C. E. OETH.

SELF WINDING CLOCK.

APPLICATION FILED NOV. 17, 1915.

1,237,216. Patented Aug. 14, 1917.

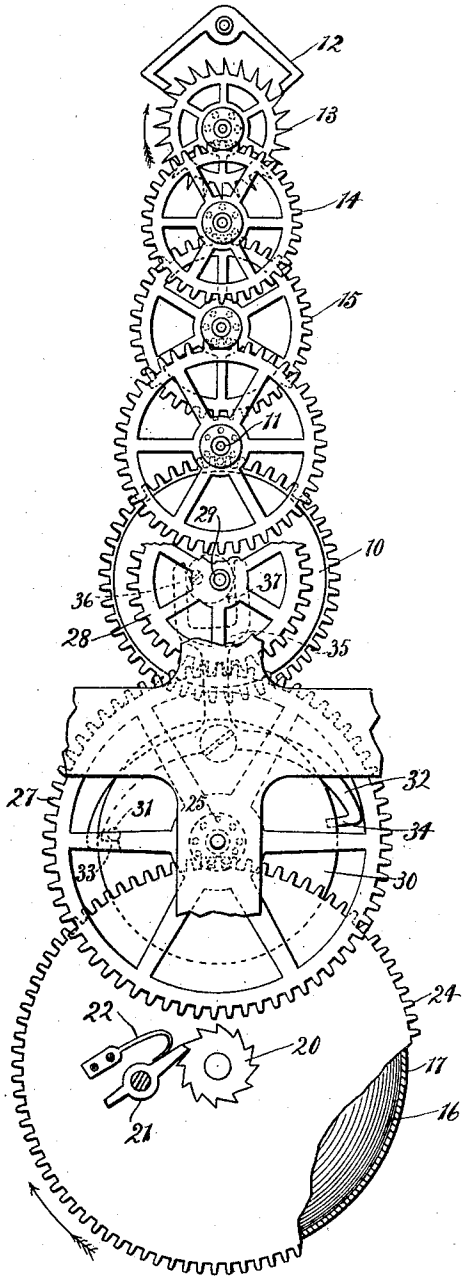

Fig. 1.

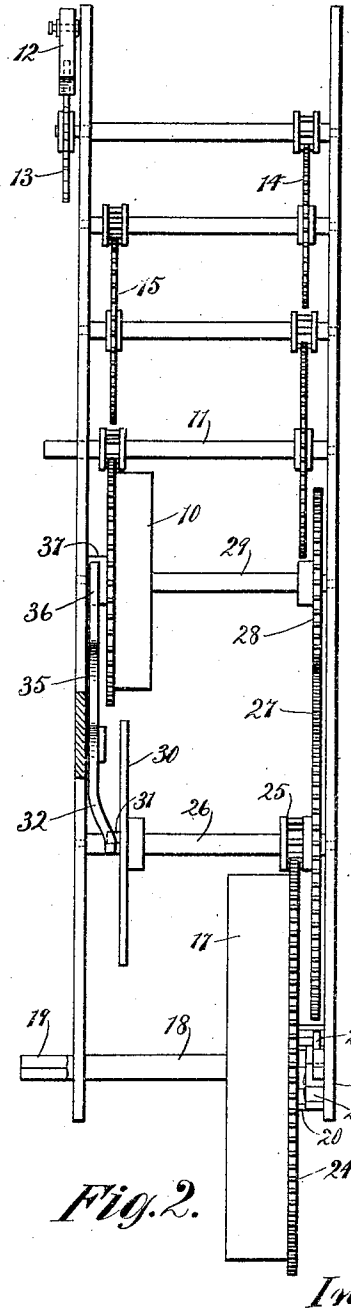

Fig. 2.

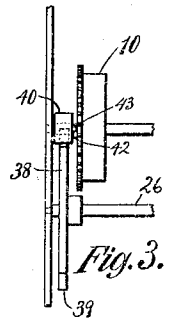

Fig. 3.

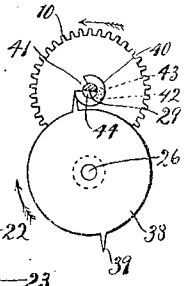

Fig. 4.

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SELF-WINDING CLOCK.

1,237,216. Specification of Letters Patent. Patented Aug. 14, 1917.

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To all whom it may concern:

Be it known that I, CORNELIUS E. OETH, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Self-Winding Clocks, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to that type of clock movements in which there is provided means for rewinding the main spring; and it consists broadly in providing the clock movement with a spring, superior in power to the main spring and which may itself be wound manually or otherwise, with operative connection between the two springs, and an escapement for periodically releasing the rewinding spring.

In the drawings illustrating the invention—

Figure 1 is a diagrammatic representation of a train of gears of a clock movement with the rewinding attachment;

Fig. 2 is a side view, partly in section, conventionally showing a train of gears and including the main spring drum and the rewinding spring drum;

Figs. 3 and 4 are details showing a modification of the escapement for controlling the rewinding spring.

The main spring drum is represented at 10, and as being in driving connection with the arbor 11 for carrying the hands of the clock. The usual escapement pallet is represented at 12, and the escapement wheel at 13,—the latter being connected through the gears 14 and 15 with the arbor 11. The rewinding spring is represented at 16 and as being inclosed within a drum 17 and wound upon an arbor 18, shown as having a squared end 19 to which a winding key may be applied. Upon the arbor 18 there is fixed a ratchet wheel 20, with which coöperates a retaining pawl 21, held in engagement with the ratchet wheel by a suitable spring, as 22,—the pawl being pivotally attached to the frame 23 carrying the movement.

The rim 24 of the drum 17 is toothed, and meshes with a pinion 25 mounted on an arbor 26, which carries a gear 27 meshing with a gear 28 fixed on the arbor 29 of the main spring drum.

A disk 30, fixed upon the arbor 26, is provided with an axially projecting stud 31 coöperating with a pallet 32 pivotally mounted on the movement frame, and having at its ends inturned arms 33, 34, which alternately move into the path of the stud. The pallet 32 is provided with an arm 35, carrying at its end a yoke 36 which fits upon an eccentric 37 carried by the drum 10 of the main spring. As the drum 10 rotates under the influence of the main spring, it causes the oscillation of the arm 35 and pallet 32, thus withdrawing the arm 33 or 34 from engagement with the stud 31. Upon release of this stud the drum 17 is rotated by the action of the spring 16, turning the disk 30 until it comes into contact with the pallet arm which has now been swung into its path, and rewinding the main spring through the agency of the gears 27, 28.

The escapement for the rewinding spring may be varied in form. In the modification illustrated in Figs. 3 and 4, there is shown a disk 38 taking the place of the disk 30 and being provided with a plurality of radial spurs 39, here shown as two in number. A roller 40 is loosely mounted on the arbor of the main spring, and is provided with a recess 41 in its periphery adapted to receive the spurs 39. A stud 42, projecting axially from the drum 10, is so placed as to engage a stud 43 on the end of the roller 40.

Normally the roller 40 serves as a stop for the spurs 39 and prevents the unwinding of the spring 16. As the drum 10 is turned under the influence of the main spring, the stud 42 engages the stud 43 and turns the roller 40 until its recess 41 comes into position to receive the contacting spur 39, whereupon the spring 16 is released and rewinds the main spring, incidentally causing the turning of the disk 38 and with it the roller 40 until the spur 39 leaves the recess 41. The rewinding movement continues until the next succeeding spur 39 comes into engagement with the smooth face of the roller. This will occur when the disk 38 has turned through exactly one-half of one revolution. It therefore follows that if the gear 28 is just one-half the size of the gear 27, the spindle 29 will be brought to rest in the same angular position after each movement. This arrangement permits of the spurs 39 being made long enough to engage the roller 40 at the side of the spindle for arresting the movement of the disk 38, the spindle being recessed at 44 to permit the passage of the spurs 39. The studs 42, 43, further serve as stops to prevent the roller being turned by

one spur 39 to a position which would permit the entrance of the other spur 39 into the recess 41.

The rewinding spring may be of any desired length, and the periods at which it must be rewound will vary with its length.

The invention not only provides for the operation of the clock through long periods before rewinding is necessary, but it secures greater accuracy because the clock movement is driven by a main spring which is at all times of substantially uniform tension, thus avoiding the disadvantage in long period clock movements of a tendency to run too rapidly when first rewound and too slowly when the main spring tension becomes considerably weakened. While I have illustrated the invention as applied to a clock movement, it will be understood that it is equally applicable to watch movements.

I claim as my invention—

1. In a time-piece movement, in combination, a main spring arbor, a main spring drum revoluble on the arbor, a rewinding arbor geared to the main spring arbor, a roller on the main spring arbor having a recess in its periphery, means for causing the rotation of the roller with the main spring drum but permitting the roller to turn in advance of the drum, and a radial spur turning with the said rewinding arbor, the said roller being located in the path of the spur and serving as a stop to prevent rotation of the rewinding arbor except when the roller has been turned by the main spring drum to permit the entrance of the spur into its said recess.

2. In a time piece movement, in combination, a main spring drum and its arbor, a rewinding mechanism including rotatable parts, one of which is geared to the main spring arbor, a notched roller coaxially mounted with the main spring drum, studs on the notched roller and on the main spring drum having a common path of movement, and an arm turned by the said rewinding mechanism, the notched roller being located in the path of movement of the said arm and serving as a stop to prevent movement of the rotatable parts of the rewinding mechanism except when the roller has been turned by the main spring drum to permit the entrance of the arm into its notch.

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