United States Patent

[11] 3,597,916

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[54] **DAY AND DATE CORRECTOR MECHANISM FOR A WATCH**

3 Claims, 4 Drawing Figs.

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[51] Int. Cl. G04b 19/24
[50] Field of Search ..... 58/4—6, 58, 63, 85.5

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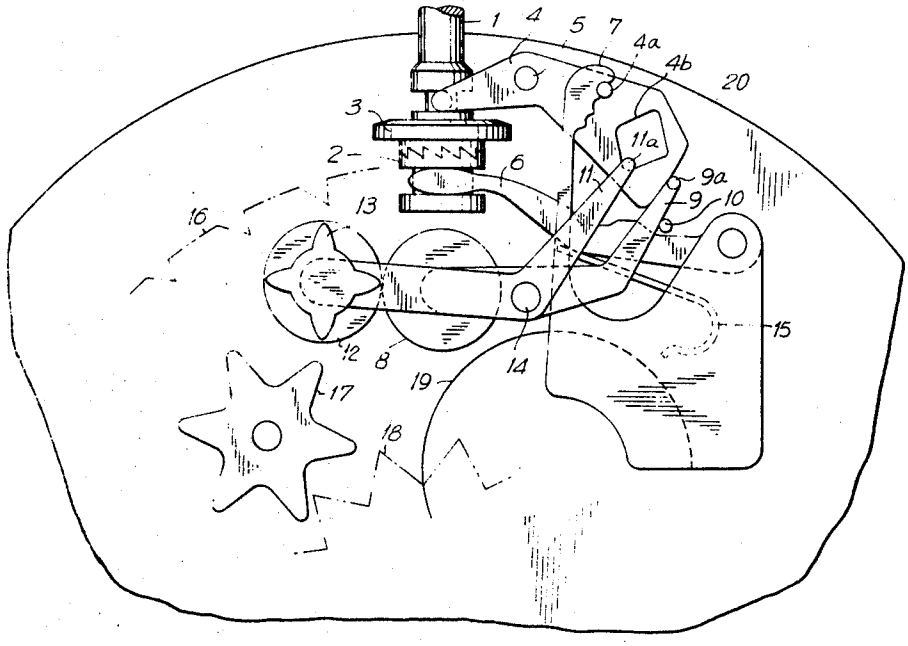
ABSTRACT: A day and date corrector mechanism mounted for pivotable displacement from outside said watch and having a quadrilateral aperture therein. A corrector wheel lever cooperatively engages said quadrilateral aperture for the selective positioning of a day and date corrector wheel mounted on said corrector wheel lever. The setting lever is pivotably displaceable between three positions, at one of which said corrector wheel lever may rock between one operative engagement of said corrector wheel for day correction and another operative connection of said corrector wheel for date correction. At the other of the two positions of said setting lever, said corrector wheel lever is restrained with the corrector wheel in a neutral position, while winding and hand setting functions are respectively performed.



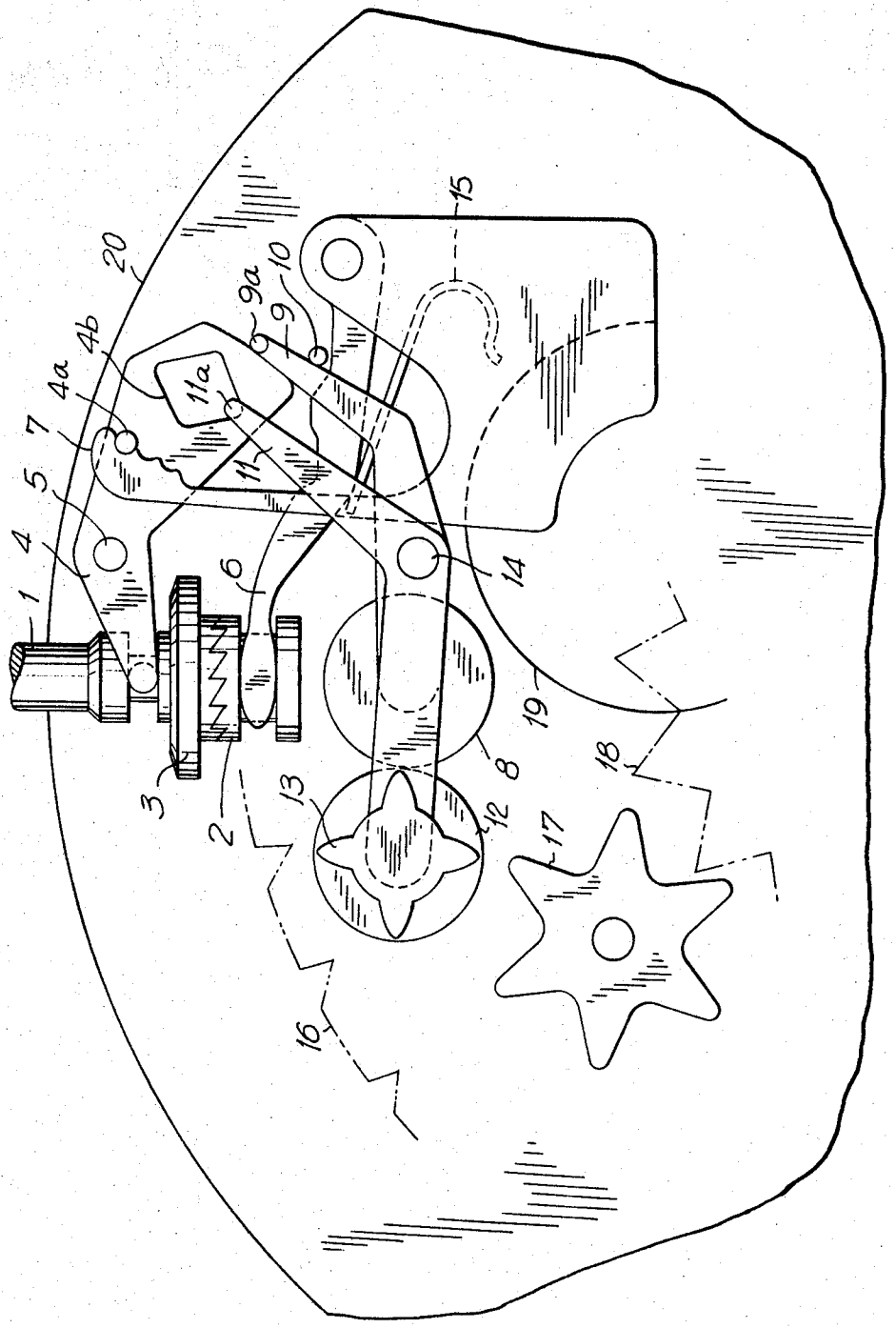


FIG. 1

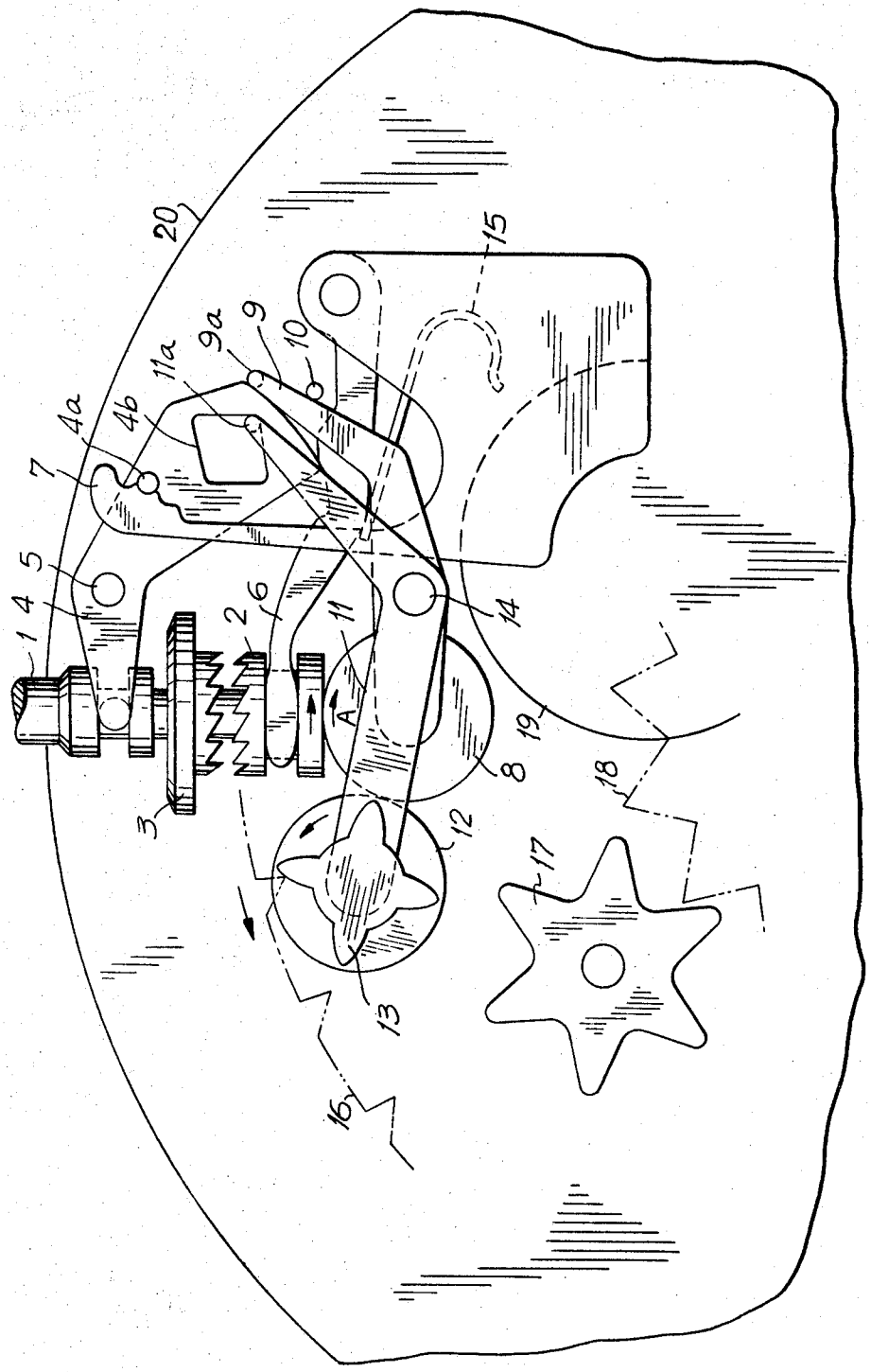


FIG. 2

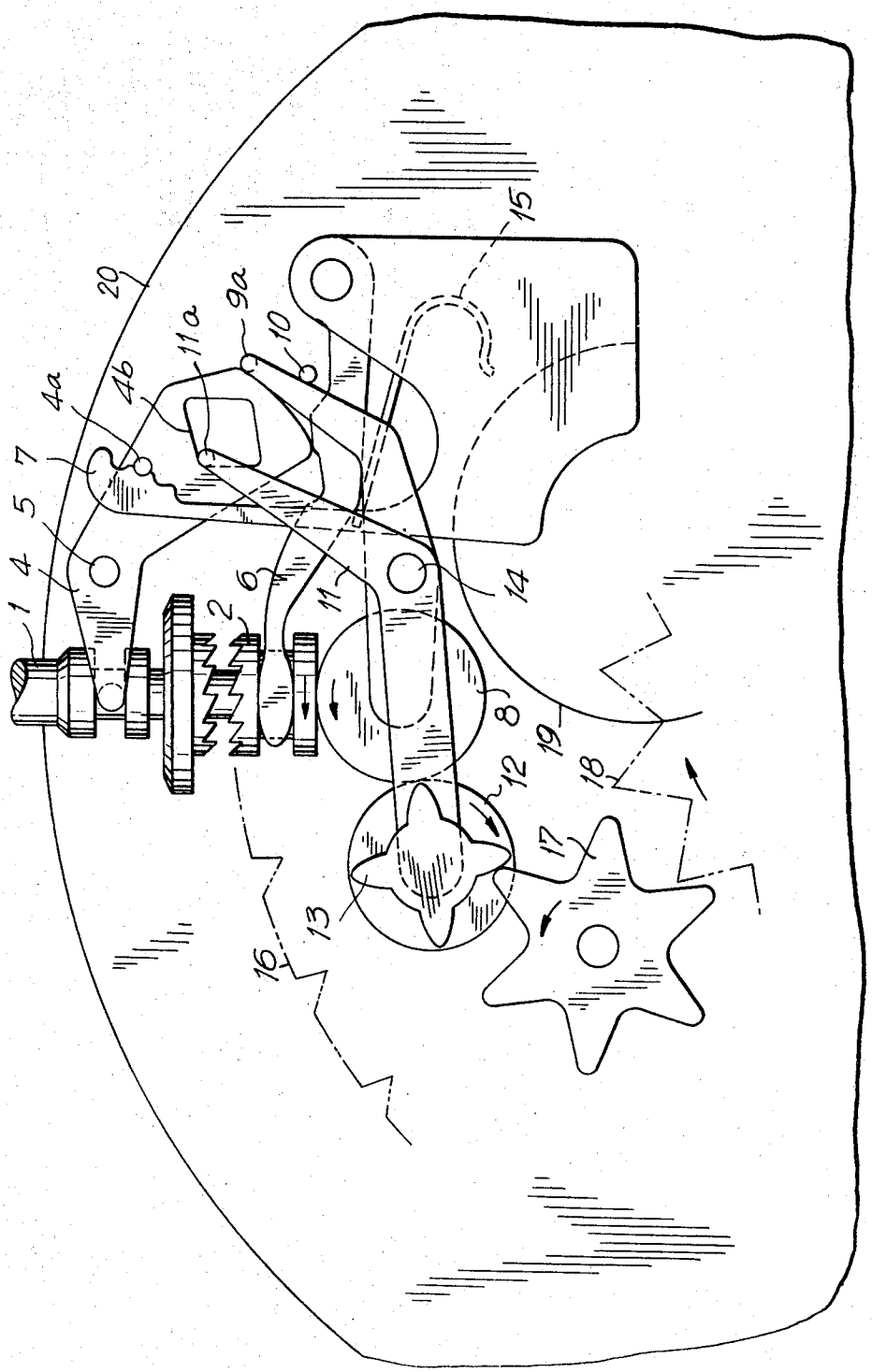


FIG. 3

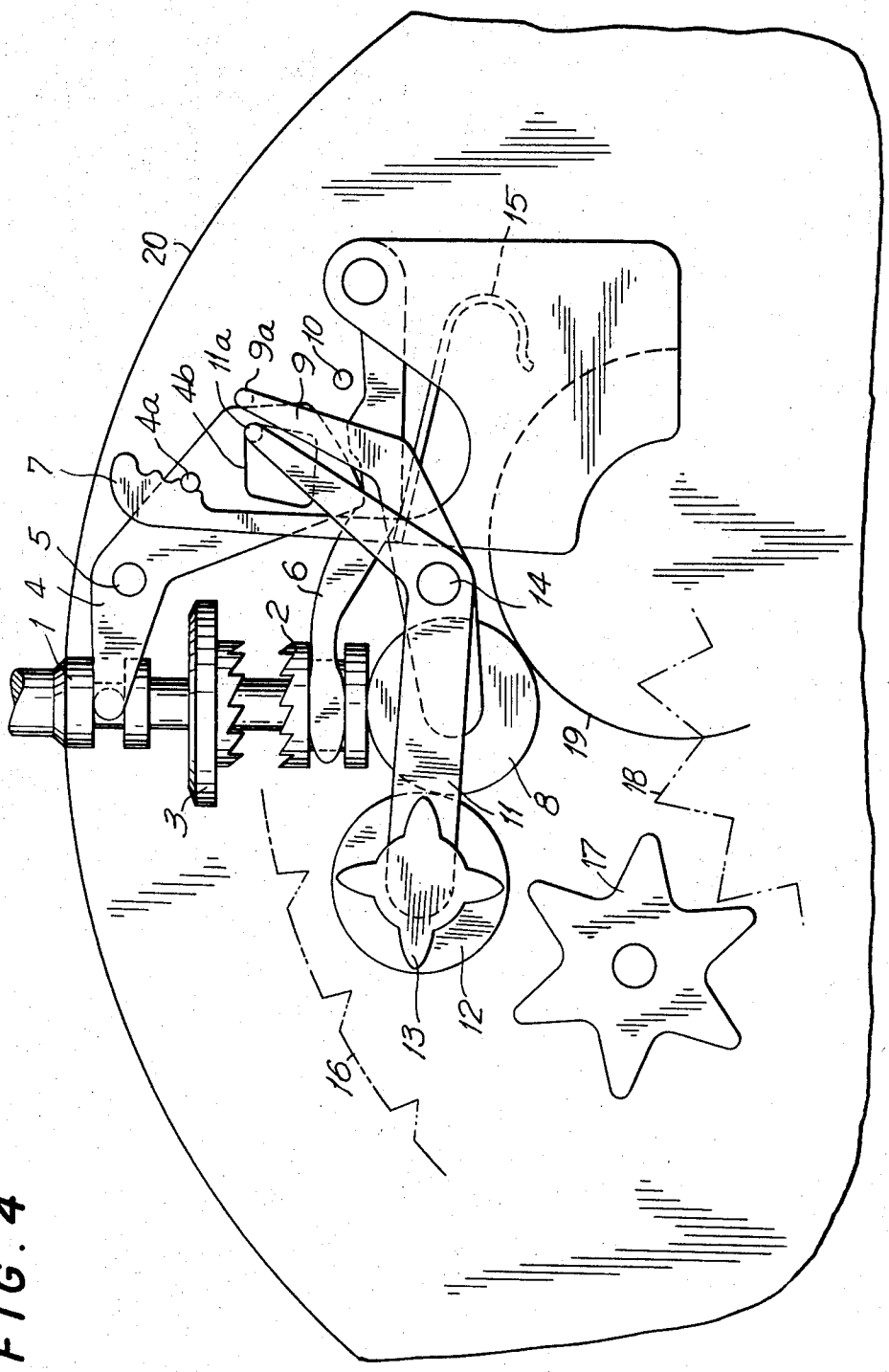


FIG. 4

DAY AND DATE CORRECTOR MECHANISM FOR A WATCH

This invention relates to a day and date corrector mechanism to correct simply and surely the day and date for a watch having a day and date calendar mechanism.

A variety of the corrector mechanisms for correcting the date only have been heretofore contrived and embodied. However, in order to achieve day correction, it is necessary to advance or reverse a watch 24 hours. On the other hand, there are also watches having day corrector mechanism, but these watches are specially provided with a day correcting button or complicated mechanism so that the appearance is spoiled and the cost of manufacturing proves to be expensive.

This invention intends to avoid these disadvantages. An object of this invention is a day and date corrector mechanism able to correct simply and surely the day and date by the action of an ordinary date corrector wheel.

An embodiment of the invention is illustrated in the accompanying drawings in which:

FIG. 1 is a plane view, showing corrector mechanism according to the invention in the state of winding of the mainspring.

FIG. 2 is a plane view, showing said mechanism in the state of date correction.

FIG. 3 is a plane view, showing said mechanism in the state of day correction.

FIG. 4 is a plane view, showing said mechanism in the state of hand setting.

Referring now to the drawings, 1 is a winding stem, 2 is a clutch wheel turning cooperatively with the winding stem 1 and conjoining to be able to slide axially, 3 is a winding pinion which transmits the turning of winding stem 1 to a crown wheel (not shown in the drawings) through the intermediary of clutch wheel 2, 4 is a setting lever conjoining with the groove of winding stem 1 and pivoting at the pin 5. The setting lever 4 is provided with the pin 4*a* which connects with successively one of the three notches of a setting lever spring 7 for positioning. A quadrilateral aperture 4*b* interlocks with the pin 11*a* which projects downwardly below the end of the corrector wheel lever 11. 6 is a yoke conjoining with the groove of the clutch wheel 2. 9 is the setting wheel lever having at the one end a pin 9*a* which projects downwardly below the setting wheel lever 9 and contacts with the end portion of the setting lever 4, and having at the other end, the setting wheel 8. 10 is a fixed pin of a plate 20 for regulating the movement of the setting wheel lever 9; 11 is the corrector wheel lever which is provided at the lower side of the one end, with the intermediate wheel 12 engaged constantly with the setting wheel 8, and at the upper side of this end, with a day and date corrector wheel 13 which turns cooperatively with the intermediate wheel 12. At the other end of the corrector wheel lever 11, the pin 11*a* interlocks with the aperture 4*b* of the setting lever 4, 14 is a pin which supports the turning movement of the setting wheel lever 9 and the corrector wheel lever 11. 15 is a yoke spring, 16 is a date dial printed with the dates, and 17 is an intermediate day corrector wheel which coacts always with a day star 18 which in turn coacts with a dial disk printed the days (not shown in the drawings). 19 is a minute wheel which engages with the setting wheel 8, during hand setting.

FIG. 1 shows the mechanism according to the invention during state of winding the mainspring, that is to say the watch is in the state of usual running. In this state, when the winding stem 1 is turned, whereof rotation is transmitted from the clutch wheel 2 to the winding wheel 3, the crown wheel and the ratchet wheel (not shown in the drawings) are turned to allow winding of the mainspring to take place. Moreover, in this state, as the pin 11*a* located at the end of the corrector wheel lever 11 is restrained by the aperture 4*a* of the setting lever 4, the day and date corrector wheel 13 is held out of the loci of the date dial 16 and of the intermediate day corrector wheel 17, that is to say in a neutral position. When the winding stem 1 is pulled out from the state shown in FIG. 1, the setting lever 4 rotates to right hand at the pin 5, the pin 4*a* is located at the second notch of the setting lever spring 7, and the yoke 6 is pushed by the end of the setting lever 4 to engage the clutch wheel 2 with the setting wheel 8. This state of the mechanism is illustrated in FIG. 2 and FIG. 3. In this state, when the stem 1 is turned counterclockwise the clutch wheel 2 and the setting wheel 8 are turned in the direction of arrow A in FIG. 2. At this time, as the corrector wheel lever 11 is in a position which permits the pin 11*a* to move freely on the diagonal line of the quadrilateral aperture 4*b*, the corrector wheel lever 11 pivoted at the pin 14, comes to the state shown in FIG. 2. Consequently, when the stem 1 is further turned counterclockwise, the day and date corrector wheel 13 drives the teeth of the date dial 16 one by one and corrects the date. On the contrary, when the stem 1 is turned clockwise, the setting wheel 8 turns counterclockwise and the corrector wheel lever 11, having mounted thereon the intermediate wheel 12 which engages with the setting wheel 8, turns counterclockwise about pin 14 and comes to the state shown in FIG. 3, that is to say, the state of day correction. In this state, the stem 1 is turned clockwise further, the day and date corrector wheel 13 turns the day star 18 to allow day correction to take place. Since setting wheel lever 9 is restrained by the end of setting lever 4 engaging pin 9*a* and steady pin 10, setting wheel 8 and clutch wheel 2 will not be disengaged. When the stem is pulled out farther from the state shown in FIG. 2 and FIG. 3, the setting lever 4 rotates clockwise at the pin 5, the pin 4*a* is located at the third notch of the setting lever spring 7, the yoke 6 is pushed by the end of the setting lever 4 and the pin 9*a* which is at the end of the the setting wheel lever 9 is released from cooperating with the end of the setting lever. Owing to this, when the clutch wheel 2 connected with the yoke 6 is pushed by the end of the setting lever 4, the setting wheel lever 9 rotates around the pin 14 and the clutch wheel drives the minute wheel 19 through the setting wheel 8. On the other hand, as to the corrector wheel lever 11, pin 11*a* thereof is restrained by the aperture 4*b* of the setting lever 4 to allow the day and date corrector wheel 13 to come to the neutral position. This state of the mechanism is shown in FIG. 4. In this state, hand setting takes place by turning of stem 1, while the day and date corrector wheel 13 runs idle at the neutral position.

In the invention, as above mentioned, the quadrilateral aperture in the setting lever 4 restrains the movement of the corrector lever 11, so that only one or two parts are added, and there is a little change in the construction as compared with an ordinary corrector mechanism, so that there are a few factors which makes it expensive. Moreover, as the day and date corrector wheel 13 rests always at the neutral position, except during day and date correction, the said corrector wheel 13 does not disturb the motion of the date dial, or day star and dial disk.

I claim:

1. In a calendar watch having a longitudinally displaceable winding stem disposable in at least three predetermined positions, mainspring winding means, hand setting means, day setting and display means, and date setting and display means, the improvement which comprises a pivotable setting lever coupled to said winding stem for pivoting in response to the longitudinal displacement of said winding stem and being formed with a quadrilateral aperture therein; a pivotable corrector wheel lever having a portion thereof projecting into said setting lever aperture for guiding the pivotable displacement of said corrector wheel lever; and a corrector wheel rotatably mounted on said corrector wheel lever for displacement therewith, said winding stem being operatively coupled to said mainspring winding means at a first of the predetermined positions thereof, to said corrector wheel at a second of said predetermined positions, and to said hand setting means at a third of said predetermined positions, said setting lever aperture and corrector wheel lever being placed to retain said corrector wheel in a neutral position out of operative engagement with said day setting and display means and said date

setting and display means when said winding stem is in said first and third of said predetermined positions, and to permit said corrector wheel lever to selectively rock between a first placement of said corrector wheel in operative engagement with said day setting and display means for day correction and a second placement of said corrector wheel in operative engagement with said day setting and display means for day correction and a second placement of said corrector wheel in operative engagement with said date setting and display means for date correction when said winding stem is disposed in the second of said predetermined positions.

2. A calendar watch as recited in claim 1, wherein the portion of said corrector wheel lever projecting into said setting

lever aperture is engaged against one of a pair of opposed corners of said quadrilateral aperture when said winding stem is positioned in each of said first and third predetermined positions, the projecting portion of said corrector wheel lever being positioned to rock diagonally across said quadrilateral aperture between the other pair of opposed corners thereof when said winding stem is in said second of said predetermined positions.

3. A calendar watch as recited in claim 1, wherein the selective rocking of said corrector wheel lever is in response to the direction of rotation of said winding stem.