

(No Model.)

W. GOY.  
STOP WATCH.

No. 278,127.

Patented May 22, 1883.

fig. 1

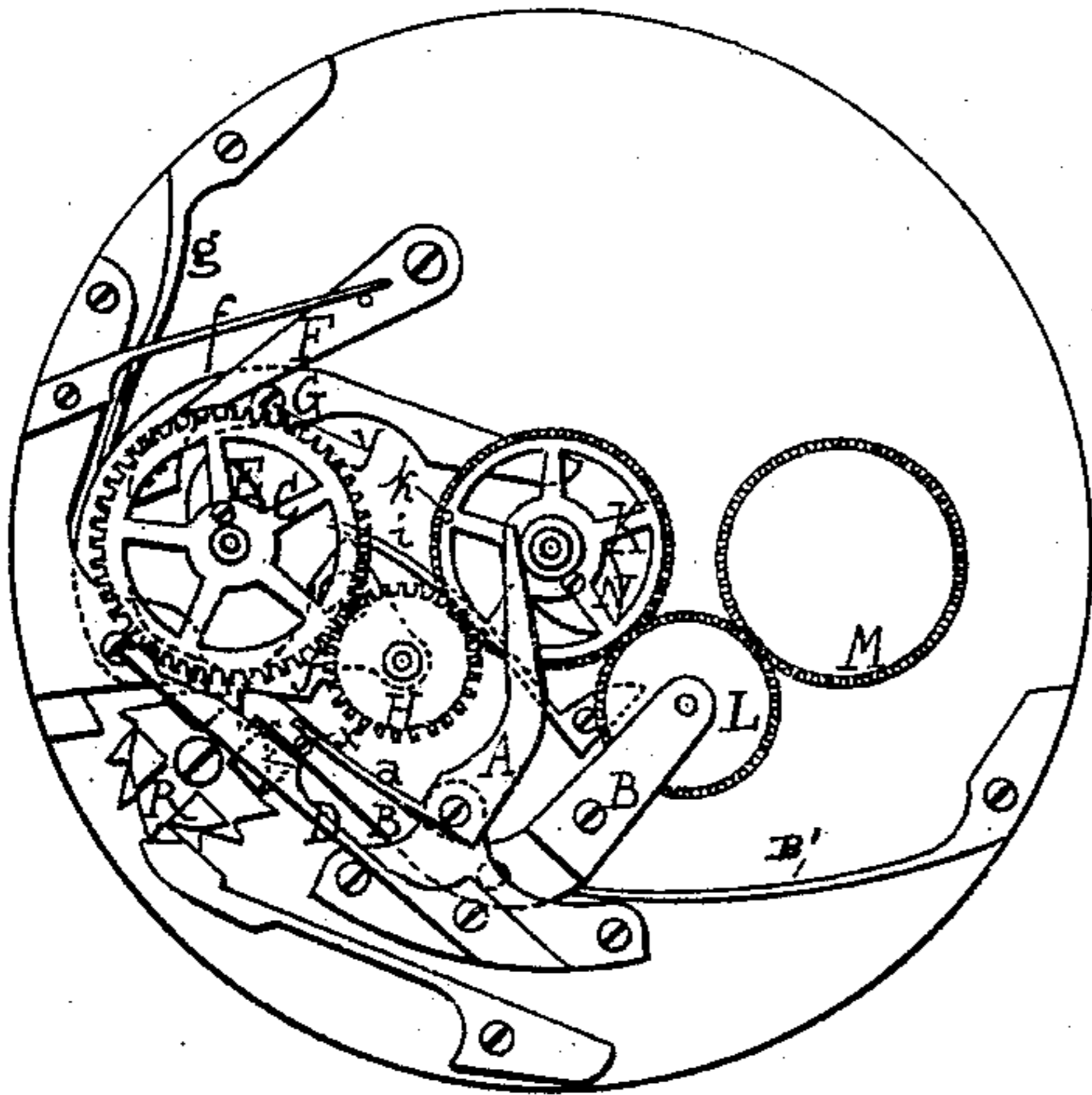


fig. 2

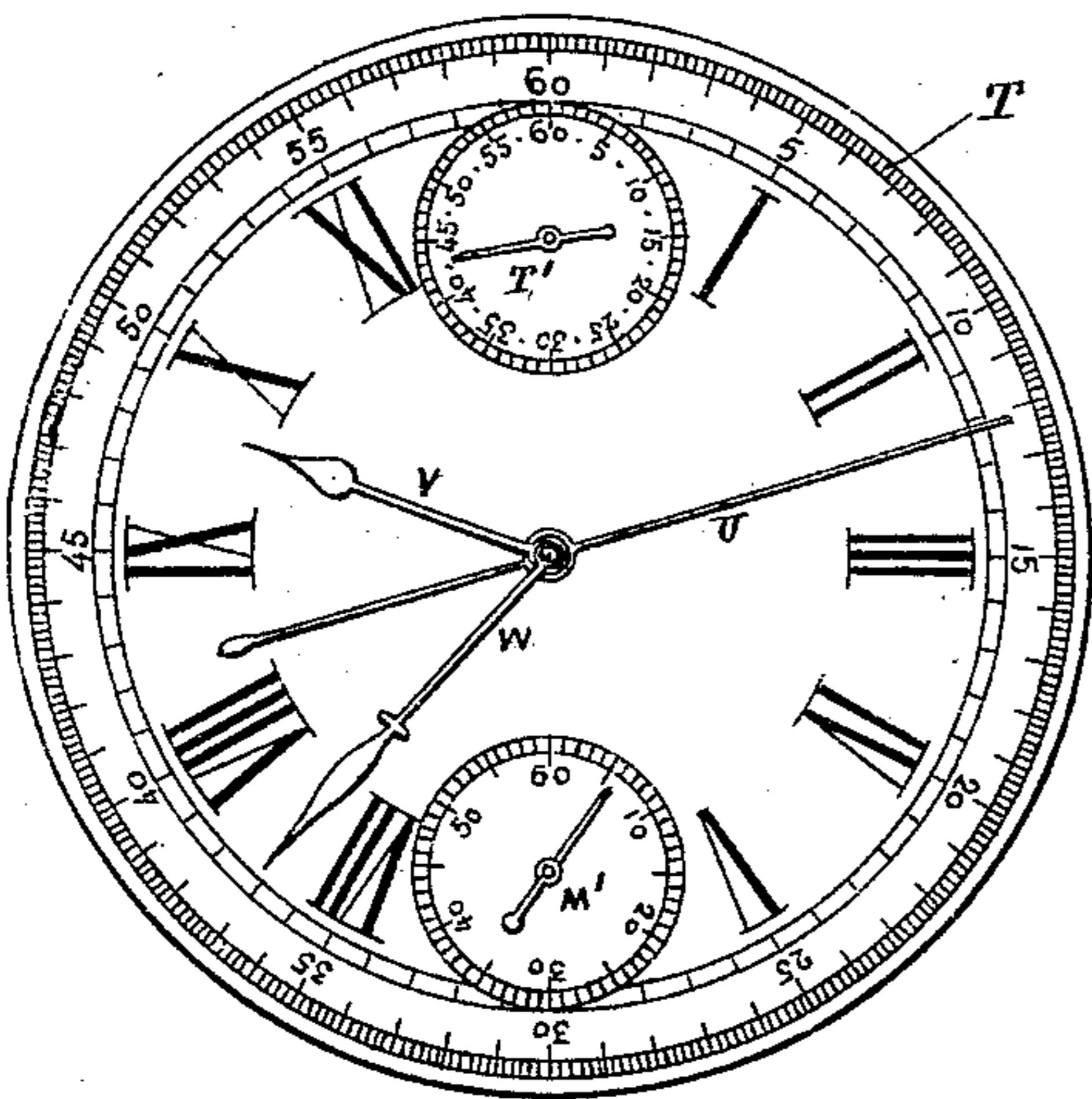
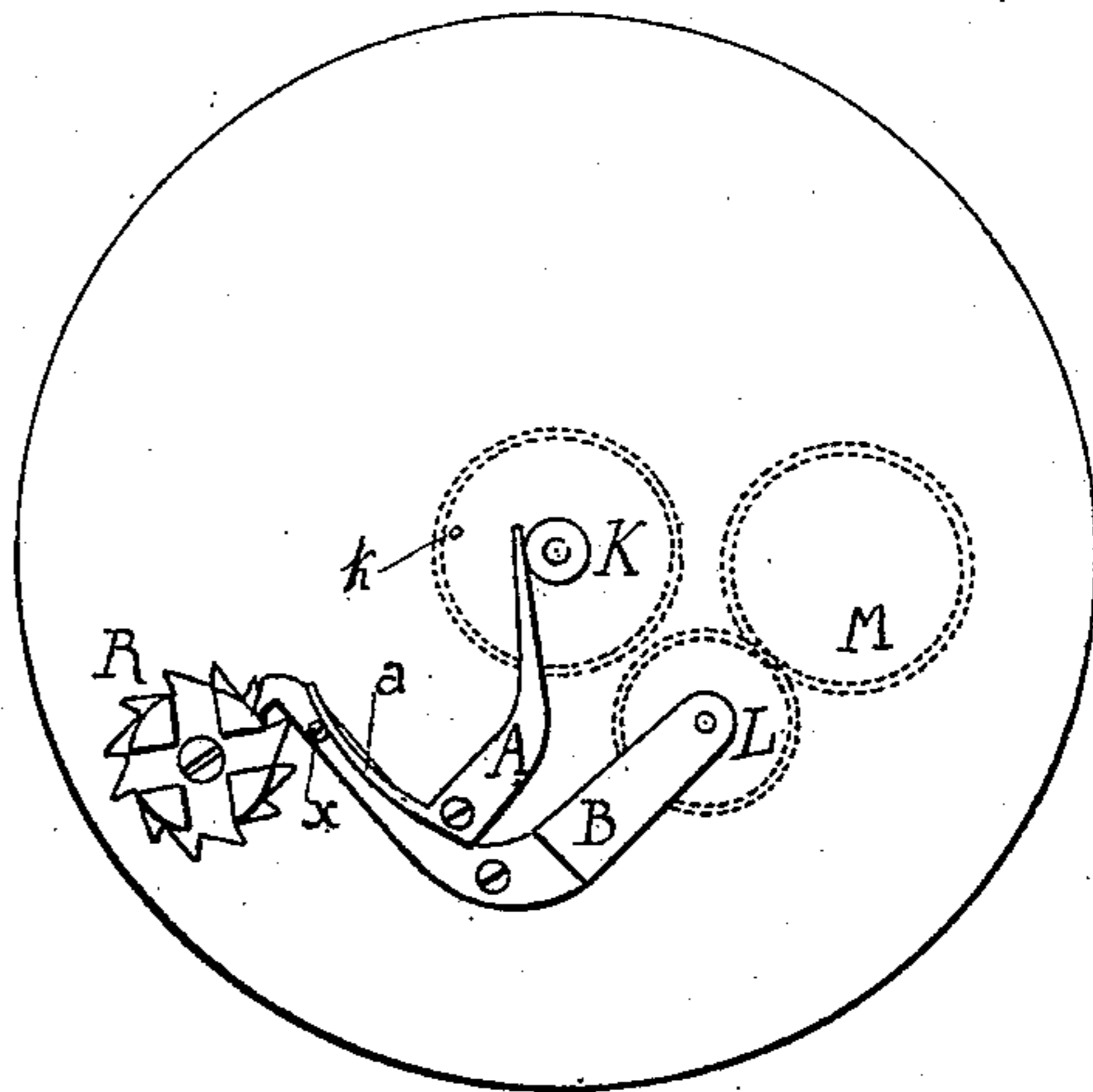
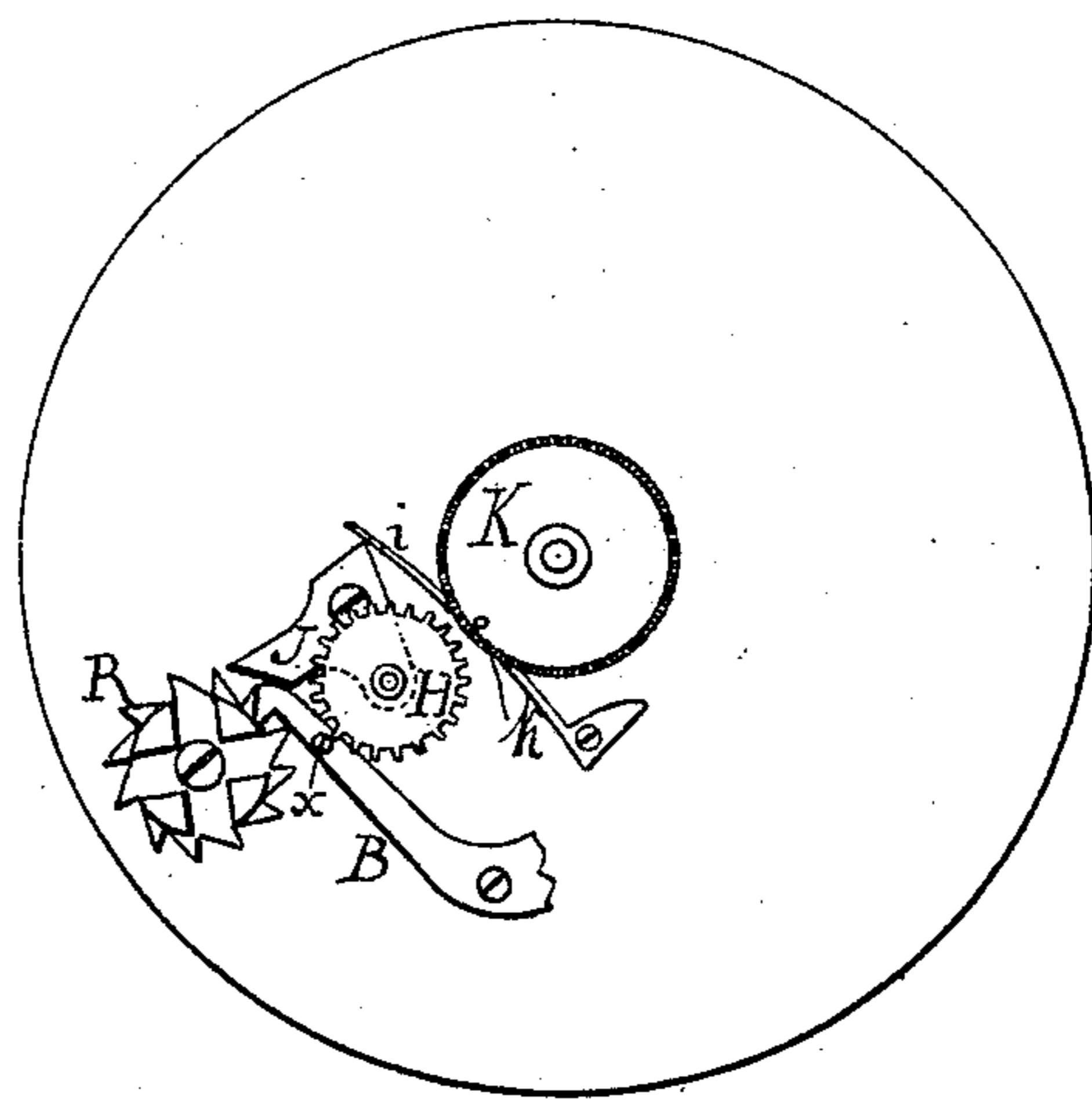


fig. 4

Witnesses

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fig. 3



Inventor

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per Lemuel W. Perrell  
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# UNITED STATES PATENT OFFICE.

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OF SAME PLACE.

## STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 278,127, dated May 22, 1883.

Application filed January 9, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GOY, a citizen of the Swiss Republic, residing at Brassus, in Switzerland, have invented a new and useful Improvement in Stop-Watches with Minute-Meters, of which the following is a specification.

The object of my invention is to obtain the utmost precision in the starting and stopping of the hands of the stop-watch when the push-piece is acted upon to start them or stop them. I obtain this result by means of a particular arrangement of brake for the independent second-hand, and by arranging in a special manner the intermediate wheel, which transmits motion from the center-wheel of the stop-watch to the wheel on the shaft of the independent minute-hand.

In the annexed drawings, Figure 1 represents that part of the mechanism of stop-watch to which the invention refers. Fig. 2 shows the position which the spring *a* and the wheel L assume when the stop-watch is at stop. Fig. 3 shows the position in which the rocker-plate J and the wheel H assume during the return to 0 of the hands of the stop-watch. Lastly, Fig. 4 represents the general arrangement of the dial and hands.

In all the figures the same letters refer to the same pieces.

As shown in Fig. 4, the dial bears, besides the usual divisions of hours, minutes, and seconds, a circle, T, of three hundred divisions for the independent second-hand U of the stop-watch. This latter passes under the hands V W of hours and minutes. In a small dial bearing sixty divisions, symmetrically disposed with that of the seconds, is placed the hand T', which progresses by one division at every turn of the independent second-hand U of the stop-watch. The return of the latter, as well as that of the minute-hand of the stop-watch, takes place from left to right or from right to left, according as the stopping has been effected before or after the division VI of the great dial, or thirty minutes of the smaller one.

The brake A, which bears with a smooth frictional surface against the cannon of the independent second-hand during its progress, has a little spring, *a*, which rests against a screw,

*x*, projecting from the bent lever B. This lever B bears the intermediate wheel, L, which transmits the motion of the wheel M to the center-wheel K. The spring *a* is arranged in such a manner that when the lever B is pressed back by one of the cams of the ratchet R the teeth of the wheel L are separated from the wheel K. This motion increases at the same time the tension of the spring *a*, Fig. 2, and consequently the action of the brake A upon the cannon of the second-hand U of the stop-watch.

The independent minute-hand T' is revolved by a sixty-toothed wheel, C, acted upon by a very weak jumper, D. The wheel C is provided with a heart-shaped cam or eccentric, E, which receives the impulse of a lever, F, to bring back the hand of the meter to 0. This lever is lifted by the lever G, which also acts upon the eccentric N. The lever F is brought into action by a spring, *f*, which presses it against the screw *y*, fixed upon the lever G.

With the wheel C a smaller one, H, engages, which is carried upon a rocker-plate, J, secured by a screw-pivot and provided with a spring, *i*. This plate J is brought into action by the lever B, which carries the intermediate wheel, L, so that when the stop-watch is brought into action by partially rotating the ratchet-wheel R, as usual, the lever B is moved and the wheel H is brought sufficiently near the center-wheel K to enable the small pin *k*, fixed upon the latter, to move the wheel C one tooth at a time, through the medium of the wheel H, every complete turn of the second-hand U.

In freeing the stop watch the lever B acts upon the lever J, which carries the wheel H, and moves the latter sufficiently far from the center-wheel K to be out of reach of the pin *k*, so that there is no further movement possible.

It is to be understood that I make use of the usual push-pin to operate upon a pawl and turn the ratchet-wheel R, and that one push brings the stop-watch mechanism into action, the next push stops the hands, and the third push restores the hands to the 0 or starting-point. The first push allows the spring B' to move the lever B and wheel L so that the lat-

ter engages with K and communicates motion from the wheel M on the arbor of the second-hand M' to the wheel K on the tubular arbor of the second-hand U. At the same time the pressure of the brake A upon the tubular arbor of K is lessened by the pin *x* moving away from the spring *a*. At the same time the spring *i* moves the rocker-plate J, and the wheel H is carried toward K, so that its teeth are in the path described by the pin *k*, that revolves with the wheel K. Hence the independent minute-hand T' will be turned one division each revolution of the independent second-wheel K. The jumper D, with its double-inclined end resting very lightly against the teeth of the wheel C, holds the same at any point to which it may be turned. When the push-pin is moved the second time, as usual, to stop the mechanism of the stop-watch, and the ratchet-wheel R is turned another tooth, the lever B is moved back, and the wheel L is disconnected from K, and the friction of A on the tubular arbor of U increased by the pin *x* moving back the spring *a*, thus holding the hand U. At the same time the end of the lever B acts upon the lever J and moves the wheel H away from the pin *k*. The third push on the pin moves the ratchet R again, and the end of the lever B still remains on the exterior of one of the cams of R, (see Figs. 2 and 3,) so that the

parts that receive motion from R remain unchanged in position; but the lever G is acted upon, as usual, by one of the cams of R, and pressed upon the heart-cam N, returning the independent second-hand U to the 0 or normal position, and at the same time the end of the lever F is thrown in by the spring *f* and acts upon the heart-cam E, turning the wheel C and hand T' back to the 0 or normal position, ready to be acted upon in the manner before described.

I claim as my invention—

1. The combination, with the ratchet-wheel and cams R and the independent minute and second hands in a stop-watch, of the lever B wheel L upon the same, the wheels K, M, and C, rocker-plate J, and wheel H thereon, pin *k*, and the levers A, G, and F, cams, and springs, substantially as set forth.

2. The combination, with the ratchet-wheel and cams R and the independent second-hand in a stop-watch, of the wheels K and M, lever B and wheel L thereon, spring B', brake-lever A, spring *a*, connected to said lever, stop *x* on lever B, cam N, lever G, and spring, substantially as and for the purposes specified.

WILLIAM GOY.

Witnesses:

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