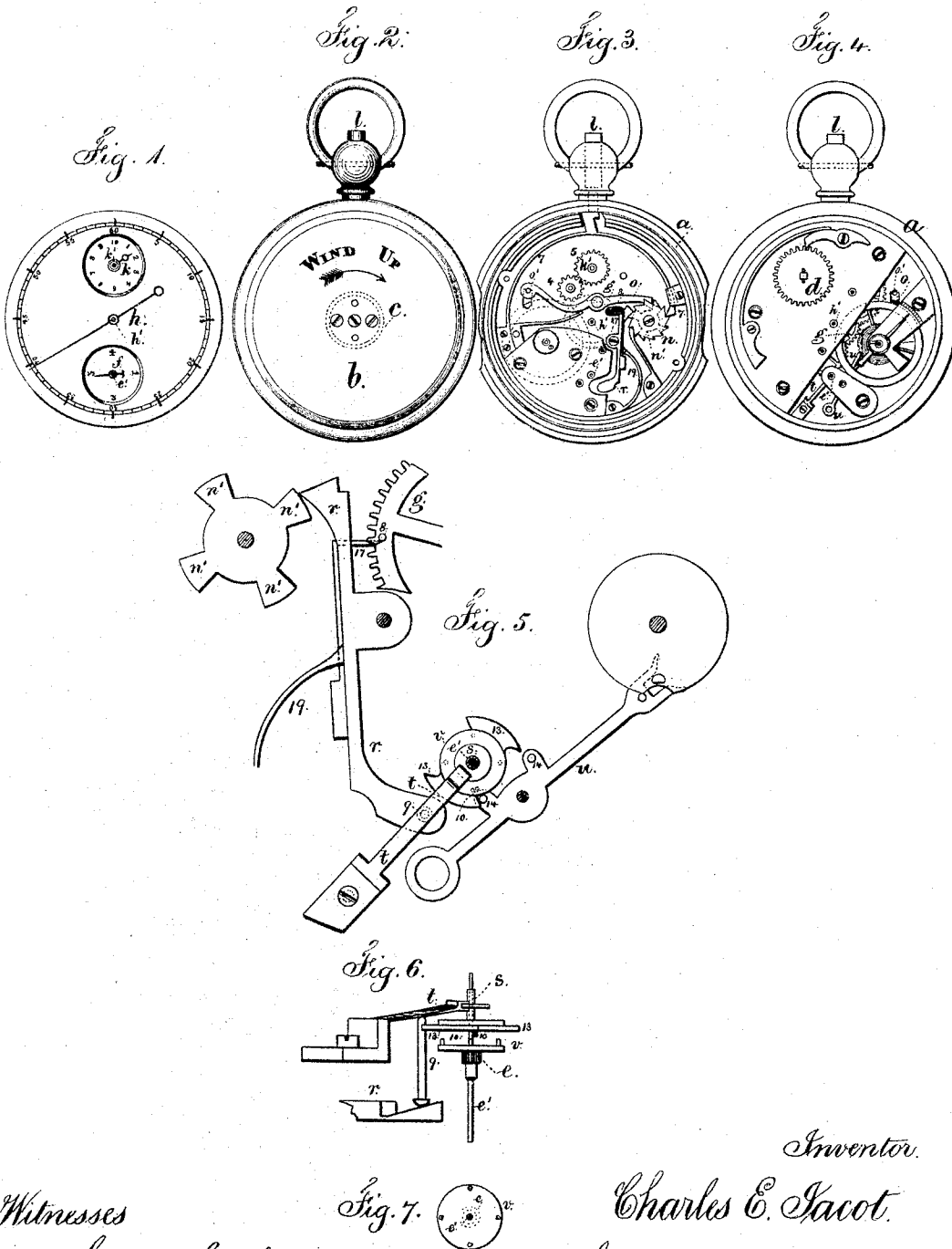


C. E. JACOT.
Stop-Watches.

No. 156,571.

Patented Nov. 3, 1874.



Witnesses

Chas. H. Smith
Geo. T. Pinckney

Fig. 7.

Inventor.
Charles E. Jacot.
per Lemuel W. Correll
att'y.

UNITED STATES PATENT OFFICE.

CHARLES E. JACOT, OF CHAUX-DE-FONDS, SWITZERLAND.

IMPROVEMENT IN STOP-WATCHES.

Specification forming part of Letters Patent No. **156,571**, dated November 3, 1874; application filed July 30, 1874.

To all whom it may concern:

Be it known that I, CHARLES E. JACOT, of Chaux-de-Fonds, Switzerland, have invented an Improvement in Stop-Watches, of which the following is a specification:

Watches have been made with stop-movements attached; but they render the watch complicated, and are liable to interfere with the accuracy of the time-piece.

My present invention is made for recording astronomical observations, races of horses, vessels, &c., in minutes, seconds, and quarter-seconds, or other integral parts of a second; and by my improved construction the stop-watch or chronoscope is an independent watch, adapted to run a comparatively few hours without winding, and containing all the appliances necessary for the most accurate observation. In my stop-watch there are three hands—one indicates minutes; the other, seconds; and the third, quarter-seconds. There might be a fourth hand connected with the minute-hand to show hours, but this usually is not required. There is a stop-motion push-pin that serves to operate the stop-lever and arrest the movement. The second movement of the push-pin liberates the train of gearing sufficiently to allow it to turn and move the second-hand around to 60 or zero, ready to commence an observation, when the push-pin is again operated.

In the drawing, Figure 1 is a view of the dial or face. Fig. 2 shows the back. Fig. 3 is the mechanism at the back of the dial. Fig. 4 shows the watch with the back open. The other figures represent the stop-work mechanism in larger size.

The watch-case is made with the bezel or ring *a*, upon which the frame of the glass is snapped at the front side, and at the back is a groove receiving the edges of the watch-back *b*. This back can be turned around bodily, the outer surface of the back at the edges being milled or roughened, so that it can be easily grasped and turned to wind up the watch by the wheel *c*, that is secured to the inside of the cap *b* and acts upon the wheel *d* and arbor of the mainspring. The train of gearing leads from the spring-barrel to the pinion *e* on the arbor *e'* of the quarter-second hand *f*. The wheel *g* is in the center of the

case and upon the arbor *h'* of the second-hand *h*, so that said hand and wheel revolve once in a minute. The minute-hand *k* is upon an arbor, *k'*, connected with one of the wheels of the train. The wheels 4 and 5 below the dial, as shown in Fig. 3, allow of this minute-hand being located in line with the quarter-second hand, the second-hand, and the shank of the watch. The push-pin *l* in the shank acts on a spring-pawl, 7, to turn the wheel *n* around. I prefer and use a wheel with twelve teeth, and, there being three operations performed by pushing the pin, these operations will be completed each quarter-revolution of the said wheel. Upon the under side of this wheel *n* are four cam-projections, *n'*, that act at the proper time to move the lever *o*, and, by a spring-finger, *o'*, projecting through an opening in the plate, either stop or release the balance-wheel. The projections also act upon the lever *r* and move the same, and throw the spring stop-finger 17, that is attached to said lever *r*, into the path of a pin, 8, upon the minute-wheel *g*, (see detached view, Fig. 5,) or else such lever and stop 17 are pressed back out of the way by a spring, 19. The other end of this lever *r* has an incline, (see detached view, Fig. 6,) that acts upon a pin, 9, that raises or lowers the spring coupling-fork *t*, for an object hereafter described. Upon the pinion *e* of the quarter-second arbor *e'* is a four-part coupling, *v*, seen in Figs. 6 and 7, and the sleeve *s* slides endwise upon said arbor by the action of the coupling-fork *t* and lifts the pin 10 upon *s* out of contact with the coupling, or connects such parts. Upon the sleeve *s* are the cam-escapements 13, that act against the two pins 14 on the escapement-lever *u*, that is forked and gives impulses to the balance-wheel. The balance is to vibrate four times a second, and hence the quarter-second arbor and hand will be stopped four times a second by the ends of the cams 13 coming against the pins 14 on the escapement-lever.

When the watch is running, the first movement of the push-pin *l* and turn of the ratchet-wheel *n* moves the lever *r*, and stops the balance and all the train exactly at the points they may stand in. The second push liberates the balance, but, by the coupling-fork *t*, lifts the sleeve *s*, disconnects the coupling, and allows

the train to run until the second-wheel *g* is arrested by the projection 17, and the parts are brought to 60. The third push of the pin couples the escapement-cams simultaneously with the release of the second-wheel from the projection 17, and the train is instantly in motion.

I claim as my invention—

1. The balance-stop *o'* and lever *o*, the lever *r*, and stop-finger 17 for the minute-wheel *g*, and the coupling-fork *t* of escapement, in combination with the ratchet-wheel *n* and push-

pin, substantially as and for the purposes set forth.

2. The inclined segments 13 of the escapement and the escapement-lever *u* and pins 14, in combination with the pinion and coupling mechanism, substantially as set forth.

Signed by me this 29th day of June, 1874.

CHAS. E. JACOT.

Witnesses:

CHAS. H. UPTON,

M. E. UPTON.