A watch movement has a setting mechanism with a pull-out winding shaft enabling a step-by-step setting of solely the hour hand when the shaft is in an intermediate position between a pushed-in winding position and a pulled-out time-setting position. Said mechanism comprises a sliding link carrying a correcting wheel permanently in mesh with a pinion which in turn is in mesh with a sliding pinion on the shaft in both the intermediate position and the pulled-out position. In the intermediate position of the shaft, the correcting wheel meshes with a wheel carrying at least one toothed sector, said sector being adapted to drive the hour hand through given angular steps each corresponding to 1 hour.

2 Claims, 3 Drawing Figures
TIMEPIECE SETTING MECHANISM

Numerous watches are known comprising devices for facilitating the resetting of the hour hand by users frequently passing from one time zone to another. In certain known watches the hour hand can be separately displaced by means of a device connected to the hand setting mechanism, and acting in one predetermined axial position of the winding shaft. The device enables the hour hand to jump from a position corresponding to one hour to another position with a shift of one hour from the former position.

The present invention is concerned with a watch movement for a watch of this type, i.e., a watch movement having a pull-out winding shaft enabling a step-by-step setting of solely the means for carrying an hour indicator (e.g., a wheel and pipe adapted to carry an hour hand) when the shaft is in an intermediate position between a pushed in winding position and a pull-out winding position. This mechanism comprising a sliding link carrying a correction wheel permanently in mesh with a pinion which in turn is in mesh with a sliding pinion on the shaft in both the intermediate hour-only correcting position and in the pull-out time-setting position.

In known movements of this type, a jumper spring in interposed between the hour wheel and the wheel carrying the hour hand to define the jumps of the hour hand, and has to be made very light to avoid an unwanted driving of the motion work.

An aim of the invention is to obviate the need for a jumper spring as used in the prior devices.

According to the invention, a watch movement of the above type is characterized in that in the intermediate position of the shaft the correcting wheel meshes with a wheel carrying at least one toothed sector, said sector being adapted to drive the means for carrying the hour indicator through given angular steps, for example steps each corresponding to jumps of the hour indicator by 1 hour.

The invention also pertains to watches incorporating such movements.

The accompanying drawings show, by way of example, an embodiment of the invention. In the drawings:

FIG. 1 is a plan view of part of a watch movement with the winding shaft pushed in;

FIG. 2 is a similar view with certain parts cut away and shown schematically and with the winding shaft in the intermediate position; and

FIG. 3 is a view similar to FIG. 2 with the winding shaft in the pulled out position.

The partially shown watch movement comprises a hand setting mechanism having a pull-out assembly comprising a winding shaft 1 adapted when axially displaced to operate a lever 2 pivoted about a pin 3. The winding shaft 1 can occupy any one of three axial positions defined by a pin 4 fixed to lever 2 and cooperating with three notches 5a, 5b and 5c in a pull-out detent 5 forming an integral resilient tongue on a fixed plate.

In the first pushed-in position of winding shaft 1 shown in FIG. 1, a lever or link 6 causes meshing of the Breguet teeth of a sliding pinion 7 with the Breguet teeth of a rewinding pinion; the winding of the watch movement can thus be effected.

In the second intermediate position of the winding shaft 1 shown in FIG. 2, the link 6 has been pushed back by shaft 1, through lever 2, in a way known by itself, the teeth of the sliding pinion 7 and of the rewinding pinion are desengaged, and radial teeth of a second part of the sliding pinion 7 come into mesh with an intermediate pinion 8.

The mechanism also comprises a sliding link 9 carrying a gear 10 always in mesh with the intermediate pinion 8. This link 9 is guided at one point by the lever 2 and at another point by a slot 11 in a stationary bridge 12, in which slot the elongated end of the shaft of gear 10 is slidable engaged.

The link 9 is guided by the lever 2 by means of two pins. One pin 13 secured to the lever 2 and slidable engages a slot 14 of the link 9; the other pin 15 is secured to the link 9 and engages a V-shaped slot 16 in the lever 2. The gear wheel 10 can take up two positions.

(1). In FIG. 1 (pushed in) and 2 (intermediate) the link 9 is permitted rotational movement with respect to the shaft of the wheel 10, the pins 13 and 15 being displaced in their slots 14 and 16 respectively the forms of which are such that the axis of the gear wheel 10 remains immobile, and the gear wheel remains meshed both with the pinion 8 and with a wheel 17 carrying a toothed sector 18. No jumper spring, or extra space for it, is either needed or used.

On rotation of the winding shaft 1 in the intermediate position thereof, this toothed sector 18 is driven by the sliding pinion 7, through the pinion 8, the wheel 10 and the wheel 17, and in turn it drives a wheel 21 carrying the hour hand (not shown) by means of pinions 19 and 20. During each complete turn of the wheel 17, the toothed sector 18 drives the wheel 21 through an angle corresponding to a displacement of the hour hand by one hour. A holding or click device (not shown) interposed between the wheel 21 carrying the hour hand and the hour wheel (not shown) holds the wheel 21 in its new position. This holding or click device, due to the provision of toothed sector 18 which sets the amount of each jump, need only fix the angular position of the two wheels. It can thus be very simple and light.

In an alternative embodiment (not shown), the wheel 17 carries several discrete spaced apart toothed sectors, for example, two or three, each of which drives the wheel 21 through an angle corresponding to one hour.

(2). In the pulled-out time setting position shown in FIG. 3, the link 9 occupies a second position in which the wheel 10 comes into mesh with the motion-work 21 for setting the time, i.e. the minute and hour hands together. In this last position, the wheel 10 is out of mesh with the wheel 17.

During normal time-keeping operation of the movement, the toothed sector 18 will always be out of mesh, or will move out of mesh, with pinion 19, so that wheel 10 is disengaged from the going train (i.e., including wheel 21 and pinion 20).

What is claimed is:

1. In a watch:

hour indicator means;

a pull-out winding stem settable in a first pushed-in position for winding, a second pulled-out position for time-setting; and a third intermediate position; lever means settable by said shaft in first, second and third positions corresponding respectively to the first, second and third positions of said stem; and hour-setting means for step-by-step setting of solely the hour indicator means when the shaft is in
the intermediate position, said hour-setting means comprising:

a stationary bridge; a slidable link; correcting gear pivotally carried by the link; a pinion in permanent mesh with the correcting gear; a slidable gear on said stem meshable with the pinion in the intermediate and the pulled-out positions of said stem; a toothed sector step drive gear means in selective mesh with the correcting gear for turning said toothed sector; means drivable by said toothed sector for driving, in the intermediate position of the stem, the hour indicator means through angular steps each corresponding to an angular extension of said toothed sector; and

pin-and-slot means interconnecting said slidable link with said bridge including means interconnecting said slidable link with said lever means, for maintaining the permanent mesh of said correcting gear with said pinion, and for controlling the selective mesh of said correcting gear with said step drive gear means to drive said hour indicator means through said toothed sector and correcting gear when said shaft and lever means are in their third positions.

2. In a watch according to claim 1, a going train, and means for maintaining continuous driving connection of said going train, through said correcting gear, with said hour indicator means during times when said stem and lever means are in their second position.

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