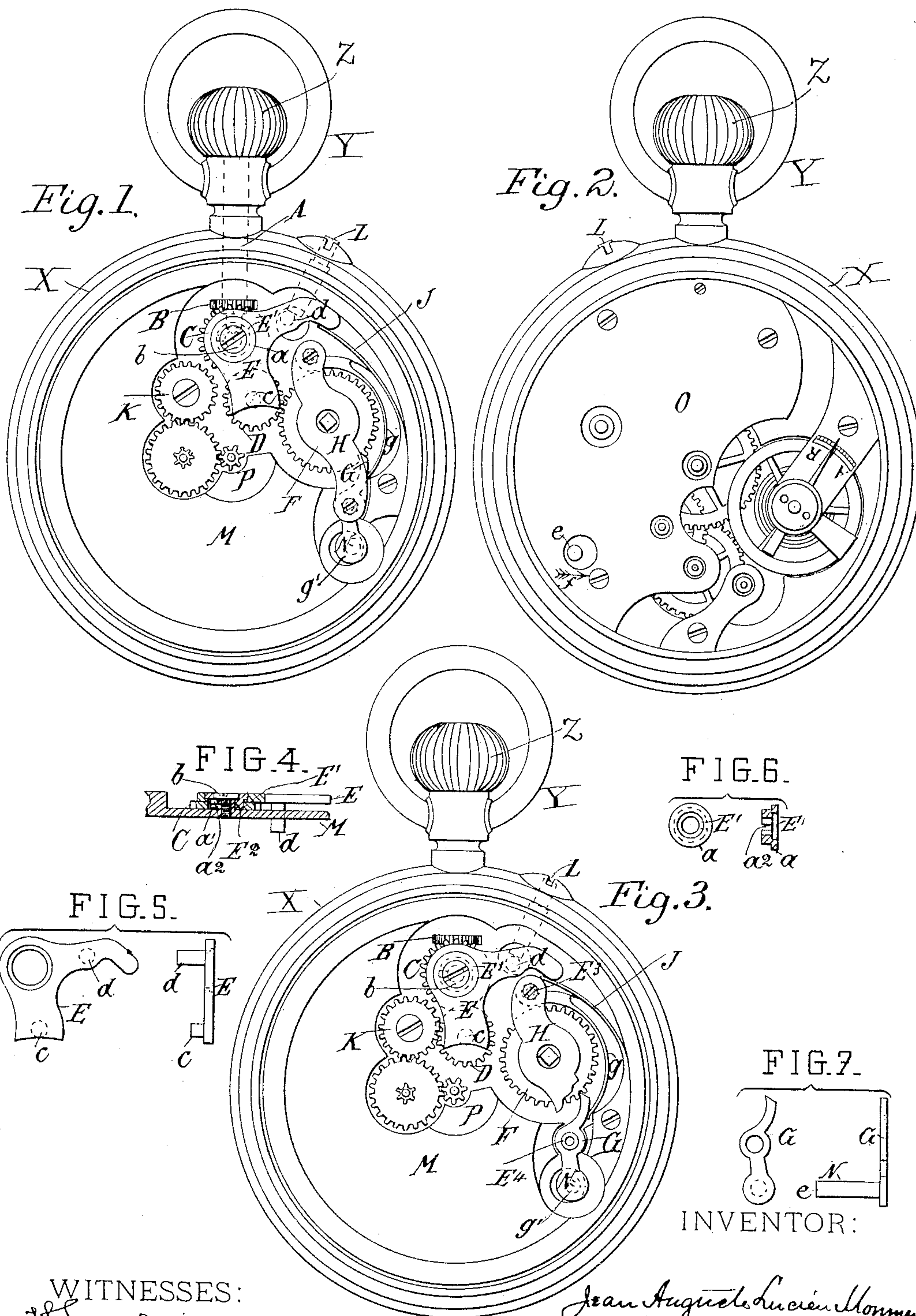


(No Model.)

J. A. L. MONNIER.  
STEM WINDING WATCH.

No. 464,131.

Patented Dec. 1, 1891.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JEAN AUGUSTE LUCIEN MONNIER, OF ROSIÈRES, SWITZERLAND.

## STEM-WINDING WATCH.

SPECIFICATION forming part of Letters Patent No. 464,131, dated December 1, 1891.

Application filed November 29, 1890. Serial No. 373,042. (No model.) Patented in Switzerland December 20, 1888, No. 223.

*To all whom it may concern:*

Be it known that I, JEAN AUGUSTE LUCIEN MONNIER, a citizen of the Swiss Republic, residing at Rosières, Canton of Soleure, Switzerland, have invented certain Improvements in Stem-Winding Watches, (for which a patent has been granted in Switzerland, No. 223, dated December 20, 1888,) of which the following is a specification.

My invention relates to the class of so-called "keyless" watches—that is, those that are wound through the medium of a stem in the pendant—and especially to that division of said class in which the hands are also set through the medium of the winding-stem.

The object of my invention is in part to improve the construction and arrangement of the shifting pinion, whereby its engagement and disengagement shall not disturb the position of the hands, and in part to provide means whereby the click of the spring-barrel may be disengaged without the necessity of first removing the dial-plate, all as will be hereinafter explained.

My invention will be fully described hereinafter, and its novel features carefully defined in the claim.

In the accompanying drawings, which illustrate my improvements embodied in a watch, Figure 1 is a face view of the movement, showing the mechanism as it appears when the dial-plate is removed. This view shows the normal position of the parts as adapted for winding the watch. Fig. 2 is a back or rear view of the watch-movement. Fig. 3 is a view like that in Fig. 1, but showing the mechanism as it appears when adapted for setting the hands. This may be called the "abnormal" position of the parts. Figs. 4 and 5 are views of the elbow-lever which carries the shifting pinion detached, and Fig. 6 shows the bearing-bush of said lever detached. Fig. 7 illustrates the click of the spring-barrel ratchet detached.

X represents a watch-case of any kind, in which is mounted the movement embodying my improvements.

Y is the pendant of the case, and Z is the milled crown fixed to the extremity of the winding-stem A. (Seen in dotted lines in Fig. 1.) These parts may be of the usual or any kind.

On the square inner end of the stem A is mounted the pinion B, which gears with the teeth of a wheel C, rotatively mounted on the plate M. This wheel turns about a flanged steel bush-bearing E', which is held down to the plate by a screw b, the head of which is let into the bearing E' flush. This bush-bearing is seen in section in Fig. 4 and detached in Fig. 6.

I may say here that there is a raised boss E<sup>2</sup> formed on the plate M by countersinking the latter, and the bush E' fits down over this boss, and a slight lateral projection a' on the boss engages a recess a<sup>2</sup> (see Fig. 6) in the bush. This prevents the bush from rotating on the boss. The screw b screws into the boss E<sup>2</sup>.

E is the elbow-lever or rocker, seen in section in Fig. 4 and detached in Fig. 5. This lever turns or rocks about the said bearing E' on the same center with the wheel C, the flange a on the bush-bearing being let into the lever flush. On one arm of the lever E is rotatively mounted the shifting pinion D, which is always in gear with the wheel C. The pinion turns on a stud c in lever E, and it is in gear normally with the ratchet F of the watch-spring arbor, being held up thereto by a spring J, which takes under the other arm of the lever E. Pendent from this arm of the lever E is a stud d, upon which bears the push-pin L, which projects out from the case, as seen in Fig. 1. When this pin is pushed in, the lever E is rocked and the pinion D put into gear with the hand-setting wheel K of the watch. By this mode of mounting the lever E all pressure on the screw b is removed, and this latter is not liable to work loose from the constant shifting of the lever.

G is the click, which engages the ratchet-wheel F, and g is the spring which holds it in engagement. This click is shown detached in Fig. 7. It has a tail g', in which is fixed a pin N, which passes through the movement-plates and appears at the back of the same, as seen in Fig. 2, where its extremity projects sufficiently to enable any one to manipulate it, and thus throw the click out of engagement with the ratchet-wheel. This construction allows the repairer or any one to set the spring free without the necessity of lifting or



removing the dial-plate, as the demi-plate O at the back of the movement may be reached at any time by opening the case. The operating end of the pin N is designated by the reference-letter *e*. The aperture in the demi-plate O will be large enough to allow the end *e* of the pin N to play, as seen in Fig. 2, where the arrow *f* indicates the direction of the movement. Both the click G and its spring *g* are mounted on bosses E<sup>4</sup> and E<sup>3</sup>, respectively, similar to the boss E<sup>2</sup>, and left standing when the thick plate M is recessed to receive the mechanism seen in Figs. 1 and 3. The bar H is fixed to the plate M by screws which screw into the bosses E<sup>3</sup> and E<sup>4</sup>. The wheel K is likewise mounted to rotate on a boss similar to boss E<sup>2</sup>, formed on the plate M, and the said plate is recessed or cut out so as to let in the mechanism described flush with the upper surface of the plate M, only the bosses on which the wheels and parts are mounted being left standing.

The operation of the winding and setting device will be briefly described.

Fig. 1 shows the parts in their normal position. If the stem A be turned to the right, the pinion D turns the ratchet-wheel F and winds up the spring in the barrel. When the spring is wound up, the click G holds the ratchet-wheel against backward rotation. If the stem A is turned to the left, the ratchet-wheel cannot rotate and the pinion D disengages its teeth from those of the ratchet-wheel by a jumping movement, the spring J, permitting its teeth to free themselves from those of the wheel F. This is well known to those skilled in the art. To set the hands of the watch the push-pin L is pressed upon, which moves the pinion out of gear with the wheel F and into gear with the wheel K. While thus held the stem A may be turned in the proper direction to move the hands

about the dial in the way desired. In shifting from wheel F to wheel K the pinion moves as short a distance as is possible. The points of engagement of the teeth of the pinion with the teeth of the respective wheels F and K are on a straight line drawn from the center of wheel F to that of wheel K. More than this, the arrangement is such that when the teeth of the pinion D move into engagement with those of the wheel K the movement of the pinion will be radial to the latter wheel, whereby the engagement is effected without the least movement of the hands of the watch. Where the pinion is so mounted as to move into engagement with the setting-wheel in a path somewhat oblique to the radius of the latter wheel, said wheel will be rotated slightly by the pressing in of the push-pin, and the hands will partake of this movement. This is objectionable, and my construction obviates the difficulty. It will hardly be necessary to state that the setting-wheel K is normally in gear with the wheels of the train which drive the hands.

Having thus described my invention, I claim—

In a movement, the combination, with the ratchet-wheel on the watch-spring arbor, of the click G, which engages said ratchet, and its spring *g*, said click having a pin N, which projects through registering apertures in the plate M and demi-plate O, whereby said click may be disengaged from the ratchet-wheel as and for the purposes set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JEAN AUGUSTE LUCIEN MONNIER.

Witnesses:

GEORGE GIFFORD,  
AMAND RITTER.