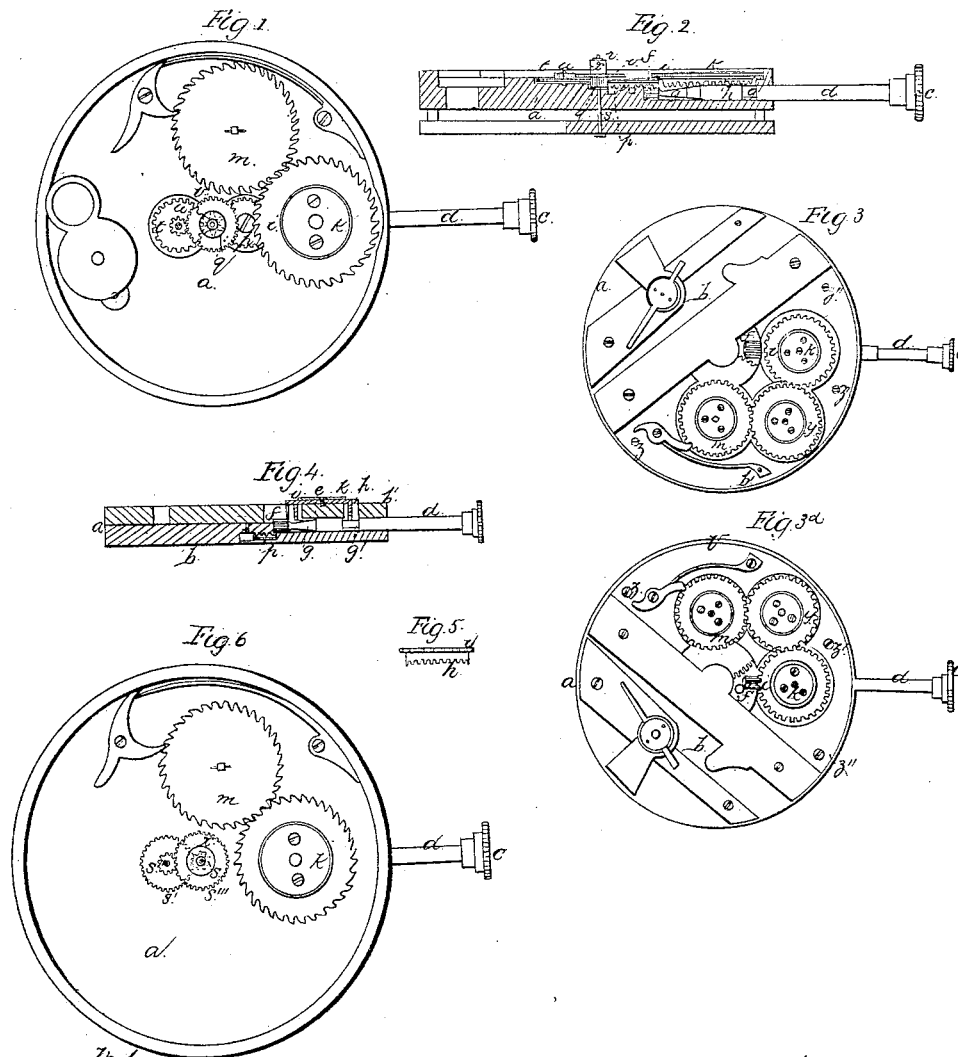


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WINDING AND SETTING WATCHES.

No. 47,370.

Patented Apr. 18, 1865.



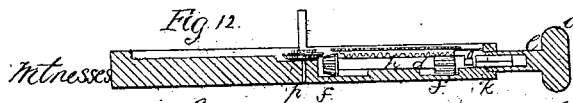
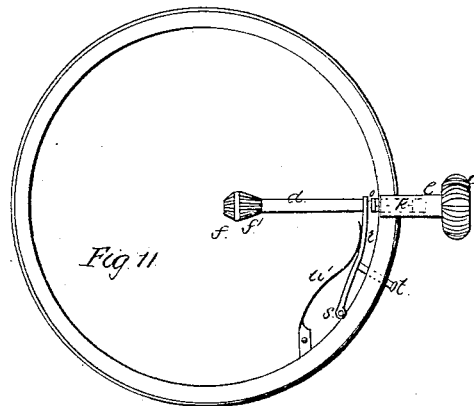
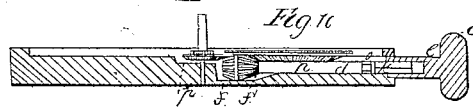
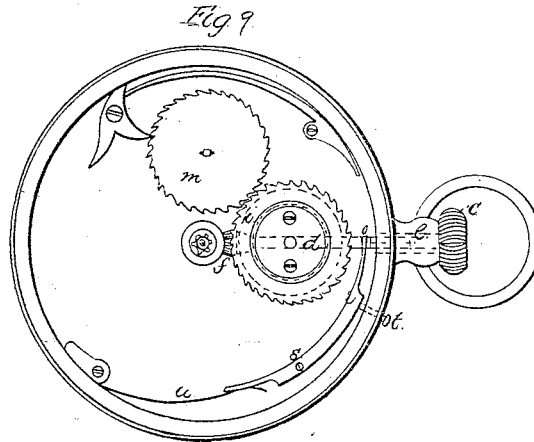
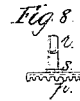
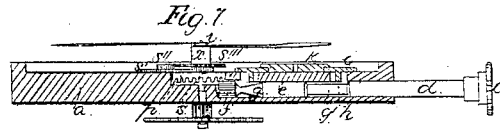
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# UNITED STATES PATENT OFFICE.

CHARLES EUGENE LAEDERICH, OF ST. IMIER, SWITZERLAND.

## IMPROVEMENT IN WINDING AND SETTING WATCHES.

Specification forming part of Letters Patent No. 47,370, dated April 18, 1865.

*To all whom it may concern:*

Be it known that I, CHARLES EUGENE LAEDERICH, of St. Imier, in the Republic of Switzerland, have invented Improvements in Watches; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

These improvements relate to certain modifications in the arrangements described in my patent of the 10th of November, 1863. In the said patent are described my improvements in that description of watches commonly called "remontoir" or "keyless" watches. In the present, although the principal parts already described in my patent of November 10, 1863, are made use of, the said parts are combined or arranged in a manner different from that described in the said patent.

I must at once remark here that, for the sake of clearness only, those parts as refer more especially to the remontoir arrangements are described in this specification and represented in the drawings, the remainder remaining the same as in ordinary watches.

Figure 1 is a plan view of the pillar or pallet plate *a* of my improved remontoir or keyless watch, showing the parts required for the winding up of the watch and for the setting of the hands. Fig. 2 is a cross-sectional view of the said parts. Figs. 3 and 3<sup>a</sup> show plan views, and Fig. 4 a sectional view, of the said parts of another modification—viz., with the parts for the winding up of the watch on one and those for the setting of the hands on the opposite side of the pillar-plate *a*. Fig. 5 represents a separate view of the principal wheel for the winding up, shown from the outside.

In these figures the pillar or pallet plate *a* is represented without the outer casing of the watch, and on a scale twice the natural size.

In Figs. 1 and 2, *a* is the pillar-plate; *c*, the knob of the spindle *d*, this latter entering in the plate *a* and gliding in a fixed button or guide-piece, *e*, Figs. 4 and 7. This spindle *d* is provided at *g* and *g'* with notches for allowing the wheel *h* to revolve freely. This wheel *h* is fixed to that, *i*, provided with ratchet or other suitable cogs or indentations, and is situated in a depression provided purposely in the pillar-plate *a*, round the guide-piece *e*, the wheel *i* being further kept in position by

means of a disk, *k*, fixed to this guide-piece *e*. The wheel *i* drives the wheel *m*, situated on the axis of the spring-barrel of the watch, for the winding up of this latter. The wheel *m* may be fixed to this axis either by a square part or socket or by a left-hand screw.

In the drawings the stop *n*, mentioned in my patent of November 10, 1863, is not represented, but the same may be arranged in such manner as to serve for pushing forward or backward the spindle *d*, instead of by hand. The minute-wheel *p* is situated on the continuation of the axis of the spindle *d*, carrying the pinion *f*. This wheel of eighteen teeth drives a pinion, *q*, of six teeth, the end or socket *r* of the axis of which carries the minute-hand, which hand may either set loose on the peg *s* or be fixed thereto. The pinion *q* drives an eighteen-tooth wheel, *t*, carrying an eight-tooth pinion, *u*, this latter driving a thirty-two tooth wheel, *v*, provided with the hollow axis or socket *x* for the hour-hand, turning freely on the hollow axle or socket *r* of the pinion *q*. The socket *x* carries the hour-hand.

A modification of my improved remontoir arrangement consists in having the parts for the winding up of the watch situated on one side of the pillar-plate *a*, and those for the setting of the hands on the opposite side of this plate. Figs. 3 and 3<sup>a</sup> represent the plate *a*. (Seen from the side at which are situated the parts for the winding up of the watch.) Part of this plate *a* is formed of two thinner plates, *b* and *b'*. The one, *b'*, (shown in the drawings by yellow color,) is fixed on the other, *b*, by means of the screws *z*, *z'* and *z''* and carries the wheels *i* *m* and connecting-wheel *y*. The indentations of these wheels may be ratchet or other cogs. The guide-piece *e* forms part of or is fixed to the lower plate, *b*. The wheel *i* is driven by that, *h*, (this latter shown separately in Fig. 5,) in gear with the pinion *f* of the spindle *d*. Fig. 5 shows in what manner the indentations of the wheel *h* are cut on the top or periphery of a cylindrical part, so as to allow of them entering deeper into the depression of the plate *a*—viz., to about one-half the depth or thickness of this plate—in order to come in gear with the pinion *f*. The wheel *p*, for the setting of the hands, is situated on the opposite side, (see Fig. 4,) and its indentations are turned upward in order to be in gear with the pinion *f*.

on the opposite side to the wheel *h*. The remainder of the wheels for the setting of the hands has not been shown in these figures, in order to avoid confusion. They may be situated either in the manner just described or in that described in my patent of November 10, 1863.

Another modification or more simple arrangement of my remontoir is represented in Figs. 6 and 7, Fig. 6 showing a plan view of the pillar-plate *a*, with the dial removed, whereas Fig. 7 is a sectional view over the diameter of the said plate, while Fig. 8 represents the socket *r* provided with a crown-wheel, *p*, which may be brought in gear with the pinion *f*. This wheel *p* is situated in the center of the pillar-plate *a*, and the wheel *i* placed nearer to the center of the plate. This arrangement dispenses with the use of the eighteen tooth wheel, the wheel *p* driving at once the minute-hand, and also the hollow arbor *x* of the hour-hand. This latter arrangement is based, however, on the same principles as the preceding ones—viz., allowing the pinion *f* to shift position from the parts for winding up to those for the setting of the hands, the said pinion being in gear at one time with the wheel *h* and at the other with the wheel *p*.

I wish it to be observed that the wheel *p* is provided at the top with a pinion, *s*, for driving the socket *x* for the hour-hand by means of the train of wheels *s'* *s''* *s'''*.

As an important feature of my invention, I consider the putting aside by my improvements of the ratchet hitherto generally made use of in remontoir watches, the said result being obtained by allowing the pinion *f* to shift position at once from the parts for winding up the watch to those for the setting of the hands, the spindle *d* of the said pinion passing and traversing in front of the wheel *h*, so as to come in gear at one time with this latter and at another time with the wheel *p*, while the notch *g* *g'* in the spindle *d* allows the revolving of the wheel *h*. My improved arrangements of remontoir consequently allow, first, of having at pleasure the parts for the setting of the hands and those for the winding up of the watch situated on the same side of the pillar-plate of the watch underneath the dial; second, having the parts for the winding up situated in view at the back part of the inside of the watch, this latter being provided in this case with the additional or connecting wheel *y*, in order that for winding up as well as for the setting of the hands the spindle *d* is to be turned from left to right, while the setting of the hands continues to take place in the ordinary manner—viz., from underneath the dial; third, of having the parts for the winding up of the watch and those for the setting of the hands both visible at the back of the inside of the watch.

Each of the improvements above described allows of passing directly from the winding up of the watch to the setting of the hands by means of the spindle *d*, the pinion *f* of which

being alternately set in gear with the wheel *h*, and the wheel *p* thus causes the said pinion to act, as it were, as a double pinion, the same being of sufficient length for allowing one part or end of its indentations to be set in gear with the wheel *h* and afterward the opposite end with the wheel *p*. The middle part of this pinion might consequently remain cylindrical or smooth—viz., without indentations—the entire thus forming, as it were, two pinions, connected together lengthwise by the said cylindrical part, or else be considered as a cylinder provided at each end part with indentations, each of these end parts thus acting as a pinion. This arrangement is represented, respectively, in plan and in side view in Figs. 9 and 10, while Fig. 11 represents part of the plan view of Fig. 9, in which the wheels *i*, *m*, and *p*, have been removed in order clearer to show the spindle *d* and pinions *f* and *f'*.

Fig. 12 shows a side view of another modification, in which the pinions *f* and *f'* are situated farther apart, while instead of being both bevel-shaped, the one, *f'*, is cylindrical. In Figs. 9, 10, 11, and 12 the same letters refer to corresponding parts.

In the arrangements shown in Figs. 9, 10, and 11 the wheels *h* and *p* are both beveled, so as to correspond with the beveled teeth of the pinions *f* and *f'*, whereas in Fig. 12 the wheel *h* is an ordinary crown-wheel, so as to correspond with the cylindrical pinion *f'*. The part *k* of the spindle *d* is made square, and moves freely in a corresponding perforation in the cylindrical boss *l*, to which latter is affixed the milled knob *c*, by means of which the boss *l* may be caused to turn without shifting position longitudinally. The spindle *d*, in advancing, puts the pinion *f* in gear with the wheel *p*, whereas by pushing the spindle *d* backward this pinion *f* leaves the wheel *p*, and on its turn the pinion *f'* comes in gear with the wheel *h*. For this purpose the end of the arm *r* of a lever, *r s*, turning on a screw-pin, *s*, is inserted in a neck, *o*, of spindle *d*, a spring, *u*, pushing from underneath against the other arm of the lever *r s*. By pressing on the stud *t*, fixed to the arm *r*, and which stud passes freely through a corresponding opening in the outer casing of the watch, the spindle *d* will be pushed forward, so as to set the pinion *f* in gear with the wheel *p*; but immediately the pressure on the stud *t* ceases the spring *u* will cause the lever-arm *r*, and consequently the spindle *d*, to recede, thereby disengaging the pinion *f* from the wheel *p*, whereas the pinion *f'* is set in gear with the wheel *h*.

Fig. 11 shows a slight modification in the arrangement of the lever *r s* and spring *u*. The lever *r s* turns on a spindle, *s*, and is constantly pushed back by the spring *u*. In the arrangement shown in Fig. 12, by pushing forward the spindle *d* the bevel-pinion *f* will be set in gear with the bevel-wheel *p*, and

the cylindrical pinion  $f'$  be disconnected from the wheel  $h$  and carried toward the center of this latter. On the contrary, the spindle  $d$  being pushed backward, the pinion  $f$  will leave the wheel  $p$ , and the cylindrical pinion  $f'$  be set in gear with the crown-wheel  $h$ .

For throwing the pinions  $f$  and  $f'$  out and in gear other mechanical contrivances might be resorted to—such, for instance, as that called “Brequet watch-key scapement;” but the distinguishing feature of the invention remains unimpaired—viz., that of allowing to pass directly from the winding up to the setting of the hands by means of the sole spindle

$d$ , carrying either the pinion  $f$  or the pinions  $f$  and  $f'$ , for performing alternately one or the other of the said operations.

Having thus described the nature of my invention, I claim—

The above-described arrangement and operation of the stem and its pinion with the train and other wheels, for the purpose and in the manner substantially as described, and illustrated in the drawings.

CHLES. EUGNE. LAEDERICH.

Witnesses:

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DREYFUS.