No. 752,937. PATENTED FEB. 23, 1904.

J. WALZ.

WINDING INDICATOR FOR WATCHES.

APPLICATION FILED DEC. 4, 1903.

NO MODEL.

Fig. 1.

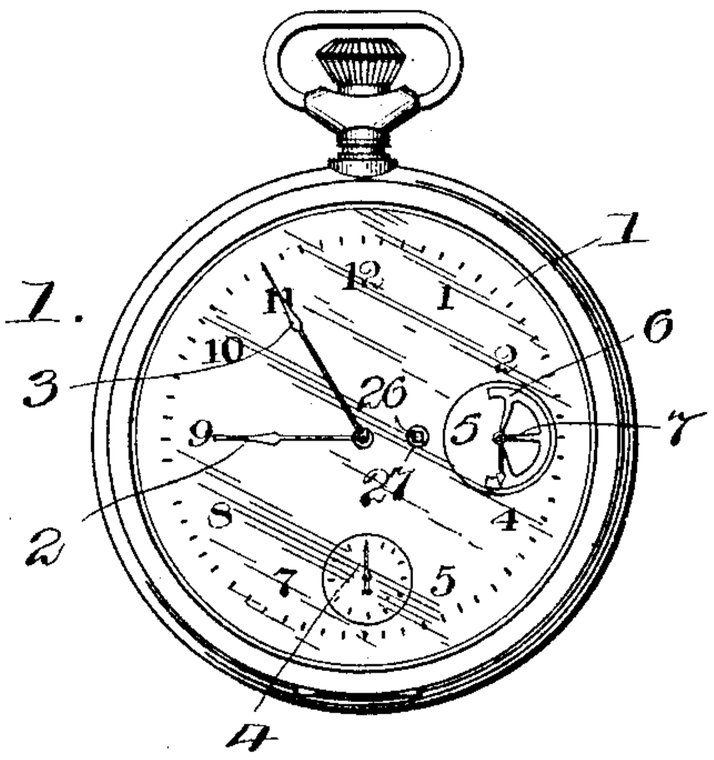


Fig. 3.

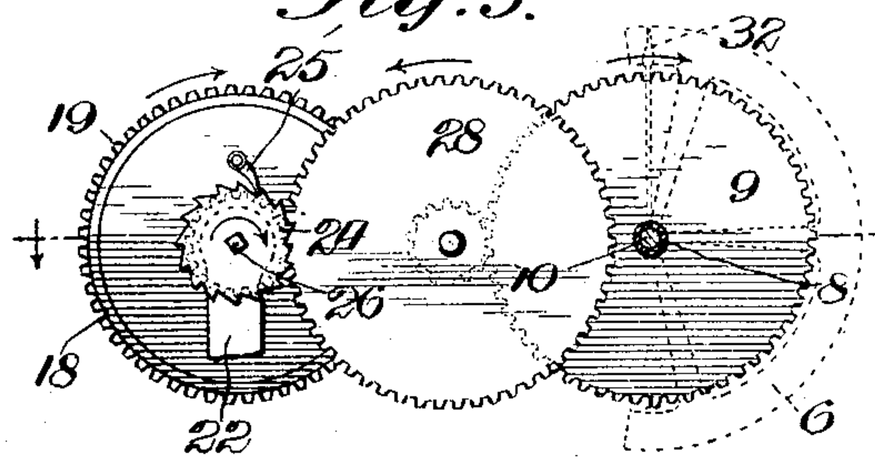


Fig. 2.

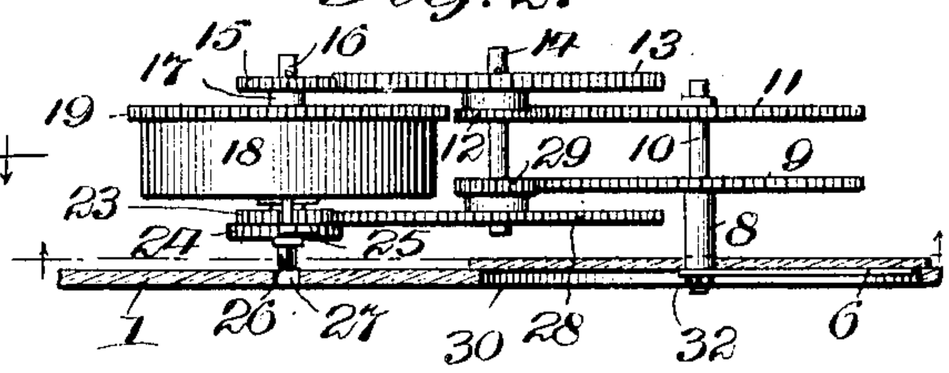


Fig. 4.

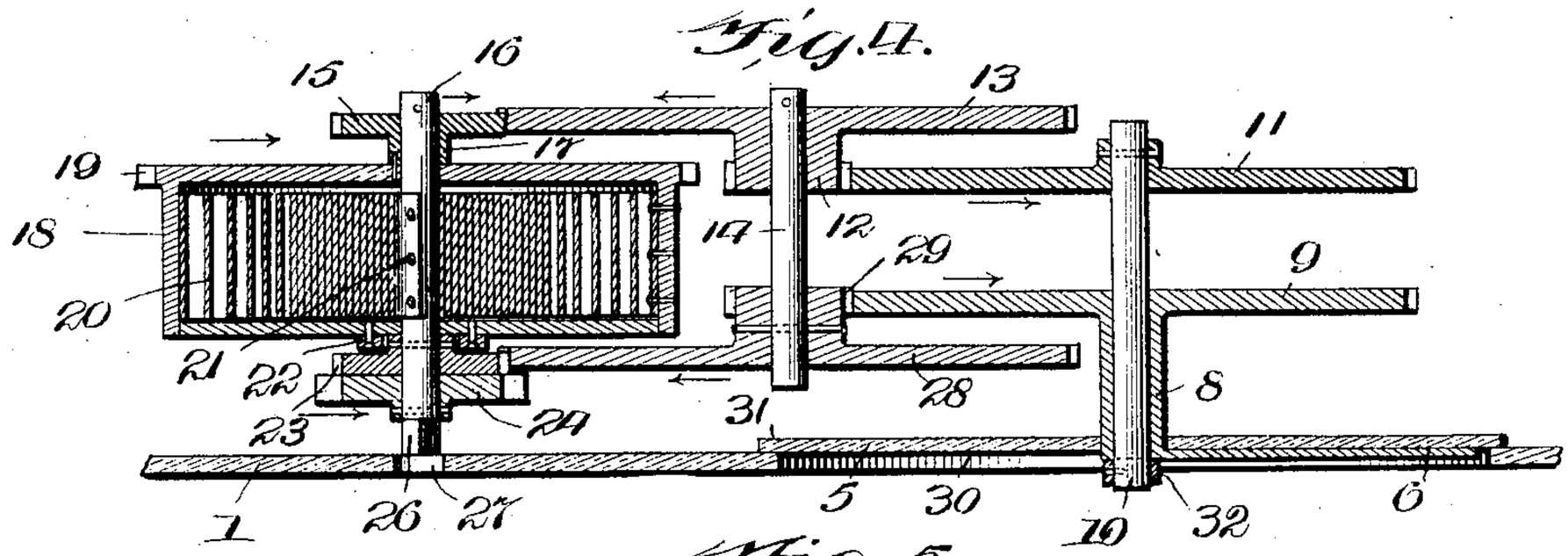
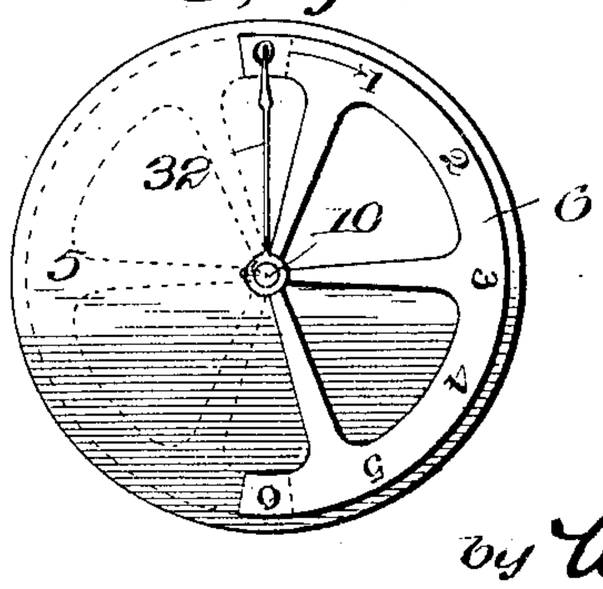


Fig. 5.



Witnesses
F. C. Bruce.
S. V. Fitzgerald.

Inventor
John Walz.
by W. J. Fitzgerald & Co
Attorneys.

No. 752,937. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

JOHN WALZ, OF ST. PAUL, MINNESOTA.

WINDING-INDICATOR FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 752,937, dated February 23, 1904.

Application filed December 4, 1903. Serial No. 183,805. (No model.)

To all whom it may concern:

Be it known that I, JOHN WALZ, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Indicators for Watches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to indicators for watches; and my prime object is to provide indicating mechanism whereby a person may at a glance determine when the watch needs winding and may also determine the degree or extent to which the mainspring has been wound.

Other objects will be hereinafter made clearly apparent, reference being had to the accompanying drawings, which are made a part of this application, and in which—

Figure 1 shows a plan view of the face of a watch of the usual or any preferred construction with my indicator applied thereto. Fig. 2 shows a side elevation of the special train of gears employed by me in providing actuation for my indicator. Fig. 3 is a bottom plan view thereof, showing one of the shafts in section and also indicating the relative position of the indicator-hand and coöperating dial therefor. Fig. 4 shows a central sectional view taken on a central line with my train of gearing, while Fig. 5 is a detail view showing the indicator-hand and its coöperating dial and also showing the changed position of the dial by dotted lines.

The various details of my invention and accessories deemed necessary to illustrate a practical application thereof to use will for convenience be referred to by numerals, the same numeral applying to a similar part throughout the several views, and, referring to the numerals on the drawings, 1 indicates a watch-dial of the usual construction, having the hour designations thereon, as is common, and also provided with the hour, minute, and second hands, as usual, said hands being, respectively, designated by the numerals 2, 3, and 4. I also provide a suitable seat 5 at some convenient point in the face of the dial, as designated by the numeral 5, said seat being formed in any preferred way, as by forming a countersink therein, and within the seat thus or otherwise provided I locate the movable indicator plate or dial 6, which is practically a half of a wheel, preferably having supporting-spokes 7 and a hub uniting said spokes, said hub being in the form of an inwardly-directed sleeve 8, the inner end of said sleeve being integrally formed with or rigidly connected to the gear-wheel 9, which latter rotates laterally upon the shaft 10.

The shaft 10 is supported by suitable bearings and has keyed upon its inner end a gear-wheel 11, which is disposed in mesh with the gear-wheel 12, formed upon the hub of the gear 13, the latter being disposed loosely upon the shaft 14 and also properly supported in its operative position in any preferred way.

The gear 13 is disposed in mesh with the gear 15, which is loose upon the shaft 16, but which is provided with an inwardly-directed hub 17, rigidly connected to the spring-holding barrel 18, the peripheral edge of which is provided with a plurality of cogs 19, by which the main mechanism of the watch is actuated, but which parts I deem unnecessary to herein illustrate.

The barrel 18 contains the mainspring 20 and is rotatably supported in position upon the shaft 16, to which the inner end of said mainspring is attached, as indicated, by the rivets 21. The barrel is also operatively supported in any preferred way, as by a contiguous part of the framework or the arms 22, as will be readily seen by reference to Fig. 4. To the outer end of the shaft 16 I fixedly key the gear 23, and I also key contiguous thereto the ratchet-wheel 24, the latter having a coöperating detent 25, carried by a contiguous part of the framework or casing, while the outer end of the shaft 16 is squared to receive the winding-key, as indicated by the numeral 26 in Fig. 4, said key end being disposed opposite the aperture 27, formed in a contiguous part of the watch-dial 1.

The gear 23 is disposed in mesh with the gear 28, which is keyed rigidly to the shaft 14, and is provided upon its inwardly-directed

hub with a relatively small gear-wheel 29, which is disposed in mesh with the gear 9, hereinbefore mentioned.

In the present instance, as will be seen by reference to Fig. 4, I provide an opening 30 instead of a countersink 5, as shown in Fig. 1, said opening being covered by the plate 31, properly attached at its periphery to the inner edge of said aperture in any preferred way.

By the construction just described it will be observed that the mainspring may be readily wound by placing the key upon the squared end 26 of the shaft 16, and since the gear 23 is keyed rigidly to said shaft the rotation of the latter will induce the rotation of said gear and turn the gear 28 and incidentally rotate the gear 9 and the sleeve 8 and move the indicator-plate 6.

The winding of the shaft 16 will not disturb the gear 13, which is loose upon the shaft 14. After the mainspring has been wound it follows that through the pawl-and-ratchet mechanism hereinbefore described the force of the spring will be exerted upon the barrel or housing 18 and cause the same to rotate, as is common, and incidentally turn the gear 15, which is keyed to the housing, but is loose upon the shaft 16, and the result will be the rotation of the gear 13, which is loose upon the shaft 14.

The rotation of the gear 13 will in turn cause the rotation of the gear 11 through the mediation of the relatively small gear 12, and since the gear 11 is keyed rigidly to the shaft 10 the indicator-hand 32 will be caused to move over the graduated indicator-plate 6.

We will assume that the indicator-plate is in the initial position, (shown in Fig. 5,) and the indicator-hand 32 will therefore start at "0," and the movement of the train of gears hereinbefore described is so graduated or timed that when said shaft reaches the figure "6," placed at the lower end of the indicator-plate 6, it will show that the mainspring has run down or needs rewinding. The winding-key is thereupon placed upon the squared end 26 of the shaft 16, and as said shaft is turned two results will be attained—first, the winding of the mainspring 20, and, second, the turning of said shaft will induce the actuation of the train of gears 23, 28, 29, and 9, thereby causing the indicator-plate 6 upon the outer end of the sleeve 8, as heretofore explained, to be so moved, as indicated by the dotted lines in Fig. 5, that the figure "6" will be brought to the same position occupied by "0." (Shown in full lines in said view of the drawings.) This will incidentally result in bringing "0" to the lower side, or directly opposite the lower end of the hand 32, which at that time will be directed downward.

By the arrangement described it will be seen that the act of winding the mainspring of the watch automatically moves the indicator-plate 6, whereby "0," as indicated thereon, will be brought to again register with the point of the indicator-hand 32, it being understood that in some instances said indicator-hand will be pointing downward, while the next time it will be pointing upward, my purpose being to place the indicator-plate in such position that the travel of the indicator-hand 32 over the same will register the varying conditions or degree of tension of the mainspring.

It is obvious that the construction and arrangement of the parts may be varied without materially departing from the spirit of my invention, and I therefore desire to comprehend all substantial equivalents and substitutes.

Believing that the advantages and manner of applying my invention to use have thus been made clearly apparent, further description is deemed unnecessary.

What I claim as new, and desire to secure by Letters Patent, is—

The herein-described indicator showing the condition of the mainspring of a watch, comprising a suitable mainspring and barrel or housing therefor; a gear 15 rigidly secured to said housing; a train of gears 13, 12 and 11 placed in operative relation to said gear, in combination with a gear 23 and a ratchet-wheel 24 keyed rigidly to the shaft of the mainspring and independent of said housing and a train of gears 28, 29 and 9 placed in cooperation with said gear 23, said gear 9 being loose upon its supporting-shaft and having a sleeve and an indicator-plate carried by said sleeve and disposed in view upon the dial of the watch, and an indicator-hand coöperating with said indicator-plate, all of said parts being combined and suitably supported whereby when the mainspring is wound the indicator-plate will be moved under the indicator-hand to indicate the initial point or wound condition of the spring and will be moved by one of said trains of gears to indicate the exhausted condition of the spring, all combined substantially as specified and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN WALZ.

Witnesses:
J. R. BLACKWELL,
JOHN H. HAUSE.