

May 18, 1948.

F. L. SEMON

2,441,847

WATCH REGULATOR MECHANISM

Filed April 21, 1944

3 Sheets-Sheet 1

FIG. 1.

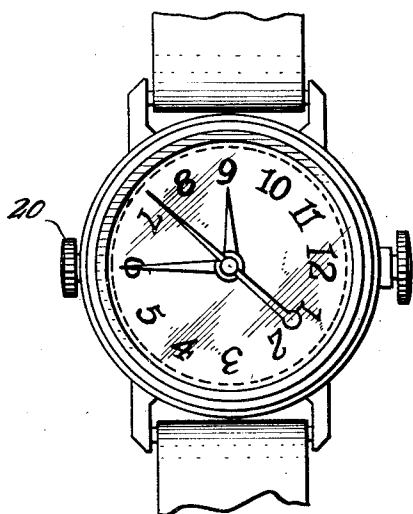


FIG. 2.

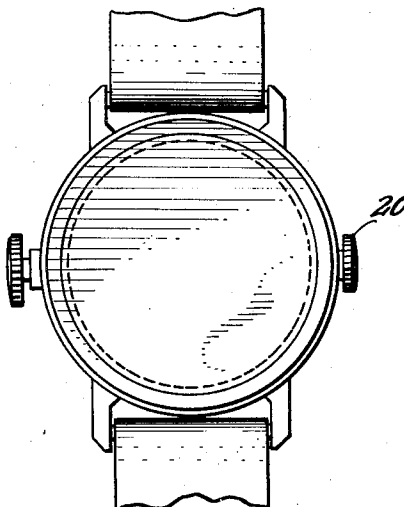


FIG. 3.

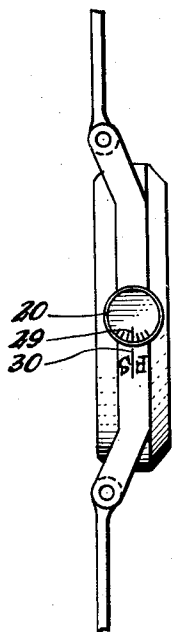
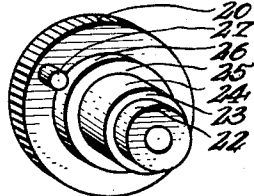


FIG. 10.



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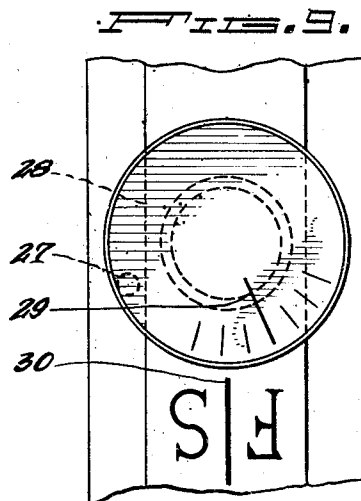
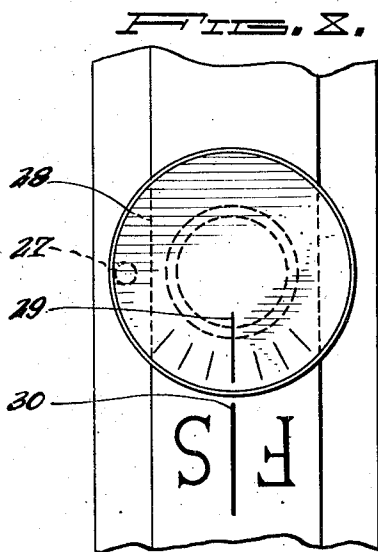
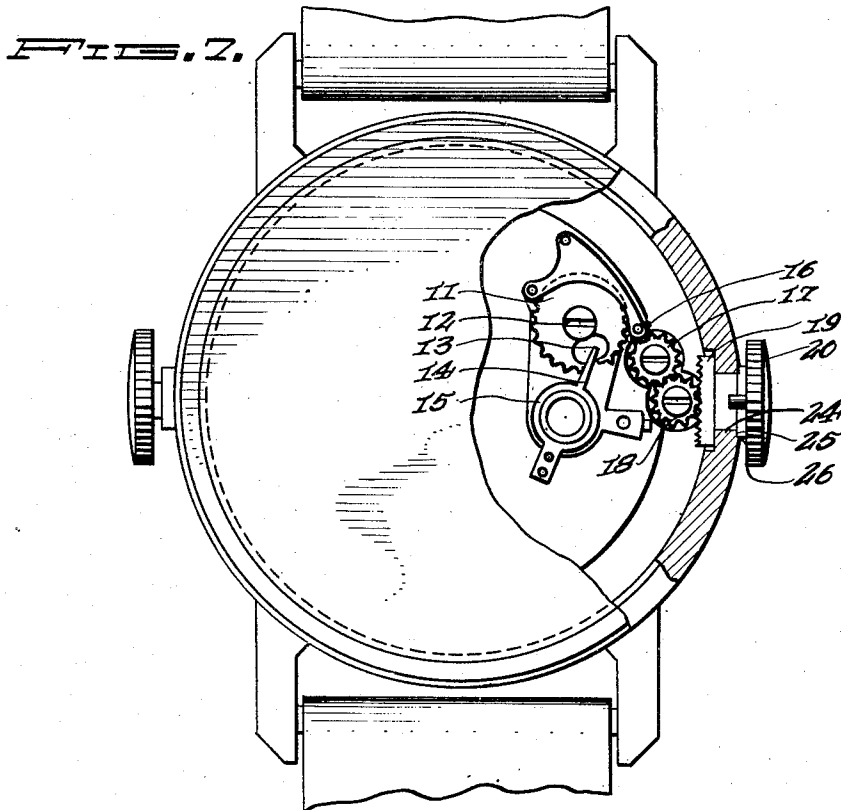
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WATCH REGULATOR MECHANISM

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3 Sheets-Sheet 3



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2,441,847

WATCH REGULATOR MECHANISM

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Application April 21, 1944, Serial No. 532,029

1 Claim. (Cl. 58—109)

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This invention relates to watch regulator mechanisms and refers more particularly to such mechanisms which may be operated from outside the watch case.

It is understood that the speed at which a watch runs is governed by a pivoted flywheel which reverses its direction of rotation rapidly and that the rapidity of reversal of direction is determined by the tension in the hairspring, a flat spiral spring whose inner end is fastened to the flywheel staff and whose outer end is fastened to the end of a regulator. The regulator being pivoted substantially at its own middle and having the opposite end pointed, moving the point varies the tension of the hairspring. Graduations on a suitable surface adjacent to the arc described by the point provide a convenient guide to the indicated magnitude of movement of the point, the effect of previous movements of definite magnitude having been observed.

The regulator of a watch is customarily located on the back, and the back cover must be opened before it is accessible. In waterproof watches this cover is not easily opened. Moreover, the opening and closing of such a cover by an inexperienced person is liable to impair its ability to exclude water.

An object of the present invention is to provide a means of regulating watches without opening the case.

Another object is to provide such a means which will preserve the water excluding ability of a waterproof watch case.

Another object is to provide external graduations from which the magnitude of movement of the regulator may be observed.

Other objects of the present invention will become apparent from the following specification.

In accomplishing the objects of the present invention it was found desirable to provide a disc pivoted at its center and in the plane of the regulator, with a hole somewhat inward of the periphery and a radial slot from the periphery to the hole, the slot being of a dimension to grip the pointer of the regulator and move it in its normal arc by movement of the disc on its pivot, and the hole being of a dimension to permit the pointer to move in its normal arc. This disc has gear teeth on its periphery and is connected by a gear train to a regulating stem which extends through the case similarly to the winding stem. The crown of this stem is knurled on the periphery for easy turning and on its top surface has graduations, the zero mark of which is matched by a

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mark on the periphery of the frame, with letters either side of the mark to indicate fast and slow.

Rotation of this regulating stem is communicated through the gear train to the disc, which moves the regulator of the watch, and the magnitude of regulation is readily observed on the scale on the crown of the regulating stem.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing, by way of example, preferred embodiments of the inventive idea.

In the drawings:

Figure 1 is a front view of a watch embodying the external regulator.

Figure 2 is a rear view of the same watch.

Figure 3 is a bottom view of the same watch.

Figure 4 is a rear view of the watch, partially in section showing the regulator in midposition.

Figure 5 is a section taken along the line 5—5 of Figure 4.

Figure 6 is a section taken along the line 6—6 of Figure 4.

Figure 7 is another rear view of the watch, partially in section, showing the regulator in extreme position.

Figure 8 is a bottom view of the watch showing the external regulator crown in midposition.

Figure 9 is a bottom view of the watch showing the external regulator crown in fast position.

Figure 10 is the external regulator stem.

Figures 1, 2 and 3 are front, rear and bottom views respectively of the watch embodying the external regulating actuator or knob 20, Figure 3 also showing the zero mark 29 and the register mark 30 of the external graduation.

Figure 4 shows a regulator actuating or engaging disc 11 centrally mounted on a pivot 12 in the plane of the regulator 15 and at a point on a line in prolongation of the point 14 of the regulator (when the point is in midposition) which causes the point to enter the body of the disc somewhat through a slot in the periphery of the disc and to extend into a hole 13. Rotation of the disc moves the point of the regulator through its normal arc, the hole being provided to permit movement of the point relative to other parts of the disc while the point is slidingly held by the sides of the slot in the periphery.

Rotation is imparted to the disc by geared pinion 16 (Figure 5) which engages teeth on the periphery of the disc, and is in turn driven by gears 17 and 18.

Gear 18 is driven by crown gear 19 mounted on the external regulating actuator or knob 20, gear

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19 being radially positioned by the bearing surface 22 and axially positioned by the screw 21 and shoulder 23. The external regulating actuator is radially positioned by bearing surface 24 and part of bearing surface 26 and axially positioned by shoulder 25 and the screw acting through the back surface of gear 19. The assembly constitutes a waterproof seal of the labyrinth type utilizing surfaces 26, 25, 24 and the back of gear 19. External regulating actuator 20 thus appears as a stepped cylinder adapted to rotate in a snugly corresponding stepped bore formed in the case of the watch.

The crown of the external regulating actuator bears a zero mark 29 (Figure 8), opposite a register mark 30 on the case of the watch, and graduations to either side of the zero mark. The under surface of the crown bears a pin 27 which acts as a stop when it reaches a surface 28 (Figure 8), either already existing or specially generated on the case of the watch.

Movement of the external regulating actuator is imparted through the gears and pinion and regulator actuating disc to the regulator, (Figure 7 compared to Figure 4), the magnitude of movement is observed on the scale and excessive regulatory movement is prevented by the pin 27.

It is apparent that the modification shown above has been given solely by way of illustration and not by way of limitation, and that it is subject to wide variation and modification within the scope of the present invention.

What is claimed is:

In a watch having a case, a regulator, and a watch winding and hand setting mechanism,

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regulator actuating means independent of said winding and hand setting mechanism, said regulator actuating means comprising a toothed disc having interconnected clearance slot and hole, the sides of said hole engaging the regulator, a regulating actuator rotatably mounted in the case and extending externally thereof, a crown gear in said case carried by said regulating actuator, a train of gears fixably mounted and in mesh with the crown gear and toothed disc for imparting movement to said disc and move the regulator when said regulating actuator is rotated, and means limiting the rotary movement of the regulating actuator and comprising a pin carried by said regulating actuator and adapted to engage said case at predetermined points.

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