

(No Model.)

L. RICHE.
WATCH.

No. 567,510.

Patented Sept. 8, 1896.

Fig. 1

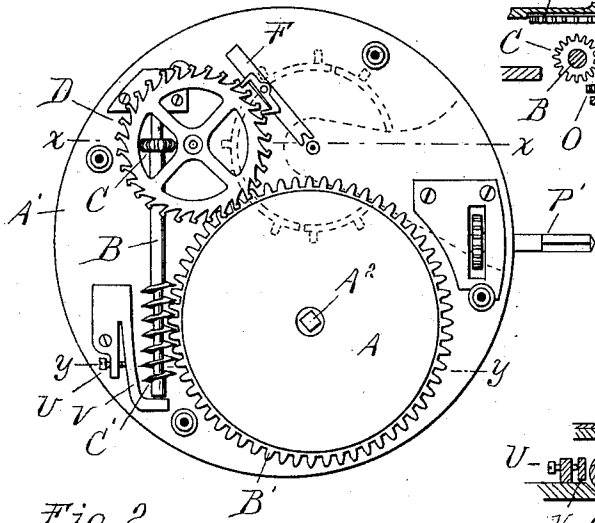


Fig. 2

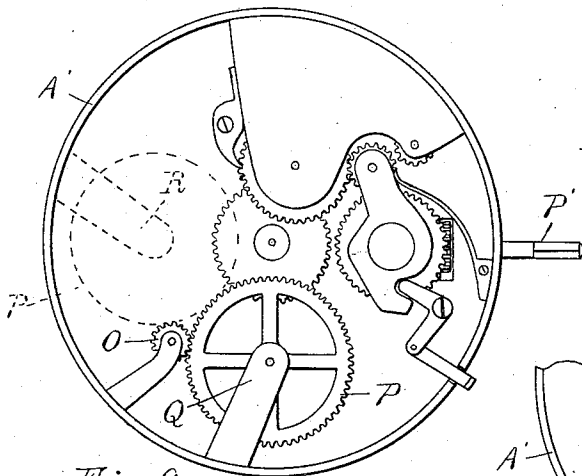
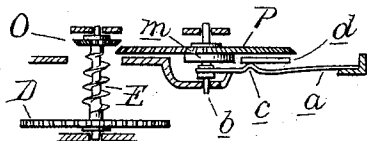


Fig. 6



Witnesses:

P. M. Hulbert,
Otto F. Barthel,

Fig. 3

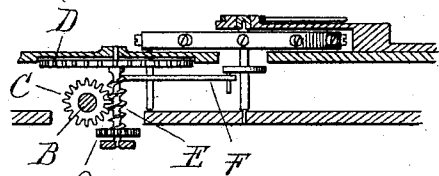


Fig. 4

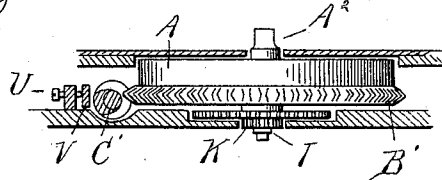


Fig. 7

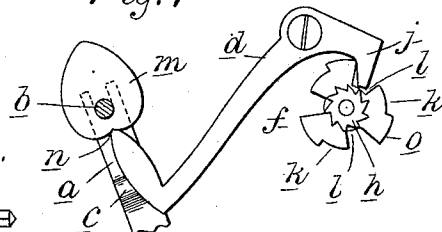
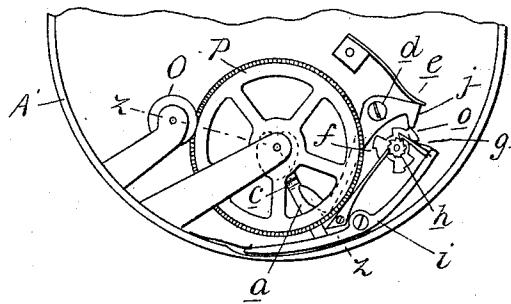


Fig. 5



Inventor:

Louis Riche
By *W. S. Maquet*
Attys.

UNITED STATES PATENT OFFICE.

LOUIS RICHE, OF DETROIT, MICHIGAN.

WATCH.

SPECIFICATION forming part of Letters Patent No. 567,510, dated September 8, 1896.

Application filed February 23, 1893. Serial No. 463,477. (No model.)

To all whom it may concern:

Be it known that I, LOUIS RICHE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have
5 invented certain new and useful Improvements in Watch-Movements, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention consists in the peculiar construction of the actuating mechanism, whereby the train of gears between the barrel and the escapement-wheel is simplified and improved, and, further, whereby the actuating mechanism for the seconds-hand is likewise
15 simplified and improved, and whereby in the same movement the seconds-hand may be placed either in line with the winding-stem or at right angles thereto without changing the movement.

In the drawings, Figure 1 is an elevation of the movement with the rear plate removed, showing the barrel and the connections from the barrel to the escapement-wheel, the balance-wheel being indicated in dotted lines.
25 Fig. 2 is a front elevation of the movement, illustrating the manner of driving the minute-hand. Fig. 3 is a section on line *x x*, Fig. 1. Fig. 4 is a section on *y y*, Fig. 1. Fig. 5 is an elevation similar to Fig. 2, but showing it as arranged for a stop-watch. Fig. 6 is a section on line *z z*, Fig. 5. Fig. 7 is an enlarged elevation of the resetting-lever.

A' is the watch-movement. A is the barrel, which contains the usual spring.

35 A² is the winding-shaft for the spring. (Not shown.) B' is a worm gear-wheel formed upon the periphery of the barrel and meshing with the worm-gear C', formed at one end of the horizontal shaft B. This shaft is journaled in suitable pillar-blocks at each end,
40 and at the end which carries the worm C' the pillar-block is supported in a spring-arm V, which may be adjusted to or from the worm gear-wheel by means of a set-screw U. By
45 this means the worm and gear are brought into proper mesh.

C is a worm gear-wheel secured to the shaft B at the end opposite from that which carries the worm C', and this worm-wheel meshes
50 with a worm E, formed upon the shaft of the escapement-wheel D.

F is an escapement-lever. The escapement wheel and lever are of known and usual construction. Thus it will be seen that I employ a direct connection from the barrel to the escapement-wheel, comprising only the worm
55 C', the worm gear-wheel C, and the worm E, forming a most positive and direct connection, dispensing with several wheels as compared with the ordinary train of gearing, and
60 also enabling me by the means described to adjust the speed of the timepiece quite accurately. The escapement-wheel is provided with any of the usual adjusting means.

O is a gear-wheel upon the lower end of the shaft of the escapement-wheel, as shown in
65 Figs. 2 and 7. This gear-wheel I employ to drive the gear P, which actuates the seconds-hand, and this gear-wheel O is so located that the gear-wheel P may be arranged on either
70 side thereof by supporting it either in the plate Q or the plate R. Thus without changing the movement, but simply changing the location of the gear-wheel P, I am enabled to
75 place the seconds-hand either in line with the winding-shaft P', as in open-face watches, or at right angles thereto, as in hunting-case watches.

In case the watch is to be used as a stop-watch the gear-wheels O and P are preferably
80 made beveled, as shown, and suitable mechanism is employed to raise and lower the gear-wheel P into and out of engagement with the pinions O, of the following construction:

a is a bifurcated spring-arm engaging between collars on the shaft *b* of the gear-wheel P and acting with its tension to normally hold that gear-wheel in engagement with the pinion O.

The spring-arm is provided with a corrugation or shoulder *c*. (Shown in Fig. 6.)

d is a bent lever actuated by a spring *e* and controlled by a step-wheel *f*. This is actuated by a spring-pawl *g*, engaging a ratchet-wheel
85 *h* on the arbor of the step-wheel *f*, the pawl *g* being actuated by a lever *i*.

The parts being thus constructed and in the position shown in Fig. 6, in which the arm *j* of the lever *d* engages a step *k* of the step-wheel *f*, allowing the opposite end of the lever *d* to bear upon the corrugation *c* on the
90 spring *a*, forcing the spring down and draw-

ing the gear-wheel downward out of engagement with the pinion and stops the seconds-hand at the desired point.

To start the seconds-hand again, the operator, desiring to first move it to zero and stop it there, presses on the lever *i*, which through the connection described will turn the step-wheel *f* and allow the arm *j* of the lever *d* to enter the step *l*, when the spring *e* will force the lever *d* inward, and, striking against the heart-shaped cam *m* on the shaft *b*, will turn that shaft until the point of the lever engages the notch *n*, locking the wheel and the seconds-hand at zero, as shown in Fig. 7.

Now to start the watch to time any event the operator again presses on the lever *i*, which throws the arm *j* of the lever *d* upon the step *o* of the step-wheel, withdrawing the lever, not only from engagement with the notch *n*, but also withdrawing it from the corrugation *c* of the spring-arm *a*. That spring-arm will immediately throw the gear-wheel in engagement with the pinion and start the seconds-hand.

It will be seen that my seconds-hand is entirely independent of the train of gear which actuates the hands which are shown in Figs.

2 and 4. The hand-actuating gears are driven from the sleeve I, Fig. 4, which is secured to the barrel A, and upon which are secured the gear wheel and pinion K, Fig. 4, suitable gears connecting with this gear and pinion for driving the minute and hour hands, respectively.

The winding and setting mechanism from the stem P may be of any suitable construction.

What I claim as my invention is—

In a watch-movement the combination with a spring-barrel having a worm-gear thereon, of a shaft at right angles to the axis of the barrel having a worm thereon, a support for the shaft comprising a spring-arm as V, the set-screw U for adjusting the shaft relative to the gear, a scape-wheel and an actuating connection between the shaft and scape-wheel shaft, substantially as described.

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

LOUIS RICHE.

Witnesses:

N. L. LINDOP,
M. B. O'DOHERTY.