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(54) TIMEPIECE MOVEMENT

(71) We, KABUSHIKI KAISHA SUWA SEIKOSHA, a Japanese company, of 3-4, 4-chome, Ginza, Chuo-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns a timepiece movement.

According to the present invention there is provided a timepiece movement comprising a rotatable stem which is axially movable into three positions, first and second time indicating means, and a seconds hand, rotation of said stem when in the first position effecting adjustment of the first time indicating means and of the seconds hand, rotation of said stem when in the second position effecting adjustment of the second time indicating means only, and rotation of said stem when in the third position effecting adjustment of neither the first or second time indicator means nor of the seconds hand.

The first time indicating means may be a minute hand, or may be both a minute hand and an hour hand. The second time indicating means may be an hour hand.

Rotation of the stem when in the third position may effect winding of the watch.

When the stem is in the first position, a braking member may be applied to a balance wheel of the movement.

Alternatively, the movement may comprise a tuning fork oscillator which drives a ratchet wheel, the tuning fork oscillator being provided with a pawl which is removed from the ratchet wheel when the stem is in the said first position. Yet again, the movement may comprise a quartz crystal oscillator, movement of the stem into the first position effecting operation of a resetting switch.

The invention also comprises a timepiece provided with a timepiece movement as set forth above.

The invention is illustrated, merely by way of example, in the accompanying drawings, in which:—

Figure 1 is a plan view showing a watch

[Price 33p]

having a timepiece movement according to the present invention, and

Figure 2 is a diagrammatic view of a mechanism which may form part of the embodiment of Figure 1.

In Figure 1 there is shown a watch 35 which is provided with one single axially movable and rotatable stem 27 which is movable between three positions indicated respectively by the reference numerals 40, 41, 42.

In a first (i.e. the radially outermost) position indicated by the reference numeral 40, rotation of the stem 27 effects adjustment of the time indicated by a seconds hand 13, a minute hand 12 and a first hour hand 11. In a second position of the stem 27 indicated by the reference numeral 41, rotation of the stem 27 effects adjustment of a second hour hand 15. In a third (or radially innermost) position of the stem 27 indicated by the reference numeral 42, rotation of the stem 27 effects winding of the watch. Thus, in the case of the watch 35, the wearer, when he has reached another time zone, merely needs to move the stem 27 to the position indicated by the reference numeral 41 so as to alter the second hour hand 15 to show the local time.

The watch 35 may be provided with an oscillator constituted by a balance wheel 20. As shown in Figure 2, rotation of the balance wheel 20 may be permitted or prevented by a braking lever 43 having a fulcrum at 44. The braking lever 43 has an arm 45 which is movable into braking engagement with the balance wheel 20, and an arm 46 which is engageable with the stem 27. A spring 47 is provided to urge the braking lever 43 to rotate counterclockwise about the fulcrum 44 so as to bring the arm 45 into braking engagement with the balance wheel 20.

When the stem 27 is moved to the position 40 shown in Figure 1, the radially inner end of the stem 27 is spaced from the arm 46 as shown in Figure 2 so as to allow the spring 47 to cause the arm 45 to make braking engagement with the balance wheel 20. However, when the stem 27 is in either of the

positions 41, 42, engagement occurs between the stem 27 and the arm 46 so as to release the arm 45 from the balance wheel 20.

Thus, if the stem 27 is pulled out the balance 20 is stopped; and if the stem 27 is pushed in, the balance wheel 20 is released. Even in a balance wheel watch having a high frequency of more than ten oscillations a second, a high precision as good as a tuning fork watch may be obtained and the time may be set to the second with a good maintenance of time.

Thus, when the stem 27 is moved to the radially outer position 40 shown in Figure 1, it prevents the drive from the said oscillator being transmitted to the seconds hand 13. Accordingly, in a quartz crystal watch in which the seconds hand is advanced in one second steps, a re-setting switch (not shown) may be operated when the stem 27 is pulled to the radially outer position 40 shown in Figure 1. In the case of a tuning fork watch, in which a pawl attached to a tuning fork oscillator drives a ratchet wheel, a stopping pawl (not shown) may be removed from the ratchet wheel when the stem 27 is pulled to the radially outer position 40 shown in Figure 1.

30 WHAT WE CLAIM IS:—

1. A timepiece movement comprising a rotatable stem which is axially movable into three positions, first and second time indicating means, and a seconds hand, rotation of said stem when in the first position effecting adjustment of the first time indicating means and of the seconds hand, rotation of said stem when in the second position effecting adjustment of the second time indicating means only, and rotation of said stem when in the third position effecting adjustment of

neither the first or second time indicator means nor of the seconds hand.

2. A timepiece movement as claimed in claim 1 in which the first time indicating means is a minute hand. 45

3. A timepiece movement as claimed in claim 1 in which the first time indicating means is a minute hand and an hour hand. 50

4. A timepiece movement as claimed in any preceding claim in which the second time indicating means is an hour hand.

5. A timepiece movement as claimed in any preceding claim in which rotation of said stem when in the third position effects winding of the watch. 55

6. A timepiece movement as claimed in any preceding claim in which, when the stem is in the first position, a braking member is applied to a balance wheel of the movement. 60

7. A timepiece movement as claimed in any of claims 1 to 5 in which the movement comprises a tuning fork oscillator which drives a ratchet wheel, the tuning fork oscillator being provided with a pawl which is removed from the ratchet wheel when the stem is in the said first position. 65

8. A timepiece movement as claimed in any of claims 1 to 5 in which the movement comprises a quartz crystal oscillator, movement of the stem into the first position effecting operation of a resetting switch. 70

9. A timepiece movement substantially as hereinbefore described with reference to and as shown in the accompanying drawings. 75

10. A timepiece provided with a timepiece movement as claimed in any preceding claim.

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positions 41, 42, engagement occurs between the stem 27 and the arm 46 so as to release the arm 45 from the balance wheel 20.

Thus, if the stem 27 is pulled out the balance 20 is stopped, and if the stem 27 is pushed in, the balance wheel 20 is released. Even in a balance wheel watch having a high frequency of more than ten oscillations a second, a high precision as good as a tuning fork watch may be obtained and the time may be set to the second with a good maintenance of time.

Thus, when the stem 27 is moved to the radially outer position 40 shown in Figure 1, it prevents the drive from the said oscillator being transmitted to the seconds hand 13. Accordingly, in a quartz crystal watch in which the seconds hand is advanced in one second steps, a re-setting switch (not shown) may be operated when the stem 27 is pulled to the radially outer position 40 shown in Figure 1. In the case of a tuning fork watch, in which a pawl attached to a tuning fork oscillator drives a ratchet wheel, a stopping pawl (not shown) may be removed from the ratchet wheel when the stem 27 is pulled to the radially outer position 40 shown in Figure 1.

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neither the first or second time indicator means nor of the seconds hand.

2. A timepiece movement as claimed in claim 1 in which the first time indicating means is a minute hand.

3. A timepiece movement as claimed in claim 1 in which the first time indicating means is a minute hand and an hour hand.

4. A timepiece movement as claimed in any preceding claim in which the second time indicating means is an hour hand.

5. A timepiece movement as claimed in any preceding claim in which rotation of said stem when in the third position effects winding of the watch.

6. A timepiece movement as claimed in any preceding claim in which, when the stem is in the first position, a braking member is applied to a balance wheel of the movement.

7. A timepiece movement as claimed in any of claims 1 to 5 in which the movement comprises a tuning fork oscillator which drives a ratchet wheel, the tuning fork oscillator being provided with a pawl which is removed from the ratchet wheel when the stem is in the said first position.

8. A timepiece movement as claimed in any of claims 1 to 5 in which the movement comprises a quartz crystal oscillator, movement of the stem into the first position effecting operation of a resetting switch.

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