams

[57] **ABSTRACT**

The winding stem of a timepiece is movable axially between a pushed-in position, an intermediate position and a pulled-out position. The timepiece has two auxiliary indicating members, for example a date ring and a day-star wheel, which are operatively connected with the stem for actuation thereof by rotation of the stem in the intermediate position. When the stem is pulled out from the pushed-in position to the intermediate position, it is connected to the date ring which can be set in both directions, and when the stem is pushed in from the pulled-out position to the intermediate position it is connected to the day-star wheel which can also be set in both directions.

13 Claims, 10 Drawing Figures

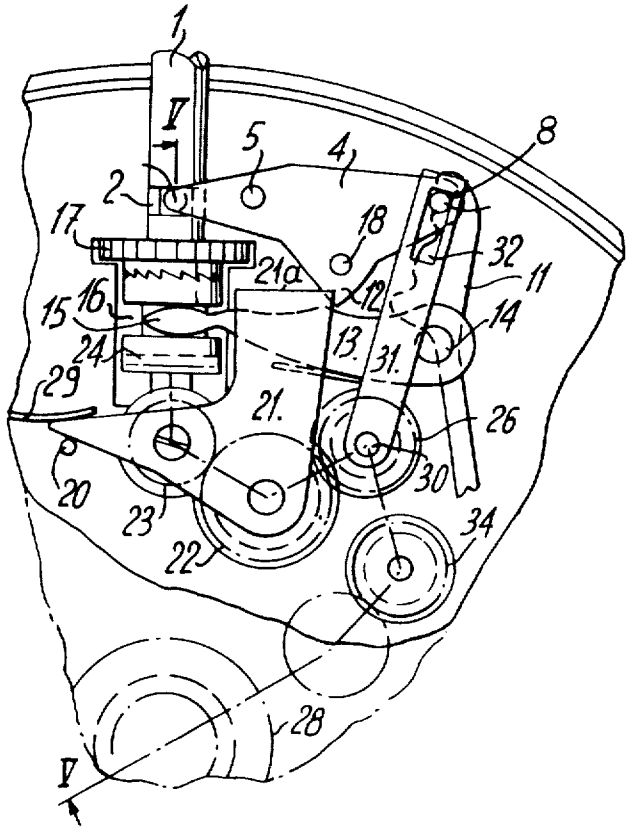

FIG. 2

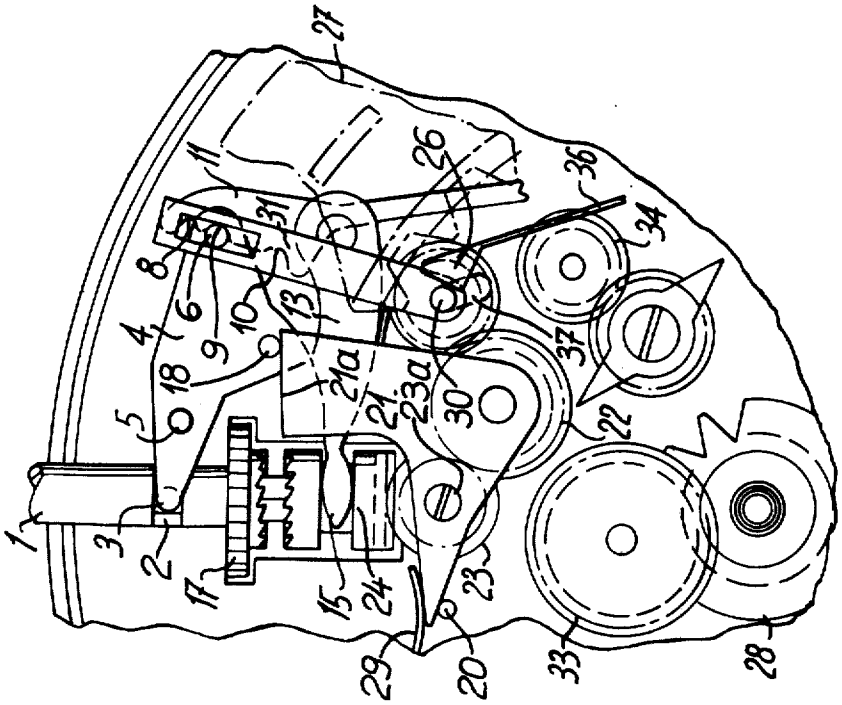
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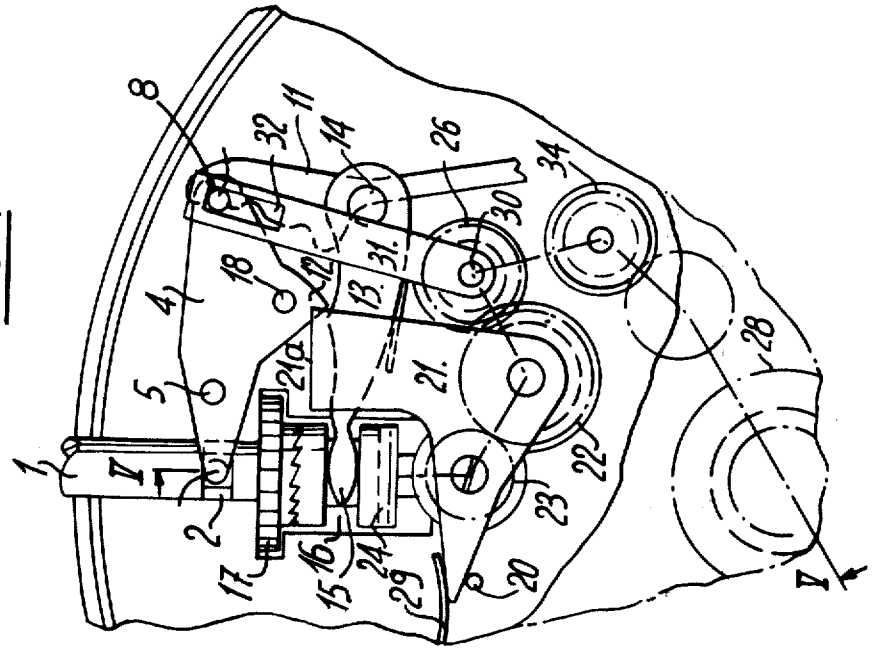
FIG. 1


8
32
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14
26
34
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18
31
12
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4
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21
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22
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29
20
I

FIG. 4

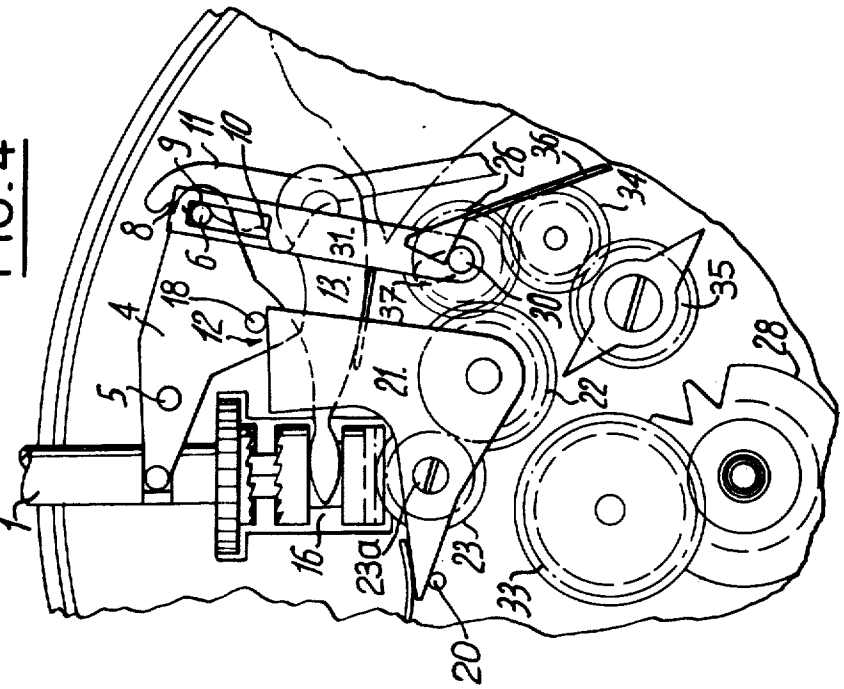
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FIG. 3

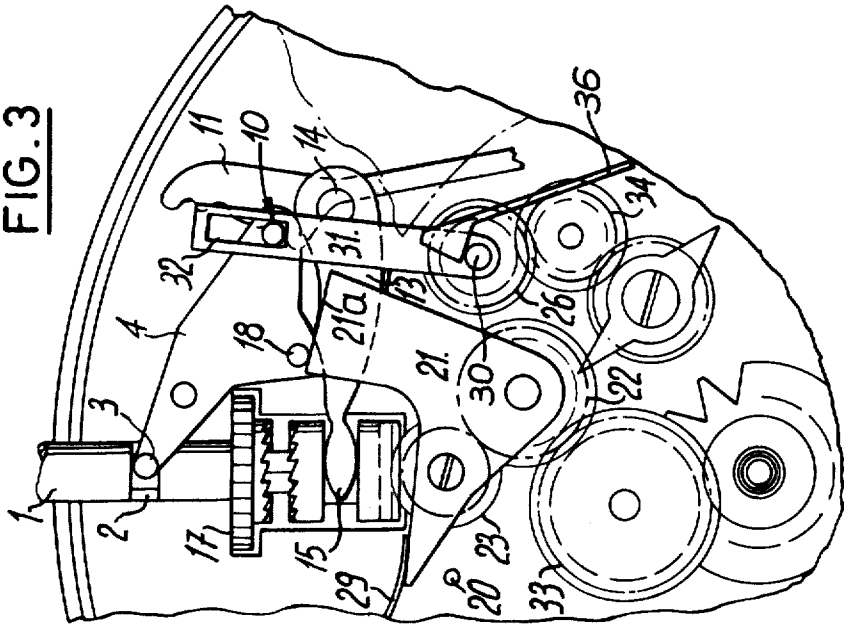
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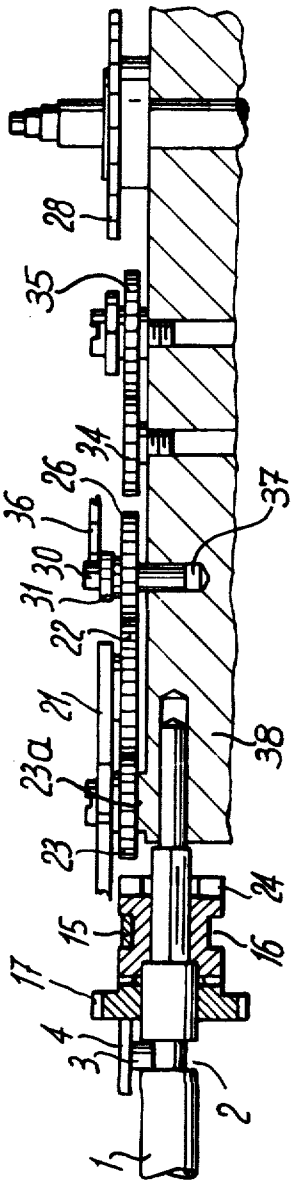
FIG. 5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35
34
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21
23a
38
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1

FIG. 6

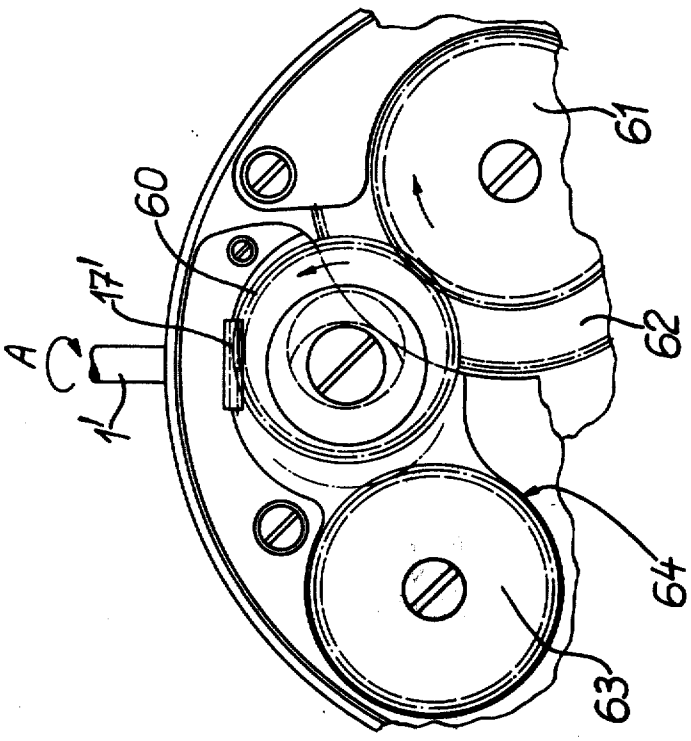
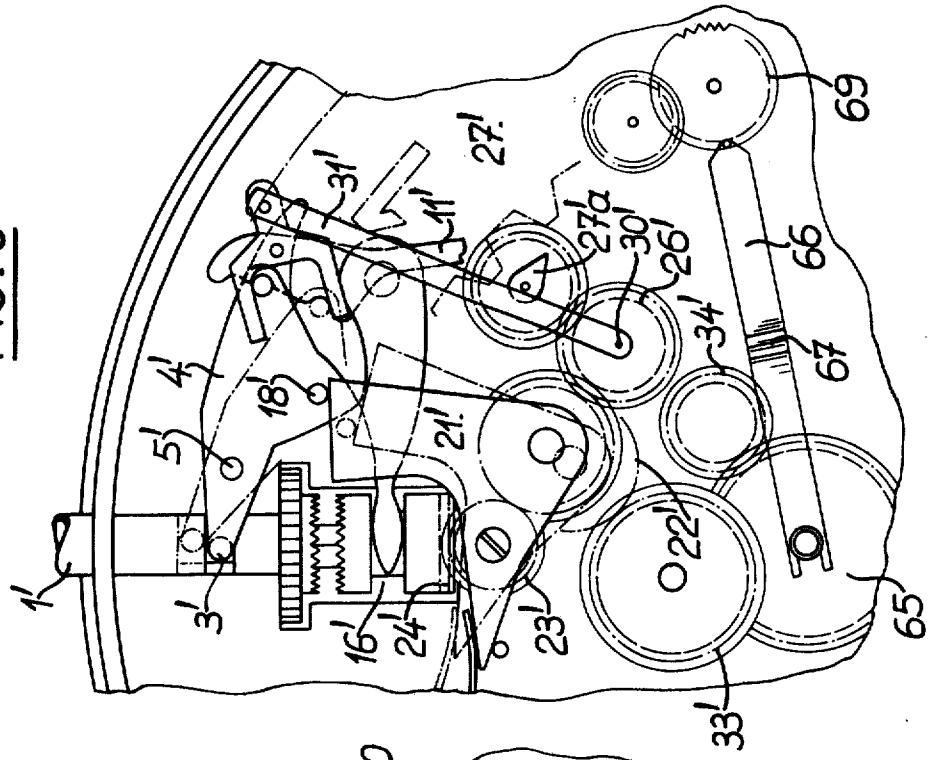

61
60
17'
62
A
1
64
63

FIG. 8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34'
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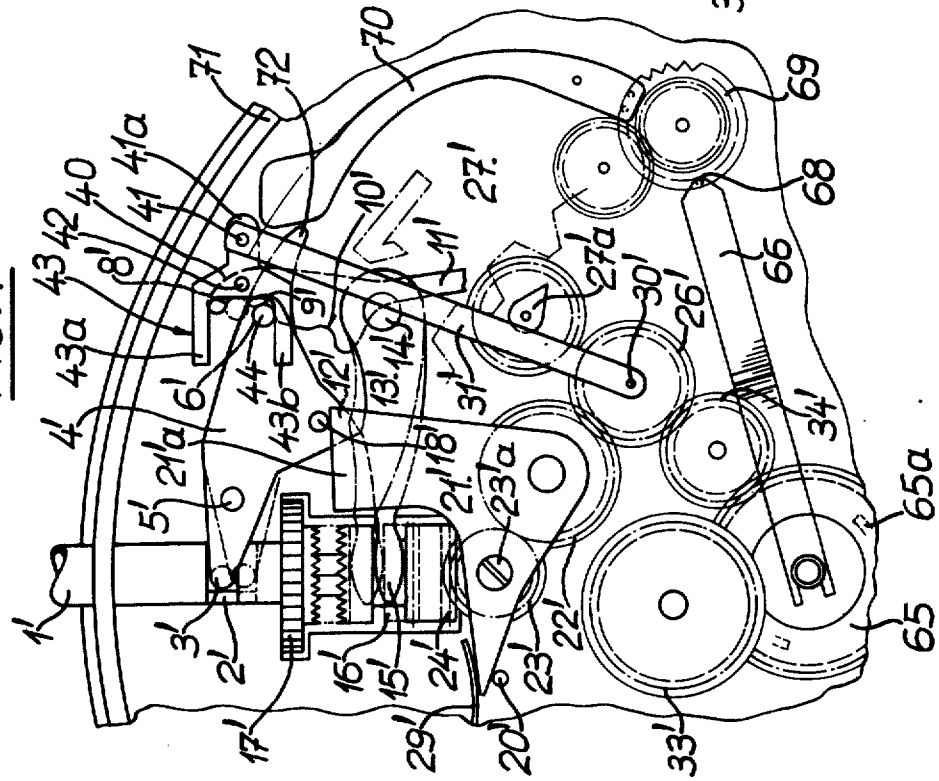
30'
27'a
27'
31'
11'
69

FIG. 7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27'a
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33'
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43b
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65a
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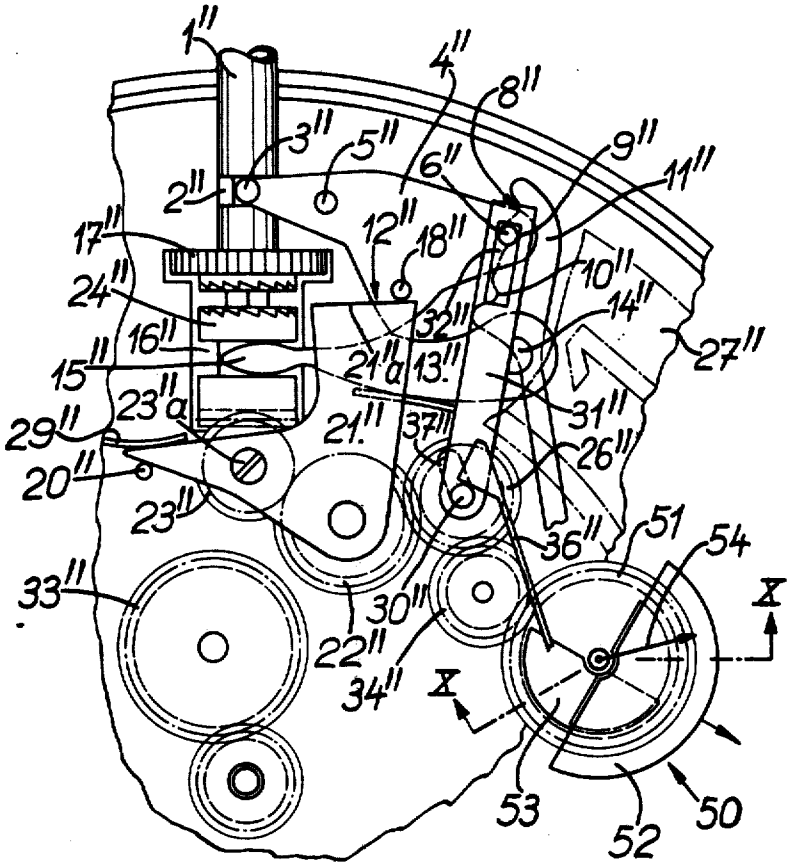
71
72

FIG.9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21''a
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23''a
31''
29''
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30''
X
22''
34''
X
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52
50

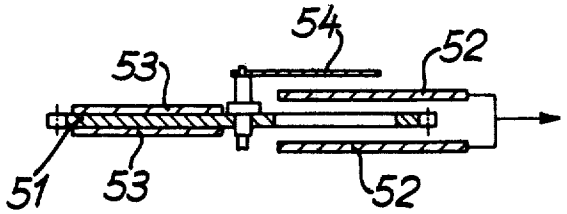
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FIG.10

WATCH STEM INTERMEDIATE SETTING POSITION WITH FUNCTIONS DETERMINED BY WHETHER INTERMEDIATE POSITION WAS ACHIEVED BY PUSHING STEM IN OR PULLING STEM OUT

The invention relates to timepieces of the type including a device for setting the indications of a plurality of indicating members, in particular supplementary indicating members such as a date ring, a day-star wheel, an hour indicator the angular position of which may be changed by one hour upon passing from one time zone to the next, and an alarm-setting indicator.

Numerous timepieces including devices of this type are known, generally including an actuating stem, such as the hour-setting and winding stem, which can be placed in three discrete axial positions one of which, usually the intermediate position, is reserved for the setting of supplementary indicating member. The setting of two indicating members in the intermediate position has already been proposed by arranging for the stem to be operatively connected with a first member when the stem is turned is one direction and with a second member when the stem is turned in the other direction. This arrangement however has the drawbacks that operation is difficult as the users tend to frequently turn the stem in the wrong direction, and the correction is unidirectional so that in the event of such an error the user must then continue to advance the indicating member right around through all of the indications in order to place the member back in its initial correct position.

It has also been proposed to provide a device in which the actuating stem has four discrete axial positions, one intermediate position being reserved for setting a first indicating member and the second intermediate position for setting another member. These devices have the drawback of requiring a large axial displacement of the stem which, for waterproof watches, necessitates the use of long winding crowns which are generally inaesthetic and for which it is difficult to ensure water-tightness. Moreover, in view of the large displacement of the stem, operation of the associated pull-out piece or setting lever usually involves difficulties.

An object of the invention is to provide a timepiece with an indicator-setting device which avoids the stated drawbacks, and which more particularly enables the selective control of a bi-directional setting of two indicating members in a single intermediate axial position of the stem.

The invention concerns a timepiece including a plurality of indicating members and a device for setting the indications of said members, said device comprising a manually operable rotatable and axially displaceable actuating stem, and means for defining three discrete axial positions of the stem namely a pushed-in position, an intermediate position in which the stem is operatively connected with at least one indicating member for actuation thereof by rotation of the stem, and a pulled-out position.

In such a timepiece, the invention provides the improvement comprising means for selectively operatively connecting said stem in said intermediate position with a first indicating member in response to pulling out of the stem from the pushed-in position to the intermediate position and with a second indicating member in response to pushing in of the stem from the pulled-out position to the intermediate position.

Three embodiments of the invention will now be described, by way of example, with reference to the accompanying schematic drawings, in which:

FIG. 1 is a partial plan view of a first embodiment of timepiece with an actuating stem in a pushed-in position;

FIG. 2 is a partial plan view of the first embodiment with the stem in an intermediate position obtained by pulling it out from the position of FIG. 1;

FIG. 3 is a partial plan view of the first embodiment with the stem in a pulled-out time-setting position;

FIG. 4 is a partial plan view of the first embodiment with the stem in the intermediate position obtained by pushing it in from the position of FIG. 3;

FIG. 5 is a partial cross-section taken along line V—V of FIG. 1;

FIG. 6 is a partial rear plan view of a second embodiment of timepiece;

FIG. 7 is a partial front plan view of the second embodiment with the actuating stem in the intermediate position obtained by pulling it out from the pushed-in position which is indicated in dotted-dashed lines;

FIG. 8 is a similar view of the second embodiment but with the stem in the intermediate position obtained by pushing it in from the pulled-out position which is indicated in dotted-dashed lines;

FIG. 9 is a partial plan view of a third embodiment of timepiece with the actuating stem in the intermediate position obtained by pushing it in from the pulled-out position; and

FIG. 10 is a cross-section taken alone line X—X of FIG. 9.

For the sake of clarity in the drawings some parts and/or reference numerals not relevant to the position of the device shown in any particular figure have been omitted.

The timepiece partially shown in FIGS. 1 to 5 includes a correction or setting device comprising an actuating and winding stem 1 provided with an external manually actuable crown, not shown. Stem 1 is provided with a groove 2 slidably receiving a stud 3 of a setting lever 4, pivotally mounted about a pivot 5. The lever 4 carries a pin 6 which engages in any one of three recesses 8, 9, 10 (FIG. 2) in a check spring 11 to define three distinct angular positions of lever 4 corresponding to three discrete axial positions of stem 1, namely a pushed-in position (FIG. 1) when pin 6 is in recess 8, an intermediate position when pin 6 is in recess 9 (FIGS. 2 and 4) and a pulled-out position when pin 6 is in recess 10.

Lever 4 also has a heel 12 cooperating with a cam-profiled upper part of a lever 13 pivotally mounted at one end about a pivot 14 and having a free end 15 which engages in the groove 16 of a clutch pinion 24. This clutch pinion 24 is slidably keyed on stem 1 and, according to its axial position, engages either by means of a Breguet toothing with a winding pinion 17 freely rotatably mounted on stem 1 or, by means of a contrate toothing, with a pinion 23.

In the pushed-in position of stem 1 shown in FIG. 1, the Breguet toothing of clutch pinion 24 meshes with winding pinion 17. In the intermediate and pulled-out positions of stem 1, shown in FIGS. 2 and 4, and FIG. 3 respectively, the contrate toothing of clutch pinion 24 meshes with pinion 23. This pinion 23 is rotatably

mounted on a fixed arbor 23*a* screwed in the bottom plate 38 (FIG. 5) of the timepiece movement.

The setting lever 4 also controls the movement of another lever 21 pivotally mounted about arbor 23*a* and carrying a toothed wheel 22 which permanently meshes with pinion 23. This movement is produced by means of a pin 18 on the heel 12 of lever 4, this pin acting against a face 21*a* of lever 21 when the stem 1 is withdrawn to the pulled-out position, shown in FIG. 3, to bring the lever 21 to a position in which wheel 22 meshes with a wheel 33 in the dial train of the timepiece. The return movement of lever 21 is limited by an abutment 20 fixed on the bottom plate and against which the lever 21 is biased by a spring 29 in the pushed-in and intermediate positions of stem 1. In this rest position of lever 21, wheel 22 meshes on the one hand with pinion 23 and on the other hand with a correction wheel 26. This wheel 26 is mounted to be able to move along an arcuate path, centred about the location of the axis of wheel 22 when lever 21 is in its rest position, between a first position (FIG. 2) meshing with a date-ring 27 and a second position (FIG. 4) meshing with a gear train 34, 35 of a day-star 28.

To this end, wheel 26 is rotatably mounted on an arbor 30 fixed on a lower end of a rod 31 and guided in an arcuate slot 37 centred about the location of the axis of wheel 22 when the lever 21 is in the rest position. Movement of rod 31 is controlled by pin 6 of lever 4 which penetrates in an elongated opening 32 in the upper end of rod 31. A jumper spring 36 cooperates with the arbor 30 to hold the rod 31 in its upper or lower position.

In operation, in the pushed-in position of stem 1 shown in FIG. 1, the pin 6 of lever 4 is in contact with the upper end of opening 32, and the correction wheel 26 is in mesh with the date ring 27 (see FIG. 2). The clutch pinion 24 does not engage with pinion 23, but with winding pinion 17 so that when the stem 1 is turned in a given direction the mainspring of the timepiece is wound by the intermediary of pinion 17.

In the intermediate position (FIG. 2) of stem 1 obtained by pulling it out, the position of lever 21 has not changed but clutch pinion 24 has come to mesh with pinion 23 which, via wheel 22 and correction wheel 26, is operatively connected with the date ring 27 so that when stem 1 is turned, in either direction, the displayed date is modified. Although in the drawings, wheel 26 is shown as meshing with ring 27, any other suitable transmission means could be employed. In this intermediate position, the pin 6 has moved along opening 32 without moving rod 31.

In the pulled-out position of stem 1 shown in FIG. 3, the lever 21 driven by pin 18 of lever 4 pivots against the action of spring 29 to disengage wheel 22 from correction wheel 26 and bring it into mesh with dial-train wheel 33 so that stem 1 can be turned to set the time displayed.

During the movement to the pulled-out position, the pin 6 of lever 4 comes to contact the lower end of opening 32 and rod 31 is then moved downwardly (looking at the drawings) to move correction wheel 26 into mesh with wheel 34 driving wheel 35 which carries two diametrically opposed protruding arms for engaging with and setting the day-star 28, the arbor 30 of rod 31 being guided along arcuate slot 37 and rod 31 being held in this position by spring 36.

When stem 1 is pushed back into the intermediate position (FIG. 4), lever 21 moves back to its rest position against abutment 20, but wheel 26 remains in mesh with wheel 34 since the pin 6 moves along opening 32 until it comes to contact the upper end thereof, this involving only a slight pivotal movement of rod 31. As a result of this movement of lever 21, wheel 22 moves out of engagement with wheel 33 and comes to mesh with the correction wheel 26 which now meshes with wheel 34. In this position, by turning stem 1 in either direction, the arms of wheel 35 turn day-star 28 to modify the day displayed.

Upon pushing stem 1 back into its pushed-in position, rod 31 is driven by pin 6 to its upper position, as shown in FIG. 1, and the clutch pinion 24 comes to engage pinion 17. The mechanism is thus returned to its initial state ready for further manipulations.

This devices thus enables correction of the day and date indications in both directions, and is very easy to operate. Correction of the date is a relatively frequent operation, and this is achieved simply by pulling out the stem to the intermediate position and then turning it in the appropriate direction. To change the day display, the stem 1 is pulled fully out and then pushed back into the intermediate position and turned in the appropriate direction.

With reference to FIGS. 6 to 8, which represent a timepiece having an alarm mechanism and a day-indicator, the same or equivalent parts are denoted by the same reference numerals as in FIGS. 1 to 5, but with a prime designation.

FIG. 6 shows parts of the timepiece from the rear face, with actuating stem 1′ in the pushed-in position in which winding pinion 17′ is operatively connected for rotation with stem 1′.

When stem 1′ is turned in the clockwise direction, as indicated by arrow A, pinion 17′ turns wheel 60 which drives a ratchet 61 of a motor spring barrel 62 driving the going train in a conventional manner. When stem 1′ is turned in the counterclockwise direction, wheel 60 is shifted to the left, disengaging with ratchet 61 and coming into engagement with a ratchet 63 of an alarm-spring barrel 64.

In the pushed-in position of stem 1′ it is thus possible either to wind the motor spring or an alarm spring according to the direction of rotation of stem 1′. Such a winding mechanism is well known in the art, and does not form a part of the invention.

FIG. 7 shows part of the timepiece from the front face with the stem 1′ in the intermediate position obtained by pulling it out from the pushed-in or winding position of FIG. 6.

The setting device is controlled by a mechanism actuated by stem 1′. This stem 1′ is provided with a groove 2′ slidably receiving a stud 3′ of a setting lever 4′, pivotally mounted about a pivot 5′. As before, the lever 4′ carries a pin 6′ which engages in any one of three recesses 8′, 9′, 10′ in a check spring 11′ to define three distinct angular position of lever 4′ corresponding to the pushed-in, intermediate, and pulled-out positions of stem 1′.

Lever 4′ also has a heel 12′ cooperating with a cam-profiled upper part of a lever 13′ pivotally mounted at one end about a pivot 14′ and having a free end 15′ which engages in the groove 16′ of a clutch pinion 24′. This clutch pinion 24′ is slidably keyed on stem 1′ and, according to its axial position, engages either by means

of a Breguet toothing with winding pinion 17' or, by means of a contrate toothing, with a pinion 23'.

In the pushed-in position of stem 1' shown in FIG. 6, the Breguet toothing of clutch pinion 24' meshes with winding pinion 17', and either of the barrel springs may be rewound by ratchet 61 or 63 according to the direction of turning of stem 1.

In the intermediate position of stem 1', shown in FIG. 7, obtained by pulling it out from the pushed-in position, the contrate toothing of clutch pinion 24', under the action of lever 13', comes to mesh with pinion 23'. Pinion 24' remains in this same position in the fully pulled-out position of stem 1', indicated in dotted-dashed lines in FIG. 8, and in the intermediate position obtained by pushing it in from the pulled-out position, and shown in full lines in FIG. 8.

The setting lever 4' also controls the movement of a lever 21' pivotally mounted about arbor 23*a* and carrying a toothed wheel 22' which permanently meshes with pinion 23'. This movement is produced by means of a pin 18' on heel 12' of lever 4', this pin acting against a face 21'*a* of lever 21' when the stem 1' is withdrawn to the pulled-out position, as shown in dotted-dashed lines in FIG. 8, to bring the lever 21' to a position in which wheel 22' meshes with a wheel 33' in the dial train of the timepiece. The return movement of lever 21' is limited by an abutment 20' fixed on the bottom plate and against which the lever 21' is biased by a spring 29' in the pushed-in and intermediate positions of stem 1'. In the rest position of lever 21', wheel 22' meshes on the one hand with pinion 23' and on the other hand with a correction wheel 26'. This wheel 26' is mounted to be able to move along an arcuate path, centred about the location of the axis of wheel 22' when lever 21' is in its rest position, between a position (FIG. 7) meshing with a positionally-fixed toothed wheel 34' and a position (FIG. 8) meshing with a date-ring 27'.

To this end, wheel 26' is rotatably mounted on an arbor 30' fixed on a lower end of a rod 31'. This rod 31' is pivotally mounted at its upper end about a pivot 41 mounted on an arm 41*a* of a fork 43 pivotally mounted at 42 at the center of a widened part 40 from which extend two spaced-apart parallel arms 43*a* and 43*b*. The angular position of fork 43 is controlled by a pin 44 disposed opposite to pin 6' on lever 4'. The fork 43, rod 31' and wheel 26' can thus move between the two positions shown in FIGS. 7 and 8, with the lower end of rod 31' guided by an arcuate groove, as before.

The timepiece also includes an alarm striker mechanism driven by barrel and actuated by an alarm-actuating wheel 65 cooperating with the hours wheel in the dial train in known manner. Wheel 65 has lifting projections 65*a* which, when one engages in a corresponding opening in the hours wheel at a pre-set time, cause pivoting of a lever 66 about its median part 67 to disengage an end 68 of lever from striker wheel 69 which then actuates striker hammer 70 to ring against a striker blade 71. In the pushed-in position of stem 1', hammer 70 is held by an end of 72 of lever 4', and in the other positions of stem 1' hammer 70 is freed.

The alarm-actuating wheel 65 carries a member such as a hand or disc indicating the setting of the alarm which is achieved by the intermediary of wheel 34' which is permanently in mesh with wheel 65.

In operation, in the pushed-in position of stem 1' the barrels 62 and 64 may be rewound by rotating stem 1', as previously described (FIG. 6). FIG. 7 shows, in dotted-dashed lines, the position of levers 4' and 13' in this pushed-in position in which clutch pinion 24' meshes with winding pinion 17' and hence only winding can be carried out. Also, the end 72 of lever 4 locks the striker hammer 70.

Pin 44 is in contact with arms 43*a* of fork 43 which is in the raised position, i.e., with rod 31' lowered and wheel 26' meshing on the one hand with wheel 22' and on the other hand with wheel 34'.

In the intermediate position shown in full lines in FIG. 7 and obtained by pulling out stem 1', clutch pinion 24' has moved down under the action of the end 15' of lever 13' to mesh by its contrate toothing with wheel 23'. Thus upon turning stem 1', the alarm actuating wheel 65 is rotated via wheels 23', 22', 26' and 34' whereby the alarm can be set at a chosen hour.

Upon pulling out of the stem 1' from the pushed-in to the intermediate position, fork 43 does not tip, but pin 44 comes to contact arm 43*b*. Also, the end 72 of lever 4 moves out of engagement with the striker hammer 70.

If the stem 1' is left in this intermediate position, the alarm will sound at the indicated time; the alarm can then be stopped by replacing stem 1' in the pushed-in position.

In the fully pulled-out position, shown in dotted-dashed lines in FIG. 8, lever 21' has tilted under the action of pin 18' and moves wheel 22' out of engagement with wheel 26' and into engagement with the dial-train wheel 33'. Setting of the time can then be carried out by rotating stem 1'.

During movement from the "first" intermediate to the pulled-out position, fork 43 tips under the action of pin 44 on arm 43*b*, which raises rod 31' so that wheel 26' comes to engage with the wheel of a correcting member 27'*a*.

When stem 1' is pushed back into the intermediate position, the parts are positioned as shown in full lines in FIG. 8. Lever 21' and wheel 22' have moved back to the rest position under the action of spring 29', and wheel 22' once more meshes with wheel 26' which is in engagement with the wheel of member 27'*a*. Upon turning the stem 1' in either direction, member 27'*a* is thus turned to set the date ring 27' backwards or forwards.

Finally, when the stem is returned to the pushed-in position, the mechanism moves back to the initial winding position.

As a variation of this embodiment, the stationary wheel 34' could drive, by means of pawls or breguet toothing, two coaxial wheels one of which would unidirectionally drive the alarm actuating wheel 65 for one direction of rotation of stem 1', and the other of which would unidirectionally drive a day-star setting member for the other direction of rotation of the stem 1'.

The third embodiment shown in FIGS. 9 and 10 is a timepiece provided with a device for setting the rate of running thereof, FIG. 9 being a partial plan view with the actuating stem in the intermediate position obtained by pushing it in from the pulled-out position. Parts identical to parts of the first embodiment are designated by the same reference numerals with a double prime indication.

The device for setting the rate of running of the timepiece is controlled by a mechanism actuated by stem 1'' which, as before, is provided with a groove 2'' slid-

ably receiving a stud 3'' of a setting lever 4'', pivotally mounted about a pivot 5''. The lever 4'' carries a pin 6'' which engages in any one of three recesses 8'', 9'', 10'' in a check spring 11' to define three distinct angular position of lever 4'' corresponding to the pushed-in, intermediate and pulled-out positions of stem 1''.

Lever 4'' also has a heel 12'' cooperating with a cam-profiled upper part of a lever 13'' pivotally mounted at one end about a pivot 14'' and having a free end 15'' which engages in the groove 16'' of a clutch pinion 24''. This clutch pinion 24'' is slidably keyed on stem 1'' and, according to its axial position, engage either by means of a Breguet toothing with a winding pinion 17'' freely rotatably mounted on stem 1'' or, by means of a contrate toothing, with a pinion 23''.

In the pushed-in position of stem 1'' the Breguet toothing of clutch pinion 24'' meshes with winding pinion 17''. In the intermediate and pulled-out positions of stem 1'', the contrate toothing of clutch pinion 24'' meshes with a pinion 23'' which is rotatably mounted on a fixed arbor 23''*a* screwed in the bottom plate of the timepiece movement.

The setting lever 4'' also controls the movement of another lever 21'' pivotally mounted about arbor 23''*a* and carrying a toothed wheel 22'' which permanently meshes with pinion 23''. This movement is produced by means of a pin 18'' on the heel 12'' of lever 4'', this pin acting against a face 21''*a* of lever 21'' when the stem 1'' is withdrawn to the pulled-out position, to bring the lever 21'' to a position in which wheel 22'' meshes with a wheel 33'' in the dial train of the timeplace. The return movement of lever 21'' is limited by an abutment 20'' fixed on the bottom plate and against which the lever 21'' is biased by a spring 29'' in the pushed-in and intermediate positions of stem 1''. In the rest position of lever 21'', wheel 22'' meshes on the one hand with pinion 23'' and on the other hand with a correction wheel 26''. This wheel 26'' is mounted to be able to move along an arcuate path, centred about the location of the axis of wheel 22'' when lever 21'' is in its rest position, between a first position meshing with a date-ring 27'' and a second position meshing with a positionally-fixed wheel 34'' permanently meshing with a member 50 for setting the rate of running of the timepiece. In the example given, the timepiece is electronic and member 50 is a variable capacitor adapted to adjust the frequency of a quartz oscillator, not shown.

As in the first embodiment, wheel 26'' is rotatably mounted on an arbor 30'' fixed on a lower end of a rod 31'' and guided in an arcuate slot 37''. Movement of rod 31'' is controlled by pin 6'' of lever 4'' which penetrates in an elongaged opening 32'' in the upper end of rod 31''. A jumper spring 36'' cooperates with the arbor 30'' to hold the rod 31'' in its upper or lower position.

In operation, in the pushed-in position of stem 1'', the pin 6'' of lever 4'' is in contact with the upper end of opening 32'', and the correction wheel 26'' is in mesh with the date ring 27''. The clutch pinion 24'' does not engage with pinion 23'', but with pinion 17'' to enable winding; for an electronic watch the winding mechanism may of course be dispensed with or replaced by another setting mechanism.

In the intermediate position of stem 1'' obtained by pulling it out, the position of lever 21'' does not change but clutch pinion 24'' comes to mesh with pinion 23'' which, via wheel 22'' and correction wheel 26'', is operatively connected with the date ring 27''. Consequently when stem 1'' is turned in either direction, the displayed date is modified.

In moving to the pulled-out position of stem 1'', the lever 21'' driven by pin 18'' of lever 4'' pivots against the action of spring 29'' to disengage wheel 22'' from correction wheel 26'' and bring it into mesh with dial-train wheel 33'' so that stem 1'' can be turned to set the time displayed.

During the movement to the pulled-out position, the pin 6'' of lever 4'' comes to contact the lower end of opening 32'' and rod 31'' is then moved downwardly to move correction wheel 26'' into mesh with wheel 34'' driving a wheel 51 of a member 50, the arbor 30'' of rod 31'' being guided along arcuate slot 37'' and rod 31'' being held in this position by spring 36''.

When stem 1'' is pushed back into the intermediate position (FIG. 9), lever 21'' is moved back by spring 29'' to its rest position against abutment 20'', but wheel 26'' remains in mesh with wheel 34'' since the pin 6'' moves along opening 32'' until it comes to contact the upper end thereof, this involving only a slight pivotal movement of rod 31''. As a result of this movement of lever 21'', wheel 22'' moves out of engagement with wheel 33'' and comes to mesh with the correction wheel 26'' which now meshes with wheel 34''. In this position, by turning stem 1'' in either direction, wheel 34'' is turned to set member 50 and thus modify the rate of running of the timepiece.

In the example shown, member 50 is a variable capacitor formed by a rotatable armature formed by wheel 51 and a fixed armature 52, rotation of wheel 51 modifying the capacitance of the capacitor.

In a variation, not shown, of the third embodiment, the timepiece is a mechanical one with a sprung balance, and the setting member 50 is a regualtor for adjusting the frequency of the sprung balance.

In both cases, the setting member 50 carries an indicating member such as hand 54 which moves in front of a graduated scale and thus enables reading of the position of the member 50 to indicate a unitary value of the correction applied to the rate of running.

Upon pushing stem 1'' back into its pushed-in position, rod 31'' is driven by pin 6'' to its upper position and the mechanism is returned to its initial state ready for further manipulations.

The armature wheel 51 of the capacitor may, as shown, carry one or two plates 53 of a ceramic with a high dielectric coefficient in a manner to provide a capacitor of given volume with an increased capacitance. Also, it is possible to choose plates 53 of ceramic which enable a correction of the variations in frequency due to changes in temperature, by providing a compensating variation of the dielectric coefficient of the plates 53.

The described device enables both positive and negative corrections to the rate of running of the timepiece, i.e., either to speed it up or slow it down. Moreover, it is simple and convenient to manipulate. Also, correction of the date is a relatively more frequent operation, and this can be achieved simply by pulling out the actuating stem to the intermediate position and then turning it. To correct the rate of running, the actuating stem is pulled fully out, then pushed back in to the intermediate position and turned in the appropriate direction,

this correction generally taking place after having set the time displayed in the pulled-out position.

Numerous variations of the described embodiments are possible. For example, the rod **31** could be replaced by a slide carrying out the same functions.

In another possible variation, a first lever could be linked with the clutch pinion to have upper, intermediate and lower positions corresponding to the pushed-in, intermediate and pulled-out positions of the stem. When this lever moves from the intermediate to the lower position, it could actuate a second lever or a slide carrying a correction wheel and having an analogous function to rod **31**.

In yet another variation, one of the members set in the intermediate position, for example the day-star of the first embodiment, could be replaced by an hour hand or other hour indicator whose angular position can be modified, in the intermediate position of the actuating stem, by steps of one hour, for example when the user moves from one time zone to another.

In the foregoing description, the term "actuating stem" should be taken in a broad sense and is not limited to the winding stems or crowns as met in mechanical watches. For example, in an electronic watch, the pushed-in position of the actuating stem could correspond to normal running, and the pulled-out position could be a position for setting the time and in which the supply circuit of the watch is cut to stop running of the watch for example to allow storage of the watch by retailers without running down the battery. The intermediate position would be reserved for the setting of auxiliary indicating members.

What is claimed is:

1. In a timepiece including a plurality of indicating members and a device for setting the indications of said members, said device comprising a manually operable rotatable and axially displaceable actuating stem, and means for defining three discrete axial positions of the stem namely a pushed-in position, an intermediate position in which the stem is operatively connected with at least one indicating member for actuation thereof by rotation of the stem, and a pulled-out position, the improvement comprising means for selectively operatively connecting said stem in said intermediate position with a first indicating member in response to pulling out of the stem from the pushed-in position to the intermediate position and with a second indicating member in response to pushing in of the stem from the pulled-out position to the intermediate position.

2. A timepiece according to claim **1**, in which one of said first and second indicating members is a date-indicating member and the other of said first and second members is a day-indicating member.

3. A timepiece according to claim **1**, comprising an alarm mechanism, in which one of said first and second indicating members is a member indicating the setting of the alarm mechanism.

4. A timepiece according to claim **3**, in which the other of said first and second members is a date-indicating member.

5. A timepiece according to claim **1**, comprising a mechanism for adjusting the rate of running of the watch, in which one of said first and second indicating members is a member for indicating the setting of said adjusting mechanism.

6. A timepiece according to claim **5**, in which the other of said first and second members is a date-indicating member.

7. A timepiece according to claim **1**, in which said means comprise a correction wheel movable between a first position in which it is operatively connected with said first indicating member and a second position in which it is operatively connected witn said second indicating member, means for moving said correction wheel from its first to its second position in response to pulling of the stem from the intermediate position to the pulled-out position and from its second to its first position in response to pushing in of the stem from the intermediate position to the pushed-in position, and means for operatively connecting the stem with said correction wheel solely in the intermediate position of the stem.

8. A timepiece according to claim **7**, in which said means for moving the correction wheel include a pivotally mounted first lever (**4**) and means connecting said first lever to the stem for providing pivotal movement of said first lever between three positions corresponding to the pushed-in, intermediate and pulled-out positions of the stem; and further comprising:

a first toothed wheel (**23**) rotatably mounted about a first fixed axis;

a clutch pinion mounted on said stem;

means including said first lever and said clutch pinion for operatively connecting the stem with said first toothed wheel in the intermediate and pulled-out positions of the stem;

a second lever (**21**) pivotally mounted about said first fixed axis;

a second toothed wheel (**22**) rotatably mounted on said second lever and meshing permanently with said first toothed wheel;

said second lever being movable between a first position in which said second toothed wheel meshes with said correcting wheel and a second position in which said second toothed wheel is operatively connected with a third indicating member;

means for biasing the second lever from its second position towards its first position;

and means (**18**) on said first lever for moving the second lever from its first to its second position in response to pulling out of the stem from its intermediate to its pulled-out position.

9. A timepiece according to claim **7**, in which the means for moving said correction wheel include a bar having first and second ends, means for mounting the correction wheel at the first end of the bar, means for guiding the first end of the bar for movement between the first and second positions of the correction wheel, a pivotably mounted first lever (**4**), means connecting said first lever to the stem for providing pivotal movement of said first lever between three positions corresponding to the pushed-in, intermediate and pulled-out positions of the stem, and means for connecting said first lever with play to the second end of the bar.

10. A timepiece according to claim **9**, comprising means defining an elongated opening in the bar adjacent said second end, and a pin on said first lever slidably engaged in said opening.

11. A timepiece according to claim **9**, comprising a fork having a first arm terminated with a widened part and two spaced-apart generally parallel second arms extending from said widened part, means for pivotally

mounting the fork centrally of said widened part, means for pivotally connecting said first arm of the fork to said second end of the bar, and a pin on said first lever disposed with play between said second arms of the fork.

12. A timepiece according to claim **9**, comprising:

a first toothed wheel (**23**) rotatably mounted about a first fixed axis;

a clutch pinion mounted on said stem;

means including said first lever and said clutch pinion for operatively connecting the stem with said first toothed wheel in the intermediate and pulled-out positions of the stem;

a second lever (**21**) pivotally-mounted about said first fixed axis.

a second toothed wheel (**22**) rotatably mounted on said second lever and meshing permanently with said first toothed wheel;

said second lever being movable between a first position in which said second toothed wheel meshes with said correcting wheel and a second position in which said second toothed wheel is operatively connected with a third indicating member;

means for biasing the second lever from its second position towards its first position;

and means (**18**) on said first lever for moving the second lever from its first to its second position in response to pulling out of the stem from its intermediate to its pulled-out position.

13. A timepiece according to claim **12**, in which said means for guiding said first end of the bar include means defining an arcuate path of the axis of the correction wheel centred about the location of the axis of said second toothed wheel when said second lever is in its first position.

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