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TIMEPIECE WINDING INDICATOR

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FIG. 1

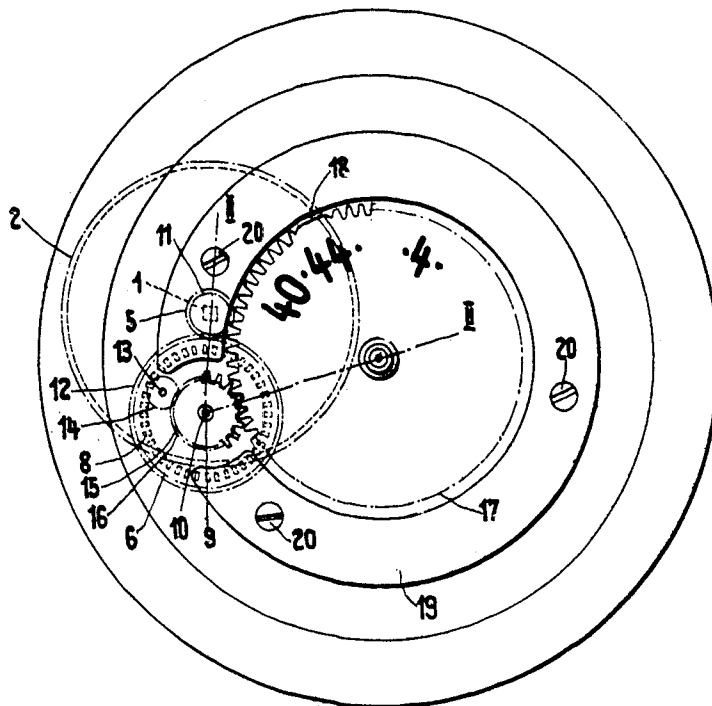


FIG. 2

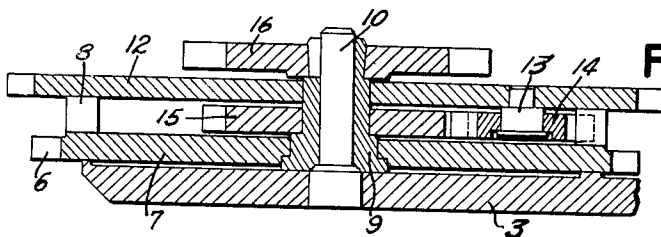
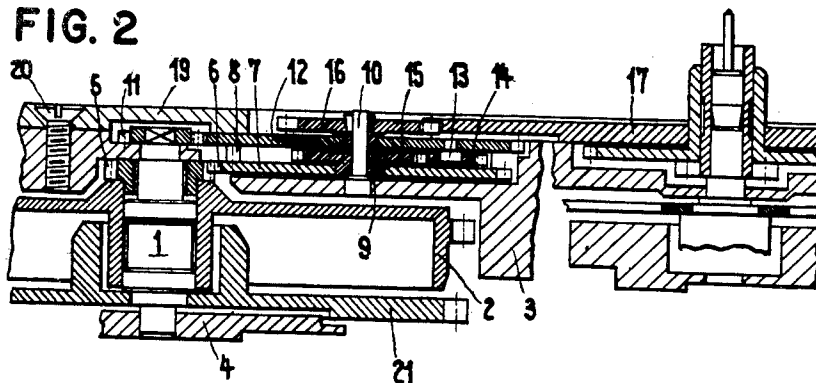


FIG. 3

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TIMEPIECE WINDING INDICATOR

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6 Claims. (Cl. 58—85)

This invention relates to a device for indicating the degree of tension of the main spring of watch or clock movements.

This device is characterized by a wheel having two toothings one of which meshes with a pinion driven by one of the members—barrel or barrel arbor—the other tooththing meshing with a planet-wheel whose holder is driven by the other of said members, said planet-wheel meshing on the other hand with a sun wheel driving the indicatory member.

The accompanying drawing shows, by way of example, an embodiment of the invention. Therein,

Fig. 1 is a plan view thereof.

Fig. 2 is a cross-sectional view in an enlarged scale along the line II—II of Fig. 1.

The arbor 1 of the barrel 2 is pivoted in the pillar-plate 3 and in the barrel bridge 4. The barrel 2 is rigidly connected with a pinion 5 meshing with the tooththing 6 of a double-toothed wheel 7. The second tooththing 8 of said wheel 7 is formed sideways and comprises a projecting annulus which has been milled at fixed intervals. The wheel 7 is loosely mounted on a sleeve 9 which itself is freely fitted on a pin 10 fixed at one end to the pillar-plate 3.

On the barrel arbor 1 is keyed a pinion 11 meshing with a wheel 12 which is loosely mounted on the sleeve 9. The wheel 12 carries a pin 13 on which is pivoted a planet-wheel 14 which meshes on the one hand with the tooththing 8 of the wheel 7 and on the other hand with a sun wheel 15 keyed on the sleeve 9. The upper end of the sleeve 9 is split and somewhat conical; owing to this arrangement, a wheel 16 is frictionally fitted on the end of the sleeve 9, the above-mentioned conicity maintaining the wheel 16 in the axial direction. The wheel 16 engages an indicatory wheel 17 pivoting at the center of the movement. A sector 18 of the wheel 17 is toothless and is formed by an arc of the addendum circle of the tooththing.

It is worth noting that the lower end of the sleeve 9 is somewhat enlarged, so that the wheel 7 is held in the axial direction. Consequently, the movers 7, 13, 15, 12 and 16 are assembled on the sleeve 9 and form a block or unit therewith, this facilitating to a large extent the assembly of the device.

A dial-holder 19 is fixed to the pillar-plate by means of three screws 20. The member 19 also serves for maintaining in the axial direction on the pin 10 the above-mentioned unit comprising the sleeve 9 and the movers 7, 13, 15, 12 and 16.

The device as shown and described operates as follows: Upon winding up the movement, the winding wheel 21 drives the arbor 1 and pinion 11. The latter rotates the wheel 12, and the planet-wheel 14, which rolls on the tooththing 8 of the stationary wheel 7, causes the sun wheel 15 to rotate, this rotation being transmitted to the wheel 16 and to the indicatory wheel 17. The latter bears figures (number of hours for which the movement will run without winding up the main spring) and these figures are to

be seen through a window of the dial (not shown). When the main spring is completely wound up, the sector 18 of the wheel 17 enters in contact with the wheel 16; the winding members can further operate, for instance under the influence of self-winding means, without the wheel 17 being driven, as the frictional arrangement of the wheel 16 on the sleeve 9 permits of a relative movement between both parts 9 and 16.

When the main spring is being unwound, the barrel 2 transmits its rotation to the pinion 5 and to the wheel 7. As the wheel 12 is now stationary, the planet-wheel 14 acts as a simple reversing gear and drives the sun wheel 15. The rotation of the latter is transmitted to the wheels 16 and 17, the wheel 17 being turned in the reverse direction as upon winding up the main spring.

The assembly of the device is very simple. Indeed, it is sufficient to place the unit or set of the said movers on the pin 10 and the indicatory wheel 17 in the center of the movement; this wheel 17 can be put in place in any angular position. Owing to the frictional arrangement of the wheel 16 on the sleeve 9 and to the uncut sector 18 of the wheel 17, the latter will take automatically its exact position when the watch or clock movement has been completely wound up.

What I claim is:

1. A timepiece winding indicator comprising, in combination, a pillar-plate, a mainspring barrel, a barrel arbor rotatably supporting the barrel, a first pinion fixed to the barrel coaxially with the latter, a second pinion fixed to the barrel arbor, a pin fixed at one end to the pillar-plate, a sleeve loosely mounted on the pin, a double-toothed wheel loosely mounted on the sleeve, the first tooththing of the double-toothed wheel meshing with the first pinion, a sun gear fixed to the sleeve, a second wheel loosely mounted on the sleeve and meshing with the second pinion, a planet-gear with a single tooththing carried by the second wheel and meshing simultaneously with the sun gear and with the second tooththing of the double-toothed wheel, an intermediate wheel frictionally mounted on the sleeve, an indicating wheel having teeth on only a portion of its periphery and in mesh with the intermediate wheel, the sleeve maintaining as a mover unit the double-toothed wheel, the sun gear, the second wheel with its planet-gear, and the intermediate wheel, and a plate fixed to the pillar-plate retaining the mover unit in position on the pin.

2. A timepiece winding indicator comprising, in combination, a pillar-plate, a mainspring barrel, a barrel arbor rotatably supporting the barrel, a first pinion fixed to the barrel coaxially with the latter, a second pinion fixed to the barrel arbor, a pin fixed at one end to the pillar-plate, a sleeve loosely mounted on the pin, a double-toothed wheel loosely mounted on the sleeve, the first tooththing of the double-toothed wheel meshing with the first pinion, a sun gear fixed to the sleeve, a second wheel loosely mounted on the sleeve and meshing with the second pinion, a planet-gear with a single tooththing carried by the second wheel and meshing simultaneously with the sun gear and with the second tooththing of the double-toothed wheel, an intermediate wheel frictionally mounted on the sleeve, and an indicating wheel having teeth on only a portion of its periphery and in mesh with the intermediate wheel, the sleeve maintaining as a unit the double-toothed wheel, the sun gear, the second wheel with its planet-gear, and the intermediate wheel.

3. A timepiece winding indicator comprising, in combination, a pillar-plate, a mainspring barrel, a barrel arbor rotatably supporting the barrel, a first pinion fixed to the barrel, a second pinion fixed to the barrel arbor, a pin fixed at one end to the pillar-plate, a sleeve loosely mounted on the pin, a double-toothed wheel loosely mounted on the sleeve, the first tooththing of the double-toothed

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wheel meshing with the first pinion, a sun gear fixed to the sleeve, a second wheel loosely mounted on the sleeve and meshing with the second pinion, a planet-gear with a single toothing carried by the second wheel and meshing simultaneously with the sun gear and with the second toothing of the double-toothed wheel, an intermediate wheel frictionally mounted on the sleeve, and an indicating wheel meshing with the intermediate wheel, the sleeve maintaining as a unit the double-toothed wheel, the sun gear, the second wheel with its planet-gear, and the intermediate wheel.

4. A time-piece winding indicator comprising, in combination, a pillar-plate, a mainspring barrel, a barrel arbor rotatably supporting the barrel, a first pinion fixed to the barrel, a second pinion fixed to the barrel arbor, a pin fixed to the pillar-plate, a sleeve loosely mounted on the pin, a double-toothed wheel loosely mounted on the sleeve, the first toothing of the double-toothed wheel meshing with the first pinion, a sun gear fixed to the sleeve, a second wheel loosely mounted on the sleeve and meshing with the second pinion, a planet-gear with a single toothing carried by the second wheel and meshing simultaneously with the sun gear and with the second toothing of the double-toothed wheel, and an indicating member in operative connection with the sleeve, the sleeve maintaining as a unit the double-toothed wheel, the sun gear, and the second wheel with its planet-gear.

5. A timepiece winding indicator comprising, in combination, a pillar-plate, a mainspring barrel, a barrel arbor rotatably supporting the barrel, a first pinion fixed to the barrel, a second pinion fixed to the barrel arbor,

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a pin fixed to the pillar-plate, a sleeve loosely mounted on the pin, a double-toothed wheel loosely mounted on the sleeve, the first toothing of the double-toothed wheel meshing with the first pinion, a sun gear fixed to the sleeve, a second wheel loosely mounted on the sleeve and meshing with the second pinion, a planet-gear with a single toothing carried by the second wheel and meshing simultaneously with the sun gear and with the second toothing of the double-toothed wheel, and an indicating member in operative connection with the sleeve.

6. A timepiece winding indicator comprising, in combination, a pillar-plate, a mainspring barrel, a barrel arbor, a pin fixed to the pillar-plate, a sleeve loosely mounted on the pin, a double-toothed wheel loosely mounted on the sleeve and driven by the barrel, a sun gear fixed to the sleeve, a second wheel loosely mounted on the sleeve and driven by the barrel arbor, a planet-gear with a single toothing carried by the second wheel and meshing simultaneously with the sun gear and with the double-toothed wheel, and an indicating member operatively connected with the sleeve.

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