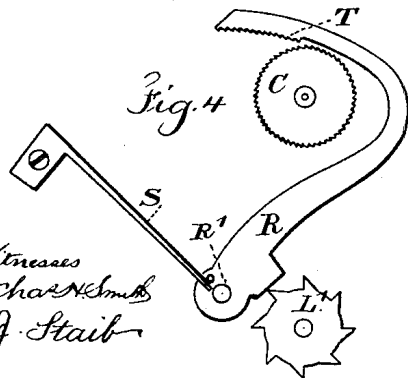
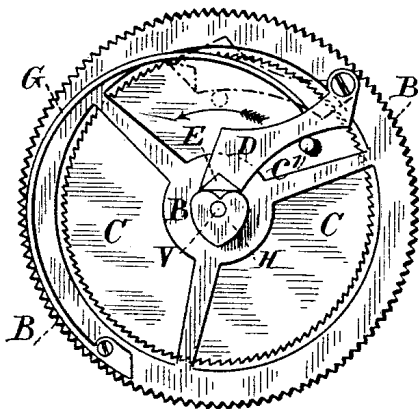
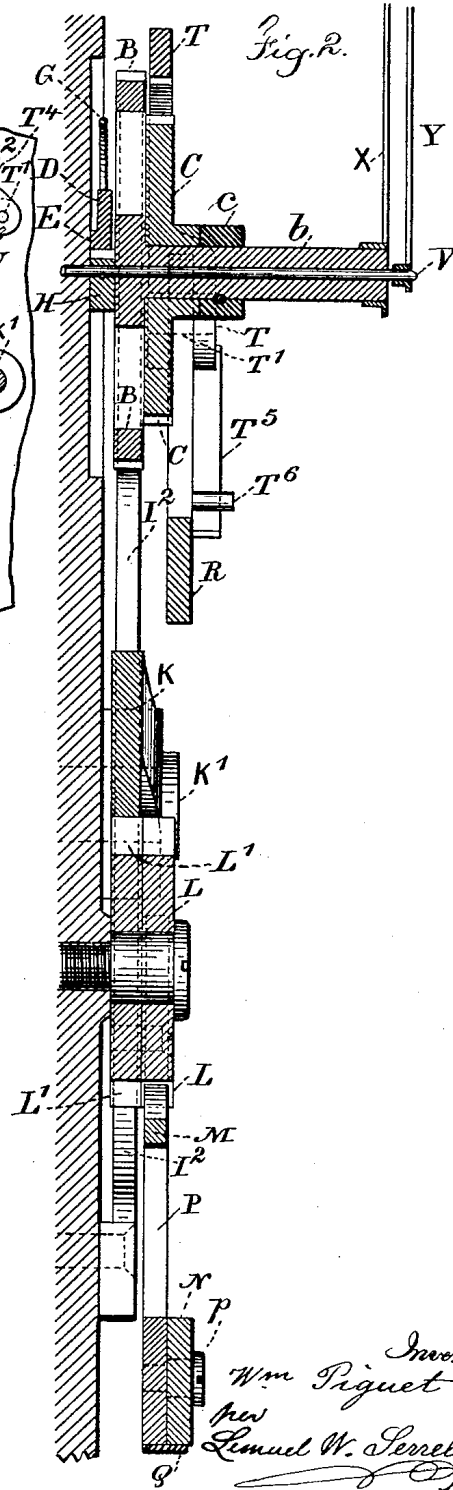
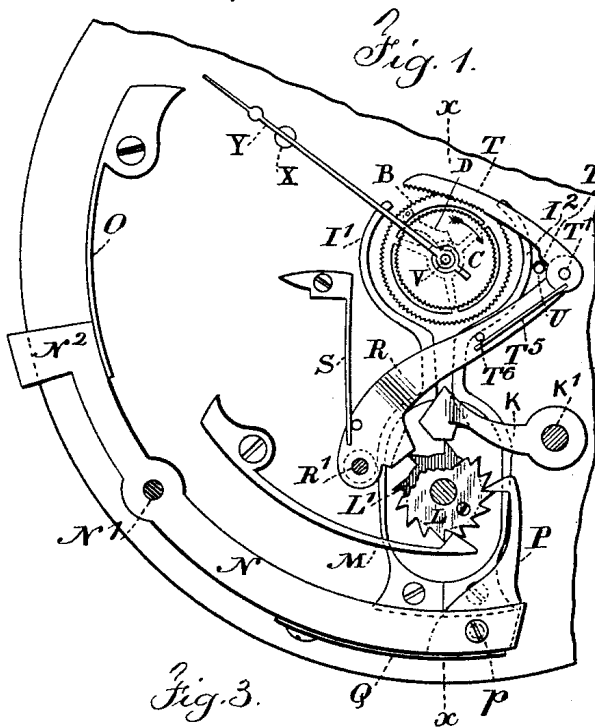


(No Model.)

W. PIGUET.
STOP WATCH.

No. 479,900.

Patented Aug. 2, 1892.



Witnesses
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per
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Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM FIGUET, OF SENTIER, SWITZERLAND.

STOP-WATCH.

SPECIFICATION forming part of Letters Patent No. 479,900, dated August 2, 1892.

Application filed December 8, 1891. Serial No. 414,431. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FIGUET, watch-manufacturer, of Sentier, Switzerland, have invented an Improvement in Stop-Watches, 5 of which the following is a specification.

This improvement relates to that class of watches in which there is a main seconds-hand that is constantly rotated and another seconds-hand which may rotate with the main 10 seconds-hand or be stopped when an observation is to be made, or it may be returned to the normal position and caused to rotate with the main seconds-hand. In this class of watches the axis carrying the constantly-ro- 15 tating main seconds-hand has been provided with a heart-cam against which a spring-lever acted to cause the two hands to rotate together, and when the independent seconds-hand was stopped the friction of the lever 20 upon the cam interfered with the proper rotation of the main seconds-hand.

By the present invention a mechanism is brought into action to swing back the spring-lever from contact with the heart-cam simultane- 25 ously with the stopping of the independent seconds-hand, thus preventing any friction against the heart-cam of the main seconds-hand, leaving such main seconds-hand to rotate unobstructedly.

30 In the drawings, Figure 1 represents the improved mechanism with the face of the watch removed, showing only a portion of the watch-plate. Fig. 2 is a section at the line x and on a magnified scale. Fig. 3 is an inverted plan view showing the heart-cam and the wheels surrounding the arbors of the sec- 35 onds-hands in the same size as shown in Fig. 2, and Fig. 4 represents the rack in a slightly-modified form.

40 The arbor V of the main seconds-hand Y is acted upon by any suitable mechanism, so as to be revolved once in a minute, and upon this arbor V the heart-cam H is firmly fastened.

45 The stop-wheel B surrounds the arbor V and has a tubular axis b for the independent seconds-hand X, such tubular axis b revolving freely upon the arbor V, and around the tubular axis b is a ratchet-wheel C, which is 50 free to turn on such tubular axis b , but it is held in position by a collar c . Upon the stop-wheel B is a lever D, acted upon by a spring

G to press the moving end of said lever D against the heart-cam H, as illustrated in Fig. 3, and there may be a jewel E at this end of 55 the lever D, and the hands X and Y coincide when the lever D is in its normal position against the heart-cam H, as seen in Fig. 3. Hence the two hands X and Y revolve in uni- 60 son under ordinary circumstances and there is little or no unusual friction.

Upon the ratchet-wheel C is a pin c' , that projects through the wheel B and is adjacent to the lever D, as seen in Fig. 3, and upon 65 reference to the dotted lines in this Fig. 3 it will be observed that if the wheel B is held stationary and the wheels C moved in the di- 70 rection of the arrow the pin c' swings the lever D out of contact with the heart-cam H and into the position indicated by dotted lines. This operation is effected by the devices here- 75 inafter described, and when this movement is effected the wheel B and the hand X are held stationary and the arbor V, heart-cam H, and hand Y are free to revolve without 80 undue friction and without any disturbing influence. I make use of a push-piece N^2 at the end of a lever N, that is pivoted at N' and acted upon by a spring O and pro- 85 vided with a pawl P, pivoted at p and having a spring Q to actuate the ratchet-wheel L, as in ordinary stop-watches, and there is a spring M with a double inclined end that acts 90 as a pawl to hold the ratchet-wheel L in the position to which it may be moved, and be- 85 neath and connected with the ratchet-wheel L is a cam-wheel L' , that acts upon the stopping and starting devices.

The spring-clamps I' and I^2 are fastened at one end to the watch-plate, and their other 90 ends are nearly semicircular, so as to be adapted to grasping the stop-wheel B, and it is advantageous to have the edges of this stop-wheel made with fine teeth or roughened, so as to hold this stop-wheel B firmly by the 95 spring-clamps I' I^2 , and there is a wedge-lever K, pivoted at K' and with its wedge-shaped ends between the offsets or shoulders of the spring-clamps I' I^2 . Hence when one tooth of the cam-wheel L' presses the wedge of the 100 lever K in between the shoulders of the spring-clamps I' I^2 , as seen in Fig. 1, such clamps are moved away from the wheel B, so that the latter may revolve freely, and when the

tooth of the cam-wheel L' passes away from the back of the wedge on the lever K, the spring-clamps I' I² are free to close against the wheel B and hold the same firmly.

5 In order to give motion to the ratchet-wheel C simultaneously with the grasping of the wheel B by the spring-clamps I' I², a rack T is made use of, the teeth of which engage the teeth of the wheel C and give to the latter a
10 partial rotation to move the pin c' and swing the lever D, as before mentioned. This rack T is upon the lever R, pivoted at R' and acted upon in one direction by the spring S and in the other direction by the teeth of the cam-wheel L', as seen in Fig. 4, and this lever R
15 and rack T may be in one piece, as shown in Fig. 4, or they may be joined together, as shown in Fig. 1, there being a joint T' with a spring T⁵, acting against a pin T⁶, to throw the teeth of the rack T toward the wheel C; but when in the position shown in Fig. 1 the
20 pin T⁴ in the plate of the watch has acted against an offset upon the rack near the joint T' to throw the rack away from the ratchet-wheel C and separate the teeth thereof.

In Fig. 4 the same object is accomplished by the movement given to the lever R being sufficient to carry the teeth of the rack beyond and free from the teeth of the wheel C. The
30 operation of these devices is that when the lever N is moved by the push-piece N² and the pawl P moves the ratchet-wheel L and cam-wheel L' from the position shown in Fig. 1 the teeth of L' pass clear of the projections on the levers K and R and the wedge of the lever K
35 is moved back from the spring-clamps I' I² by the spring of said clamps, and these clamps grasp the wheel B, and as a tooth of the cam-wheel L' clears the projection on the lever R the spring S gives to said lever a movement
40 which causes the teeth of the rack T to turn the wheel C sufficiently for its pin c' to raise the lever D from contact with the heart-cam H, and in this position the hand X is held firmly, while the hand Y continues to rotate
45 unobstructedly. When the lever N is again moved by the push N² and the wheel L moved by the pawl P the extent of another tooth, the teeth of the cam-wheel L' again return the

parts to the position indicated in Fig. 1, and in so doing the rack T moves the wheel C back to its normal position and the pin c' allows the lever D to act against the heart-cam H and return the hand X to unison with Y, so that they revolve together, and the spring-clamps I² are simultaneously opened, so that there is
55 no obstruction to the free rotation of the wheel B.

I claim as my invention—

1. The combination, with the main and independent seconds-hands, of an arbor carrying the main seconds-hand, a tubular arbor surrounding the same, carrying the independent seconds-hand, and a stop-wheel connected with the tubular arbor, a heart-cam upon the
60 arbor of the main seconds-hand, and a spring-lever on the stop-wheel acting against the heart-cam, a wheel surrounding the arbor of the independent seconds-hand, and a pin acting upon the lever of the heart-cam, and mechanism, substantially as specified, for holding
70 the stop-wheel and independent seconds-hand and for moving the wheel and pin to separate the spring-lever from the heart-cam, substantially as set forth.

2. The combination, with the main and independent seconds-hands and their arbors, of a heart-cam on the arbor of the main seconds-hand, a stop-wheel connected with the arbor of the independent seconds-hand, a spring-lever upon the stop-wheel acting against the
80 heart-cam, a ratchet-wheel surrounding the arbor of the independent seconds-hand, and a pin on the same to act upon the heart-cam lever, spring-clamps for acting upon the stop-wheel, a wedge-lever for opening the spring-clamps, a ratchet and lever for acting upon the ratchet-wheel and pin, and a push mechanism, ratchet-wheel, and cam-wheel for acting upon the wedge-lever and the ratchet-lever,
85 respectively, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM FIGUET.

Witnesses:

G. FRIED. SCHNEIDER,
E. PRENTICE NAYLOR.