United States Patent

Mochizuki et al.

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[54] DAY-DATE QUICK-ADJUSTER FOR CALENDER TIMEPIECE

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[73] Assignee: **Citizen Watch Co., Ltd.,** Tokyo, Japan

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June 19, 1969 Japan.....44/58167

[52] **U.S. Cl.**.....**58/58**
[51] **Int. Cl.**.....**G04b 19/24**
[58] **Field of Search**.....58/4, 5, 58

[56] **References Cited**

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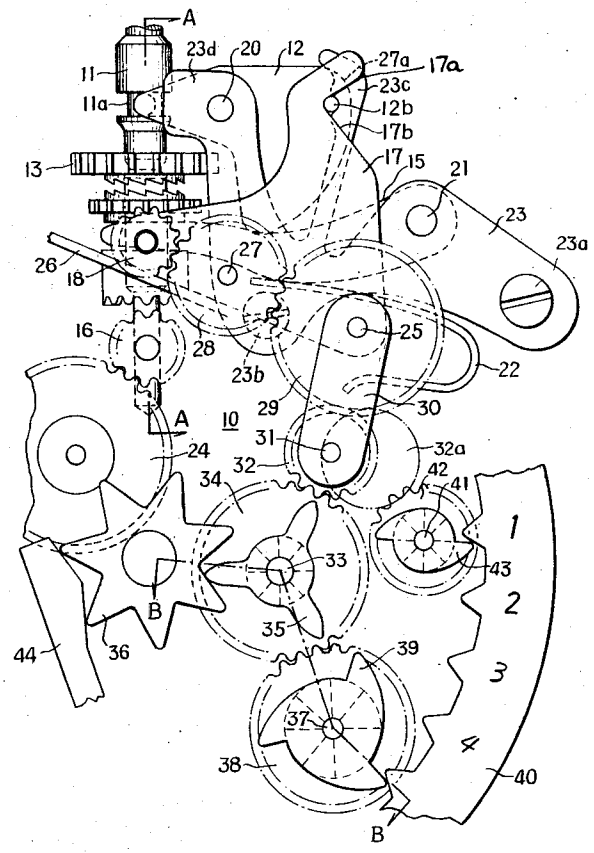
Primary Examiner—Richard B. Wilkinson
Assistant Examiner—George H. Miller, Jr.
Attorney—Sughrue, Rothwell, Mion, Zinn and Macpeak

[57] **ABSTRACT**

The calendar correction mechanism for use with a calendar timepiece having a date and a day calendar dial operable independently from each other is operable by the manually rotatable winding stem.

The correction torque transmitting arrangement is so designed that by turning said stem in one direction both calendar dials are rotated for correction in unison with each other and by turning the stem in the opposite direction only one of the dials is rotated independently from the other and in the same direction as before when the stem was rotated in said one direction.

9 Claims, 13 Drawing Figures



6 Sheets-Sheet 1

FIG. 1

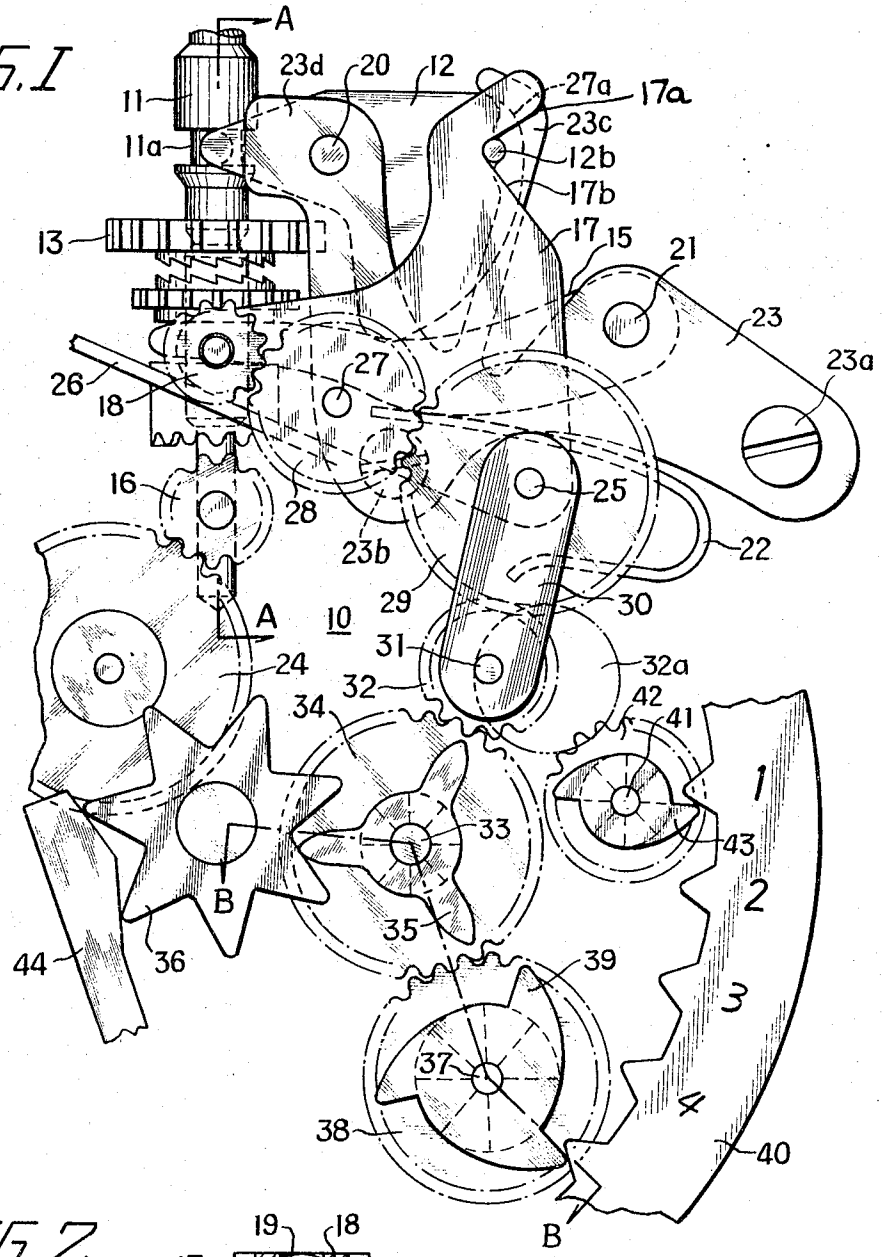
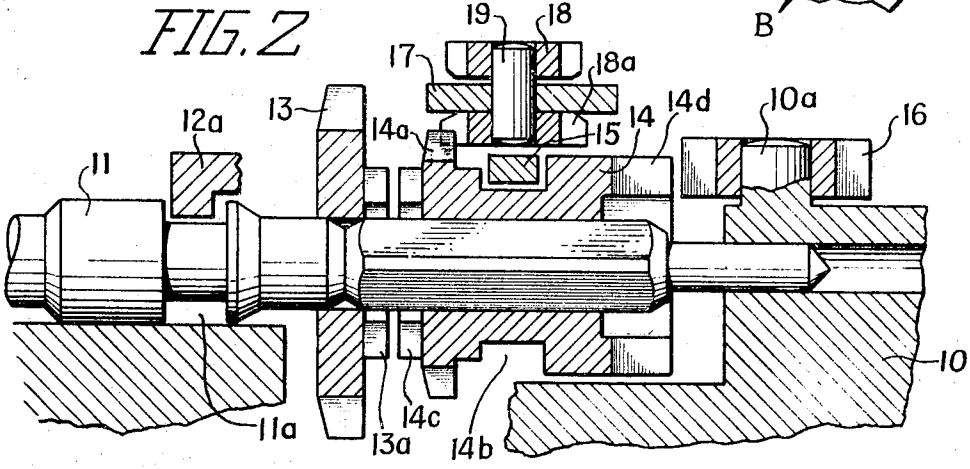


FIG. 2



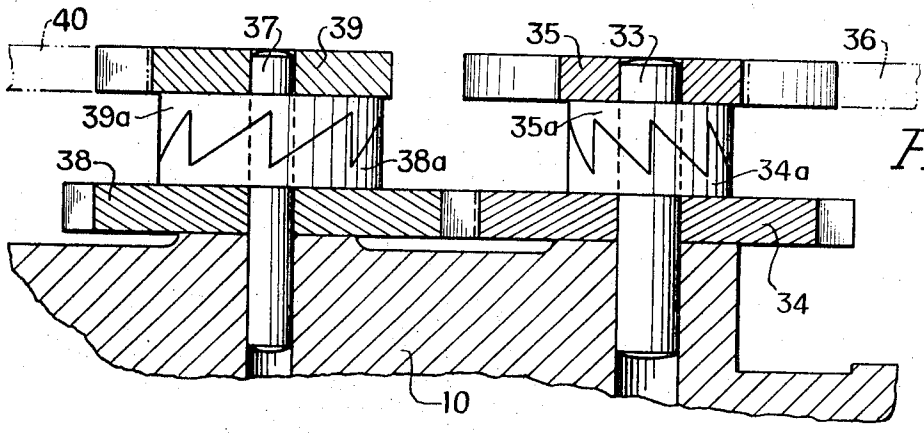


FIG. 3

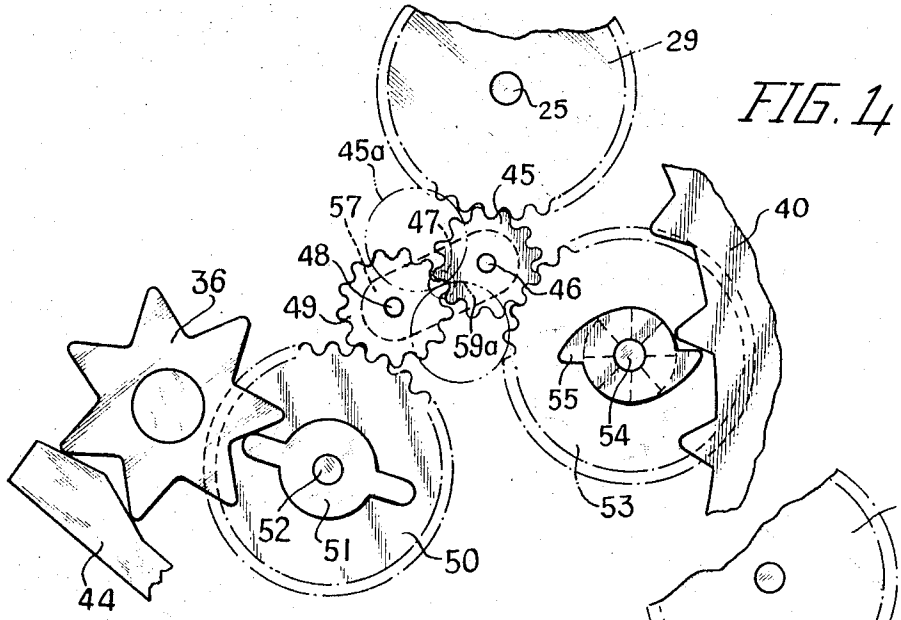


FIG. 4

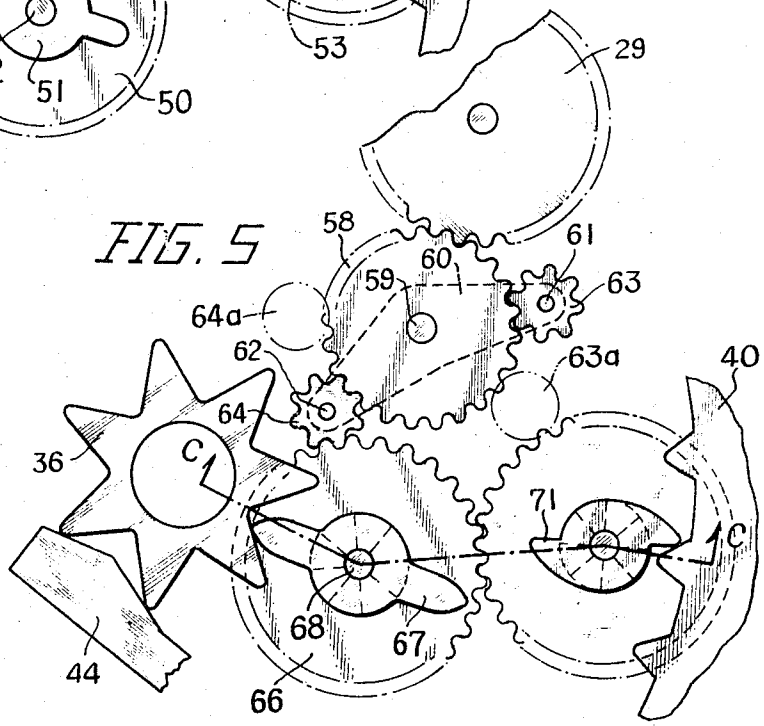


FIG. 5

FIG. 9

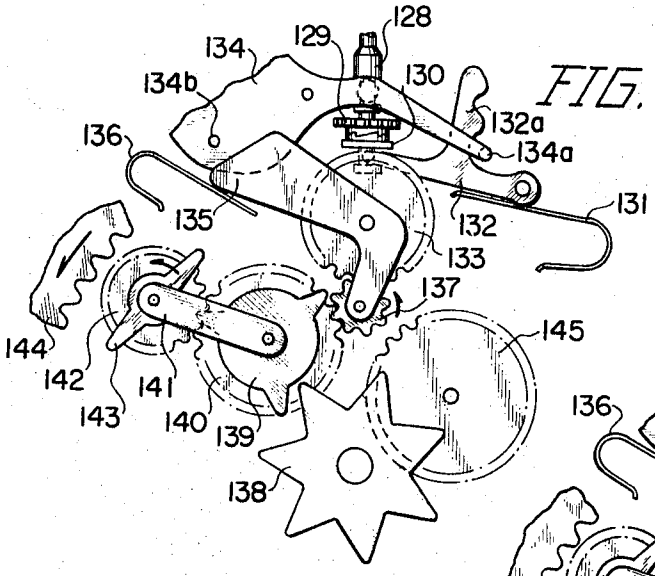


FIG. 10

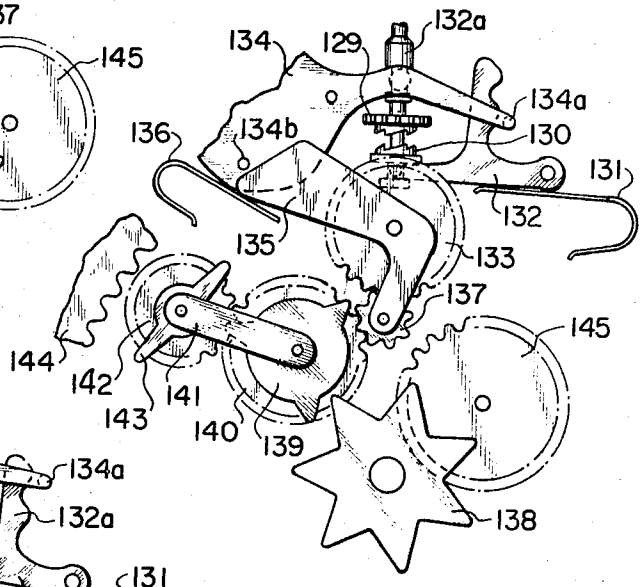


FIG. 11

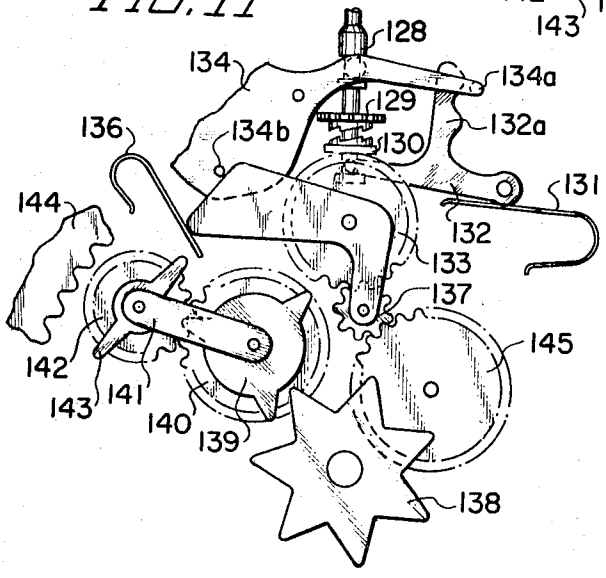


FIG. 6

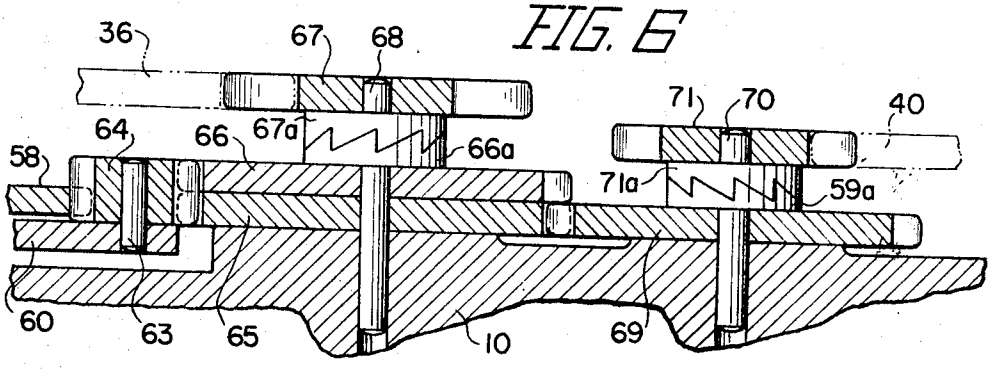
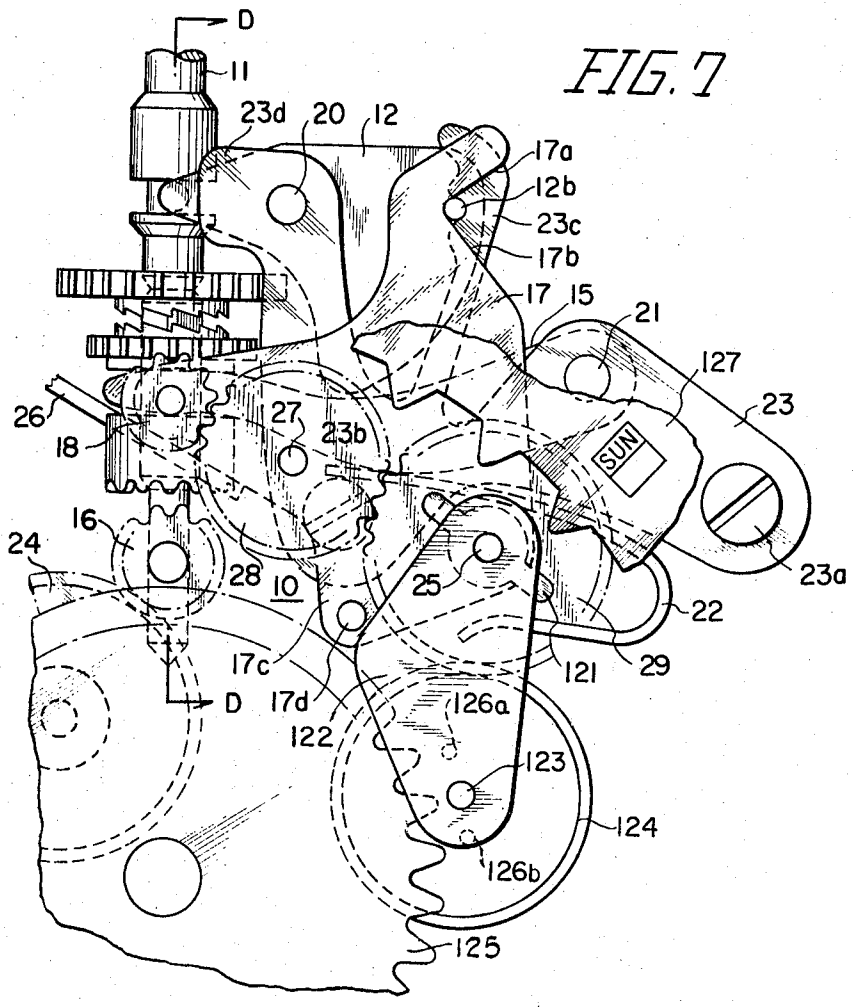


FIG. 7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23d
20
12
17a
12b
23c
17b
17
15
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127
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SUN
16
24
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23a
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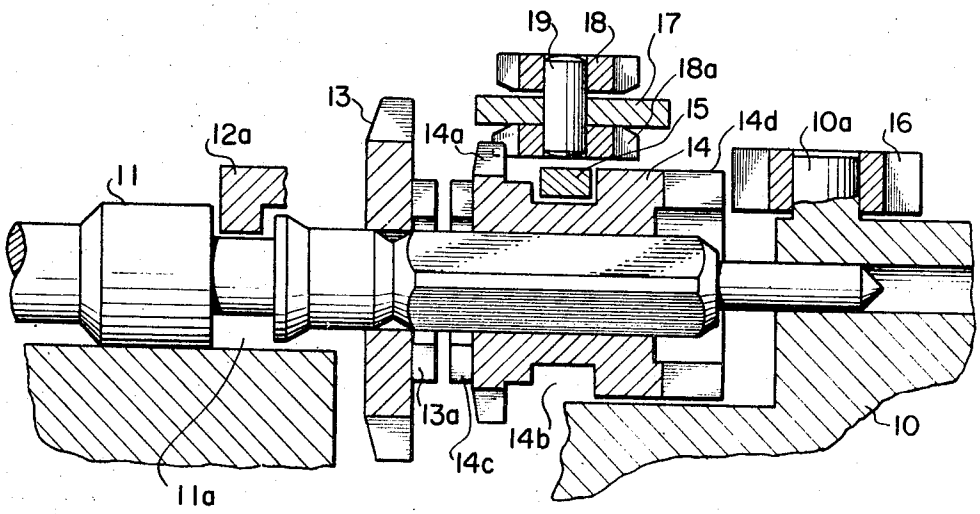
17c
121
29
D
17d
126a
122
123
124
126b
125

FIG. 8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18
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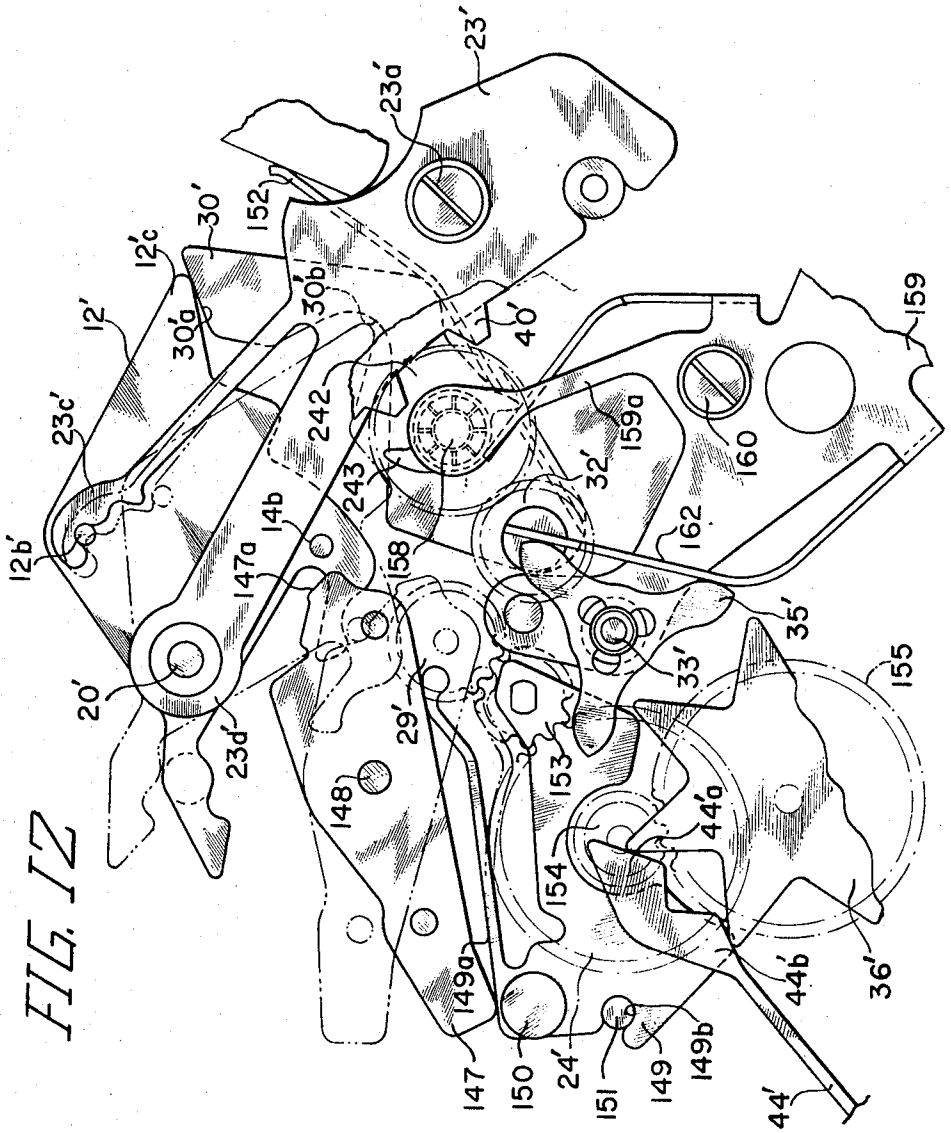
15
14d
10a
16
12a
14a
14
11
13a
14b
10
14c
11a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30b'
40'
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159a
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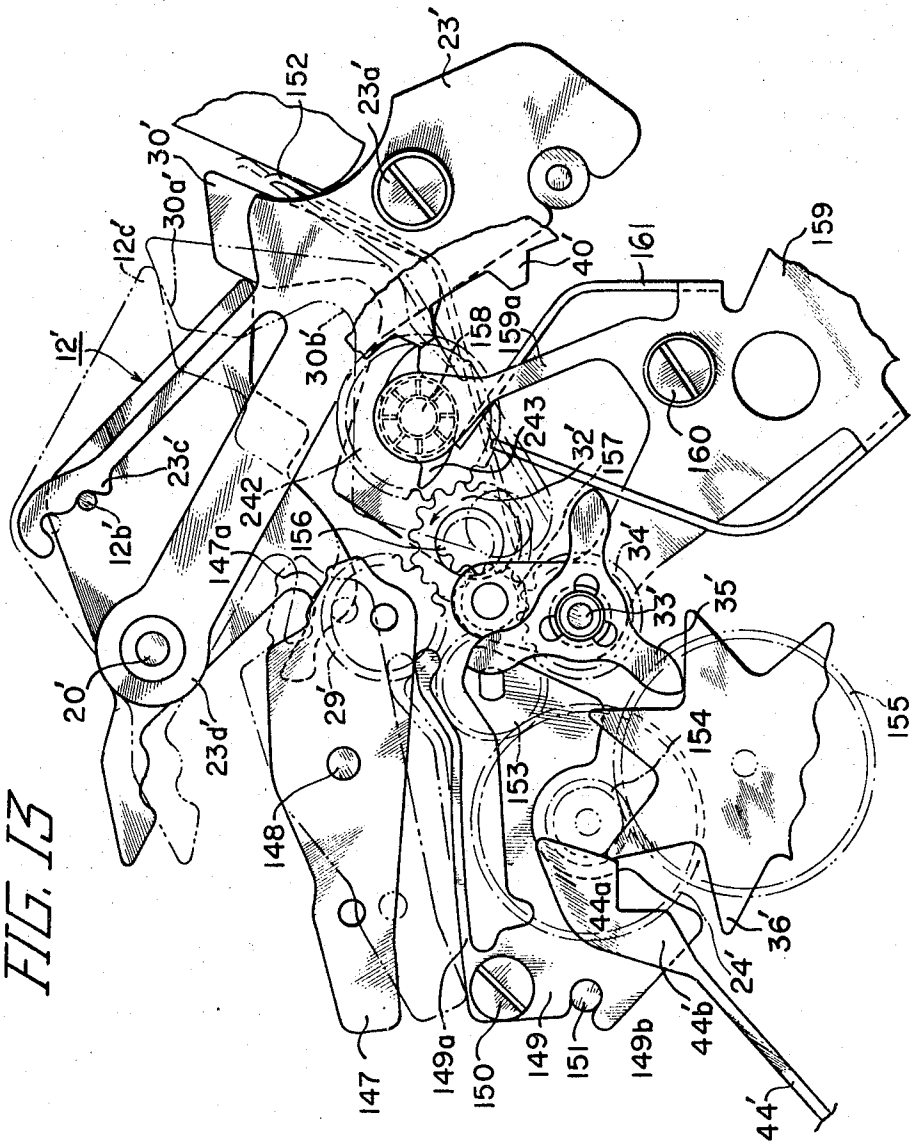
23c'
243
32'
14b
162
12b'
147a
158
35'
20'
33'
155
29'
153
23d'
148
44a'
154
36'
149a
44b'
147
150
24'
151
149
149b
44'

FIG. 12


23'
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23c'
12b'
242
147a
156
34'
33'
35'
20'
29'
23d'
154
155
153
148
44a'
36'
24'
147
149a
150
149
151
149b
44b'
44'

FIG. 13

DAY-DATE QUICK-ADJUSTER FOR CALENDER TIMEPIECE

The present invention relates broadly with improvement in and relating to calendar timepieces. More specifically, it relates to a quick-calendar correction mechanism for use with the timepiece of the above kind having a date calendar dial and a day calendar dial operable independently from each other.

One of recently advanced day and date calendar correction mechanisms is constructed so that by turning the conventional winding stem in one direction upon preparatory positioning thereof in its quick calendar correcting position, either of the both calendar displays is subjected correction and by turning the stem in the reverse direction the remaining calendar display is corrected.

If the timepiece movement should stop its motion for several days, the winding stem must be rotated for performing one kind of calendar correction at first in one direction and then in the opposite direction for performing the remaining kind of calendar correction. Therefore, with use of the prior advanced correction mechanism, two successive operations must be adopted for carrying out the day and date calendar corrections.

It is therefore an object of the present invention to provide a further improved quick calendar correction mechanism, adapted for performing simultaneously the both day and date calendar corrections.

A still further object of the invention is to provide a calendar correction mechanism of the above kind, capable of providing the ability to correct the day calendar display in the reverse direction for attaining an easier and quicker day correction at the end of a small month.

These and other objects, features and advantages of the invention will become more apparent when read the following detailed description by reference to the accompanying drawings illustrative of several preferred embodiments of the invention.

In the drawings:

FIG. **1** is a schematic plan view of a preferred first embodiment of the invention.

FIG. **2** is a sectional view taken substantially along a section line A–A′ shown in FIG. **1**.

FIG. **3** is a sectional view taken substantially along a section line B–B′ shown in FIG. **1**.

FIGS. **4** and **5** are plan views of several main working parts of preferred second and third embodiments of the invention, respectively.

FIG. **6** is a sectional view taken substantially along a section line C–C′ shown in FIG. **5**.

FIG. **7** is a schematic plan view of a fourth embodiment of the invention.

FIG. **8** is a sectional view taken substantially along a section line D–D′ in FIG. **7**.

FIGS. **9** and **10** are schematic plan views of two different working modes of a preferred embodiment of the invention.

FIG. **11** is a similar view to FIG. **9**, illustrative of the time setting position of the fifth embodiment.

FIGS. **12** and **13** are plan views of a sixth embodiment of the invention, illustrative of different operating positions of the mechanism.

Referring now to FIGS. **1–3**, illustrating the first embodiment, the numeral **10** represents a conventional plate of a timepiece movement and a conventional winding stem **11** is rotatably and slidably mounted in the plate. The stem **11** is formed with a ring groove **11***a* with which a projection **12***a* of a setting lever **12** is kept in engagement as conventionally for the prevention of otherwise possible slip-out of the stem from position.

Winding stem **11** carries a winding pinion **13** and a clutch wheel **14** having a gear portion **14***a* made integral therewith, as conventionally.

Winding position **13** is slidable in the axial direction of the stem **11** and rotatable relative thereto, while clutch wheel **14** is arranged only slidable longitudinally of the stem, thus being rotatable in unison with the latter.

Clutch wheel **14** is formed on its cylindrical peripheral surface with a ring groove **14***b* with which one end of clutch lever **15** is engaged, the latter lever being movable in unison with the push-in and drawout manual operation applied to the winding stem **11** by receiving motion therefrom through the setting lever **12**.

In the position shown in FIG. **1**, clutch wheel **14** having a tooth portion **14***c* being kept in its disengaged position with the tooth portion at **13***a* formed on the winding pinion **13**. At this stage, setting wheel **16** mounted rotatably on a stationary shaft portion **10***a* formed on the plate **10** is kept again in its disengaged position, as shown, with the toothed portion at **14***a* of clutch wheel **14**. At this stage, further, the clutch wheel **14** is so positioned, as shown, in a stabilized way that its toothed portion **14***a* is positively kept in engagement with a gear **18***a* which is rigid with a shaft **19** rotatably mounted in a lever **17**.

When the winding stem **11** is pushed in rightwards in FIG. **2** from the position shown therein, the clutch lever **15** is moved leftwards relatively, thus the toothed portion **13***a* on winding pinion **13** is brought into engagement with the toothed portion **14***c* of clutch wheel **14**, while the engagement between the toothed portion **14***a* with the gear **18** is released ready for spring winding.

Conversely, when the winding stem **11** is drawn out leftwards in FIG. **2** from the position shown, clutch lever **15** is moved rightwards relatively and the toothed portion **14***d* on winding pinion **14** is brought into engagement with the setting wheel **16**. As seen from FIG. **1**, this position is ready for the timesetting operation wherein motion is transmitted from the winding stem through a conventional minute wheel **24**.

Since the lever **17** can move more than that which is performed by the winding pinion **14** in the right-hand direction in FIG. **2** in this stage, the engagement of the toothed portion **14***a* on winding pinion with the gear **18***a* is released. The gear **18** rigid with gear **18***a* fixedly mounted on the shaft **19** will act as the prime mover wheel for the mechanism to be described, as will be more fully described hereinafter.

Now turning back to FIG. **1**, illustrative of the mechanism according to this invention in a specific way, setting lever **12** is rotatably mounted around a shaft **20** which is rigid with the plate **10**, and clutch lever **15** is rotatably mounted on its shaft **21** which is also rigid with the plate. A conventional clutch lever spring **22** urges the clutch lever **15** so as to establish a pressure contact thereof with setting lever **12**. Numeral **23** represents a conventional setting lever spring the main nonelastic part of which is fixed onto the plate **10** by means of setting screws **23***a* and **23***b*.

Setting lever spring **23** comprises an elastic arm **23***c* which is kept in pressure contact with setting lever pin **12***b*. Setting lever spring **23** is formed with an elastic arm **23***d* which exerts a resilient pressure upon the setting lever **12** for keeping the latter in position within the timepiece movement.

Setting wheel **16** is kept in meshing with minute wheel **24**.

The lever **17** is rotatably mounted on a shaft **25** which is rigid with the plate **10**, said lever **17** being abutting under pressure against the setting lever pin **12***b* under the influence of a bar spring **26** which is shown only partially for simplicity of the drawing. Although not shown, this bar spring **26** is mounted at its root portion fixedly on the plate **10**.

The aforementioned relative arrangement of setting lever **12**, clutch lever **15**, clutch lever spring **22** and winding stem **11** is substantially known per se for the two position setting mechanism for the timepiece movement.

Since the lever **17** is kept in a positive pressure engagement with the setting lever **12***b* and movable in the counter clockwise direction in FIG. **1** irrespective of occasional and selective moving direction of the lever **12** caused by a push-in or drawout operation applied to the winding stem, indeed, by the intimate and positive cooperating engagement of cam parts **17***a*; **17***b* of the setting lever pin **17***b*. On the lever **17**, a gear **28** is rotatably mounted around a shaft **27** which is rigid

with the lever, said gear **28** meshing with said gear **18**. On the same lever **17**, there is a further gear **29** which is rotatable around a shaft **25** rigid with the said lever. A further lever **30** is also mounted rotatable on the same shaft **25**, a further shaft **31** being fixedly mounted on the said lever **30** and a further gear **32** being rotatably mounted on the shaft **31** and meshing with gear **29**.

When gear **29** rotates in clockwise direction in FIG. **1**, lever **30** is subjected to a mechanical urging force acting in clockwise direction and gear **32** is brought into meshing with gear **34** which is rotatably mounted on the shaft at **33**.

As shown in FIG. **3**, gear **34** meshes at its ratchet tooth portion **34***a* with that shown at **35***a* of gear **35** which is rotatably mounted on the shaft **33**. These ratchet tooth portions are so designed and arranged that when gear is rotated in clockwise direction, rotation is transmitted therefrom to gear **35** which is kept in meshing with a day star wheel **36**, the latter being controlled in its movement by a jumper lever **44** as is known per se.

Gear **34** meshes gear **38** which is rotatably mounted on a shaft **37**. Gear **39** is rotatably mounted on the same shaft **37** and so designed and arranged that when gear **38** rotates in counter clockwise direction, rotation is transmitted to gear **39** through the intermeshing between ratchet tooth portions **38***a* and **39***a*. Gear **39** is kept in meshing with date display ring **40**.

With the arrangement so far shown and described and with a clockwise rotation of gear **29**, gear **32** is brought into meshing with gear **34**, motion being thus transmitted through gear **35** to the day star wheel **36** for performing the desired correction of the day display.

At the same time, rotation is transmitted from gear **34** through gears **38** and **39** to the date display ring **40** for the correction of display. Although not shown, the date ring **40** is controlled by a conventional jumper means.

It will be clear from the foregoing that with rotation of gear **29** in clockwise direction, both the day display and the date display are subjected to correction.

With counter clockwise rotation of gear **29**, gear **32** is shifted to a position shown at **32***a* so as to mesh with gear **42**. Gear **42** is rotatably mounted on the shaft **41** and a gear **43** is positioned on the gear **42** and rotatably mounted concentrically therewith. As seen these related parts are so designed and arranged that only with counter clockwise rotation of gear **42**, the correction force can be transmitted to date ring **40**. The configuration and arrangement of the ratchet means are selected for satisfying these requirements.

With counter clockwise rotation of gear **29**, gear **32** is shifted to a position shown at **32***a* and the correction force is transmitted through gears **42** and **43** to date ring **40**.

With either rotational direction of gear **29**, date ring **40** is turned in its regular or forward direction and when a drive power is transmitted from the power spring or the like source to both the date ring and the day ring, gears **43**, **35** and **39** are rotated in idle and rotation can not be transmitted to any other means not related therewith, thanks to the design and arrangement of the related ratchet means.

Next, referring to FIG. **4**, the second embodiment will be described in detail. Since, in the present embodiment, the design and function of the working parts arranged in advance of the gear **29** rotatably mounted on the shaft **25** are substantially similar to those shown and described with reference to the foregoing first embodiment, detailed description thereof may be omitted without injury to better understanding of the present second embodiment.

With counter clockwise rotation of gear **29**, a gear **45** rotatably mounted on a shaft **46** made rigid with an arm **57** which is pivotably mounted on a shaft **47** is brought into meshing engagement not only with gear **29**, but also with gear **53**.

Said gear **53** is rotatably mounted on shaft **54** upon which a gear **55** is concentrically mounted with gear **53**. This partial gear train is so designed and arranged, as will be seen from FIG. **4**, drive force is transmitted when the gear **53** is rotated in counter clockwise direction. Gear **45** is further kept in meshing with a gear **49** which is rotatably mounted on a shaft **48** made rigid with arm **57**. Arm **57** is kept in contact with a stop means which is rigid with the plate of the timepiece movement, although not shown.

Gear **50** is rotatably mounted on a shaft **52** and made with a gear **51** meshing with the day star wheel **36** controlled by a jumper lever **44** as conventionally.

With rotation of gear **29** in counter clockwise direction, motion will be thus transmitted through gears **45**, **53** and **55** to date ring **40** and, through gears **45**, **49**, **50** and **51** to day star wheel **36**, for the correction of day- and date dials.

With clockwise rotation of gear **29** and on account of that gears **29** and **45** have deeper dedendums, respectively, gear **45** is brought to a position shown at **45***a*, and gear **49** to a position shown at **49***a*. Thus, rotation is transmitted from gear **29** through gears at **45**, **49**, **53** and **55** to date ring **40** which is thus subjected to a correction as in the former way. Day ring is not affected in this case.

Next, when a drive force is transmitted from the power spring or the like source to rotate the day star wheel, gears **51** and **49** are also brought into rotation, but, the gear **49** is receded to the position at **49***a* so that no mechanical interference may be invited. Even with rotational movement of the date ring, a slip may be invited through the ratchet means provided between the related gears **55** and **53**.

Referring further to FIGS. **5** and **6**, the third embodiment of the invention will now be described.

The upstream working parts in advance of gear **29** when seen in the transmitting direction of the calendar correcting force are substantially same as before and a detailed description thereof will be omitted herein.

With clockwise rotation of gear **29**, motion is transmitted therefrom to a gear **58** which is rotatably mounted on a shaft **59** and provided on an arm **60** which is pivotable on the same shaft **59** rigid with the plate.

Shafts **61** and **62** are made rigid with arm **60** and gears **63** and **64** are rotatably mounted on these shafts, respectively. As seen from the sectional drawing in FIG. **6**, gear **64** is kept in meshing with gears **65** and **66** rotatably mounted on a shaft **68** made rigid with the plate **10**. The ratchet means **66***a*; **67***a* are so designed and arranged that rotation is transmitted therethrough only with counterclockwise rotation of gear **65**. Gear **65** meshes gear **67** through said ratchet means. Gear **65** is kept in meshing with gear **69** rotatably mounted on the shaft **70**. Rotation is transmitted from gear **69**, only when rotated in clockwise direction, through ratchet means **69***a*; **71***a* to gear **71** which is kept in meshing with date calendar ring **40**. Calendar ring **40** and day star wheel **36** are controlled by jumper means as conventionally, although not specifically.

With clockwise rotation of gear **29**, both calendar rings are subjected to correction in unison.

With counter clockwise rotation of gear **29**, arm **60** is correspondingly swiveled and gear **63** is shifted to a position shown at **63***a* and gear **64** to a position shown at **64***a*. Rotation will be thus transmitted from the gear **29** through gears **58**, **63***a*, **69** and **71** to date ring **40** which is thus subjected to a corresponding correction.

At this stage, gear **69** is kept in meshing with gear **65**, but gear **64** does not act as a member of the related gear train, thus, no rotation being transmitted to the gear **66**. It will be seen that in this case the correction is made only upon the date ring **40**.

Further, referring to FIGS. **7** and **8**, the fourth embodiment will be described in detail.

In the present embodiment, the following numerals denote respective same parts as before, thus a further analysis of these parts have been omitted:

10; **10***a*; **11**; **11***a*; **12**; **12***a*; **12***b*; **13**; **13***a*; **14**; **14***a*; **14***b*; **14***c*; **14***d*; **15**; **16**; **17**; **18**; **18***a*; **19**; **20**; **21**; **22**; **23**; **23***a*; **23***b*; **23***c*; **23***d*; **24**; **25**; **26**; **27**; **28** and **29**.

Gear **29** is fixedly attached with gear **121** and an arm **122** is pivotably mounted on the shaft **25**, said arm **122** fixedly mounting in turn a shaft **123** which mounts a gear **124** carry-

ing thereon two pins **126***a* and **126***b* adapted for meshing with a date gear **125** having **31** gear teeth formed in its periphery.

With clockwise rotation of gear **29**, rotation is transmitted therefrom through gear **30** to day calendar ring **127**. At the same time, rotation will be transmitted through gear **124**, pins **126***a* and **126***b* and date gear **125**. Therefore, both date and day corrections are brought about.

With rotation of gear **29** in counter clockwise direction, the day calendar ring will be rotated in the reverse direction as in the above case, but, on account of counter clockwise rotation of arm **122** causing the pins **126***a* and **126***b* to disengage from gear **125**, and therefore the date calendar ring being affected in no way.

Under the regular working conditions of the timepiece, the lever **17** is brought to its counterclockwisely rotated position. The arm **122** is urged mechanically by contact with a pin **17***d* formed on the projecting part **17***c* of lever **17** so as to release the engagement between pins **126***a*; **126***b* and gear **125** and thus there may be a possibility of the engagement of gear **121** with day calendar ring **127**. But, it may be observed that all the gears meshing with the gear **121** are kept in their free position, thus no mechanical interference being invited in this case.

Next, referring to FIGS. **9** and **10**, the fifth embodiment of the invention will be described in detail. The position shown in FIG. **9** is that for spring winding.

Winding stem **128** mounts rotatably a winding pinion **129** and the conventional square section part of the stem **128** a conventional clutch wheel **130** is mounted nonrotatably, yet axially slidably. Clutch lever **132** urged resiliently by a conventional clutch lever spring **131** is kept by its projecting end in engagement with a ring groove formed on the stem **128** as before. Under normal operational conditions, therefore, the clutch wheel **130** is kept in engagement with the winding pinion **129**. Rotation of the winding stem can be transmitted to a conventional crown wheel for winding the power spring, not shown. In this operational stage, it is natural that clutch wheel **130** is kept in disengagement from the setting wheel **133**.

In FIG. **10**, the quick-calender correcting position of the same embodiment is shown, being of the one step drawing out type.

With the winding stem **128** drawn out, setting lever **134** is rotated in the counterclockwise direction and the projecting end shown at **134***a* of the lever will rise up along the convexly curved surface shown at **132***a* of clutch lever, the latter being thereby urged to rotate in the counterclockwise direction so that clutch wheel **130** is brought into engagement with setting wheel **133** by virtue of the mechanical cooperation of the tip end of clutch lever **132** with a ring groove formed on the clutch wheel. At the same time, the engagement between winding pinion **129** and clutch wheel **130** is released. A spring **136** is provided for urging the lever at **135** pivoted on the setting wheel shaft to rotate in clockwise direction.

A gear **137** rotatably mounted on a shaft rigid with lever **135** is kept in engatement with setting wheel **133** and urged by a spring **136** against a gear **140** which is fitted with a further gear **139** kept in meshing with the day star wheel **138**.

A lever **141** is rotatably mounted on the shaft of gear **140** and mounts a further shaft mounting a gear **142** meshing with said gear **140**. The gear **142** is so designed and arranged that with clockwise rotation of gear **140**, the gear **143** fixed on gear **142** is brought into engagement with date ring **144** for the correction thereof, so that, in this case, the both calendars day and date, are subjected to correction simultaneously. On the other hand, when gear **140** is rotated in the counterclockwise direction, gear **142** will escape or recede in the counter clockwise direction so that the gear **143** is released from engagement with date ring **144**. Thus, correction is made only on through the day star wheel.

It can be thus seen that in the present embodiment, a regular rotation of the winding stem, both calendars are corrected, while with a reversed rotation of the stem, the day calendar is corrected in the reverse sense.

In FIG. **11**, the shown position is that for time setting.

The winding stem **128** has been brought to a still further drawn out second position. By this manual operation, a pin **134***b* mounted on the setting lever **134** acts upon the lever **135** to rotate it in counter clockwise direction against the action of spring **136** so that gear **137** is brought into engagement adapted for transmitting the rotation of setting wheel to minute wheel **145**.

Further transmission of the time setting effort from the minute wheel is carried out as in the conventional way. Although the position of setting lever **134** is at this stage somewhat different from that shown in FIG. **10**, the clutch lever will occupy a substantially same position as before so that the clutch wheel **130** is kept in engagement with the setting wheel **133**. Although the winding stem **128** and the setting lever **134** have been omitted only for simplicity, these parts are kept in position for being prevented from slipping out of the timepiece movement, by virtue of the provision of a setting lever spring, as was referred to hereinbefore.

Finally, the sixth embodiment of the invention will be described. In the present embodiment, the day calendar can be corrected in either direction, but the date calendar may be adjusted in one direction only, as was referred to hereinbefore in connection with the fourth to the fifth embodiment.

The position shown in FIG. **12** is that for time setting and that shown in FIG. **13** is for calender correction.

In FIG. **12**, the full line position of the main working parts are those ready for for the spring winding operation, while the chain-dotted line position for the time setting.

In FIGS. **12** and **13**, several working parts already described hereinbefore in connection with the first embodiment are represented with respective same reference numerals, each, however, attached with a prime.

Thus, **12′** represents a conventional setting lever; **12***b′* a setting lever pin; **20′** a pivot shaft thereof; **23′** a setting lever spring; **23***a′* a pivot shaft thereof; **23***c′* a first elastic arm similar to that shown at **23***c* in the foregoing; **23***d′* a second elastic arm similar to that shown at **23***d* in the foregoing; **24′** a minute wheel; **29′** a gear; **30′** a pivotable lever similar to that shown at **30** in the foregoing; **32′** an intermediate gear; **33′** a shaft similar to that denoted **33** in the foregoing; **34′** a gear; **35′** a further gear; **36′** a day star wheel; **40′** a date calendar dial; and **44′** a jumper lever for control of star wheel **36′**.

When the setting lever **12′** is swiveled in clockwise direction in FIG. **12** from its full line position to its chain-dotted line one by drawing out the winding stem, not shown, from its spring winding to its time setting position, a pin **146** rigid with lever **12′** will act upon one end **147***a* of a change-off lever **147** rotatably mounted on a shaft **148** rigid with the conventional plate, not shown, thereby the lever **147** being caused to rotate in clockwise direction in FIG. **12**, against the spring action exerted by an elastic arm **149***a* formed on a minute wheel positioner **149** which is fixedly attached to the plate, not shown, by means of a set screw **150** and a positioning pin **151** which is studded on the plate and in engagement with a cooperating recess **149***b* formed on said positioner **149**.

With the temporarily of setting lever **12′** in clockwise direction, the tip end **12′***c* of the latter acts upon an inclined end surface **30′***a* on the lever **30′** so as to tempararily turn the latter in clockwise direction against the resilient action exerted thereupon by a spring strip **152** the root end of which is fixedly mounted the lever **30′** , although the fixing means have been omitted from the drawing only for simplicity. However, the lever **30′** will occupy substantially the same position shown in full line in FIG. **12**, because the thus clockwise turned setting lever **12′** is brought by its tip end **12′***c* into engagement with a recess **30′***b* formed on the lever **30′**. Thus, gear **32′** mounted on the lever **30′** will substantially occupy the shown position.

At this operational stage, the intermediate gear **29′** mounted in the present embodiment on the change-off lever **147** will occupy the shown position in which the latter is kept in separation from the gear **32′**. During the time setting operation by manipulating the winding stem for this purpose, motion is transmitted therefrom to the gear **29′** in the same

manner as was referred to in the foregoing several embodiments, thus the gear **29'** being kept in rotation at this stage, wherein the last-mentioned gear meshes a further intermediate gear **153** rotatably mounted on the plate. Motion is transmitted from gear **153** through minute wheel **24'** and minute pinion **154** made rigid therewith. The minute pinion **154** rotates a conventional cannon wheel **155**, thus the minute hand, not shown, is rotated as desired.

Finally, referring to FIG. **13**, the chanin-dotted line position of several main working parts corresponds to that shown in full lines in FIG. **12**.

The full line position in FIG. **13** is that of the calendar correction.

When the winding stem, not shown, is drawn out from the spring winding position axially thereof one step to the calender correcting position, setting lever **12'** is rotated in clockwise direction in FIG. **13** into its full line position. Thus, lever **30'** is rotated in clockwise direction from its chain-dotted line to its full line position. At the same time, the change-off lever **147** is also rotated in clockwise direction so as to occupy its full line position. In this case, gear **29'** is brought into meshing relation with gear **32'** carrying rigidly thereon a pinion **156** which is now brought into engagement with an intermediate pinion **157** mounted rotatably on the plate, on account of the pinion **156** rotatably mounted on the lever **30'**. Gear **157** is permanently kept in meshing with gear **34'**, a gear **35'** serving as a driver for day calendar correction being coupled concentrically with the gear **34'** through a friction coupling, although not specifically shown. The gear **35'** is kept at this operational stage in meshing with the day star wheel **36'**. By rotation of the winding stem in either direction under these operational conditions, the day calendar dial, not shown, is corrected in one direction or in another direction, as the case may be, depending upon the rotational direction of the winding stem. When a driving torque, if applied from the regular gear train including cannon wheel **155**, to star wheel **36'**, no day calendar correction will be invited, because such torque may be relieved through said friction coupling.

In this embodiment, an improved jumper lever **44'** having two tooth projections **44'*a*** and **44'*b*** is arranged to cooperate with the star wheel **36'**, so as to provide two holding positions to the wheel for providing two different day calendar displays, such as, for instance, expressed in English and German.

Simultaneously with the day calendar correction, rotation is transmitted from gear **32'** to gear **242** permanently meshing therewith, the latter gear cooperating with a date correction pallet **243** through an one way clutch, not shown, arranged between the gear **242** and the pallet **243**, as at **66*a*** shown at **66*a***; **67*a*** in FIG. **6**. The pallet is arranged to drive the date calendar dial **40'**, only partially shown. Therefore, motion is transmitted normally from gear **242** to the pallet so as to rotate the latter in clockwise direction. When the gear **242** is rotated in the opposite or counter clockwise rotation by rotation of the winding stem in the opposite direction, no torque will be transmitted from the gear **242** through the one way clutch to the pallet, thus no correcting effect being transmitted to the dage calender dial **40'**.

Holding plate **159** is fixedly attached to the plate by means of a plurality of set screws of which only one is shown at **160**, a spring arm **159*a*** projecting the main part of the holding plate **159**, so as to contact from upper with the pallet **243** so as to provide an axial pressure onto the one way clutch to keep it always in its ready-for-operational position.

For the regular drive of the date from the side of the normal gear train of the timepiece movement, the pallet **243** must be disengaged from the dial, in order to avoid an excess energy consumption of the drive poser source. For this purpose, there is provided an elongated spring arm **161** which is fixed at its root end to the holding plate **159**, while the free end of the spring arm is kept in pressure contact with the tooth space on the pallet.

In the similar way, a further elongated spring arm **162** is provided for the gear **35'**.

The embodiments of the invention in which an exclusive property or privilege is claimed are as follows:

1. In a calendar timepiece comprising a rotatable date calendar ring, a rotatable day calendar ring, a rotatable winding stem and setting means operatively connected between said rings and said stem for imparting a correcting rotation to both of said rings simultaneously upon rotating said stem in one direction and for imparting a correcting rotation to only one of said rings by rotating said stem in the opposite direction, said setting means comprises first and second date indexing means for indexing the date calendar ring and day indexing means for indexing the day calendar ring, a first transmission means for coupling the winding stem to the first date indexing means and the day indexing means upon rotation of said stem in the said one direction and a second transmission means for coupling the winding stem to the second date indexing means upon rotation of said winding stem in the said opposite direction.

2. A calendar timepiece as claimed in claim **1** wherein each of the transmission means includes a common gear operatively coupled to the winding stem during calendar ring setting and arranged for selective meshing with another gear of one of said first and second transmission means in dependence on the direction of rotation of the winding stem.

3. In a calendar timepiece comprising a rotatable date calendar ring, a rotatable day calendar ring, a rotatable winding stem and setting means operatively connected between said rings and said stem for imparting a correcting rotation to both of said rings simultaneously upon rotating said stem in one direction and for imparting a correcting rotation to only one of said rings by rotating said stem in the opposite direction, said setting means comprises a day indexing means for indexing the day calendar and a date indexing means being coupled to first and second gears respectively and a third gear arranged to be coupled to the winding stem during the calendar ring setting.

4. A calendar timepiece as claimed in claim **3** wherein the setting means comprises fourth and fifth meshing gears mounted on a common rotatable support, said fourth gear disposed in mesh with the third gear so that upon turning of the winding stem in the said one direction the support is rotated to a position in which the fourth gear meshes with the second and third gears and the fifth gear meshes with the first gear and upon turning of the winding stem in the said opposite direction the support is rotated to a position in which the fourth gear meshes with the third gear and the fifth gear meshes with the second gear.

5. A calendar timepiece as claimed in claim **3** wherein the third gear meshes with the first gear and the setting means comprises a fourth gear mounted on a support rotatable about the axis of the first gear and which is disposed in mesh with the first gear, said fourth gear arranged to be coupled to the second gear only during turning of the winding stem in the said one direction during calendar ring resetting.

6. A calendar timepiece as claimed in claim **3** wherein the third gear is brought into mesh with the first and second gears during calendar ring resetting and wherein one of the indexing means is coupled to its associated gear of the first and second gears through a one-way clutch.

7. A calendar timepiece as claimed in claim **3** wherein the day and date indexing means are coupled to said first and second gears respectively by means of a one-way clutch.

8. A calendar timepiece as claimed in claim **7** wherein the setting means comprises a sun gear in mesh with said third gear and first and second planet gears in mesh with the sun gear and mounted on a support rotatable about the axis of the sun gear, said first and second planet gear being selectively brought into mesh with the first and second gears in dependence on the direction of turning of the winding stem during calendar ring setting.

9. A calendar timepiece as claimed in claim **7** wherein the third gear is brought into mesh with the first gear during calendar ring resetting.