(No Model.)

J. S. AUBERT.

Chronograph Watch.

No. 238,203. **Patented March 1, 1881.**

Fig. 2.

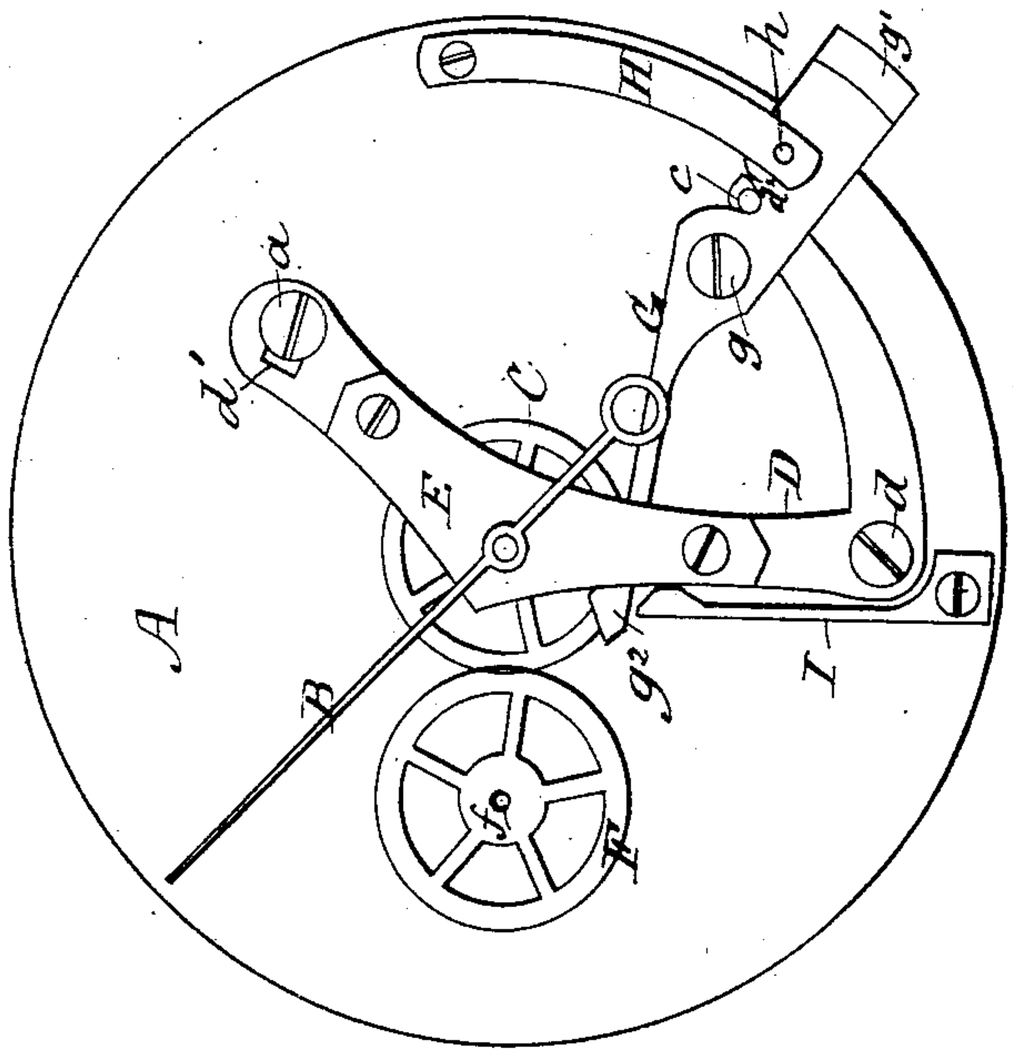


Fig. 3.

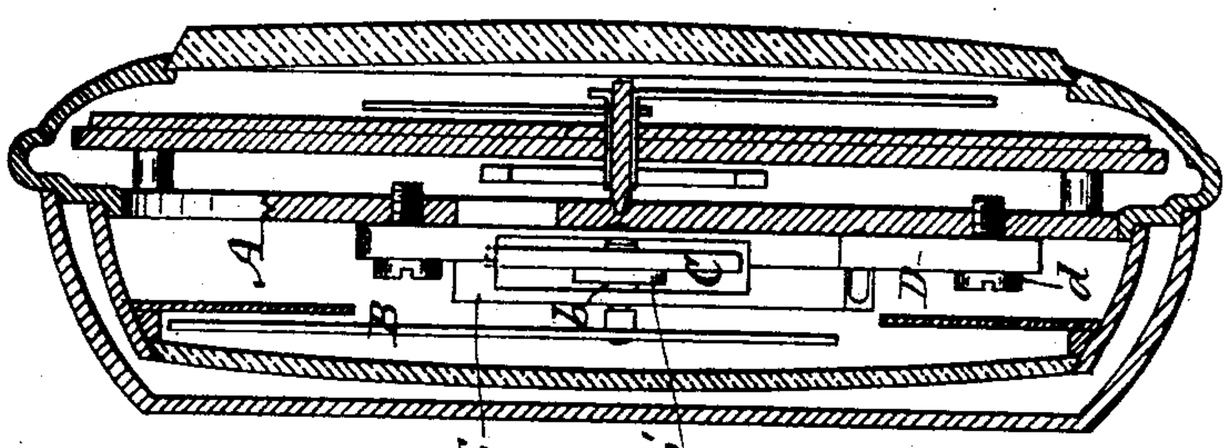
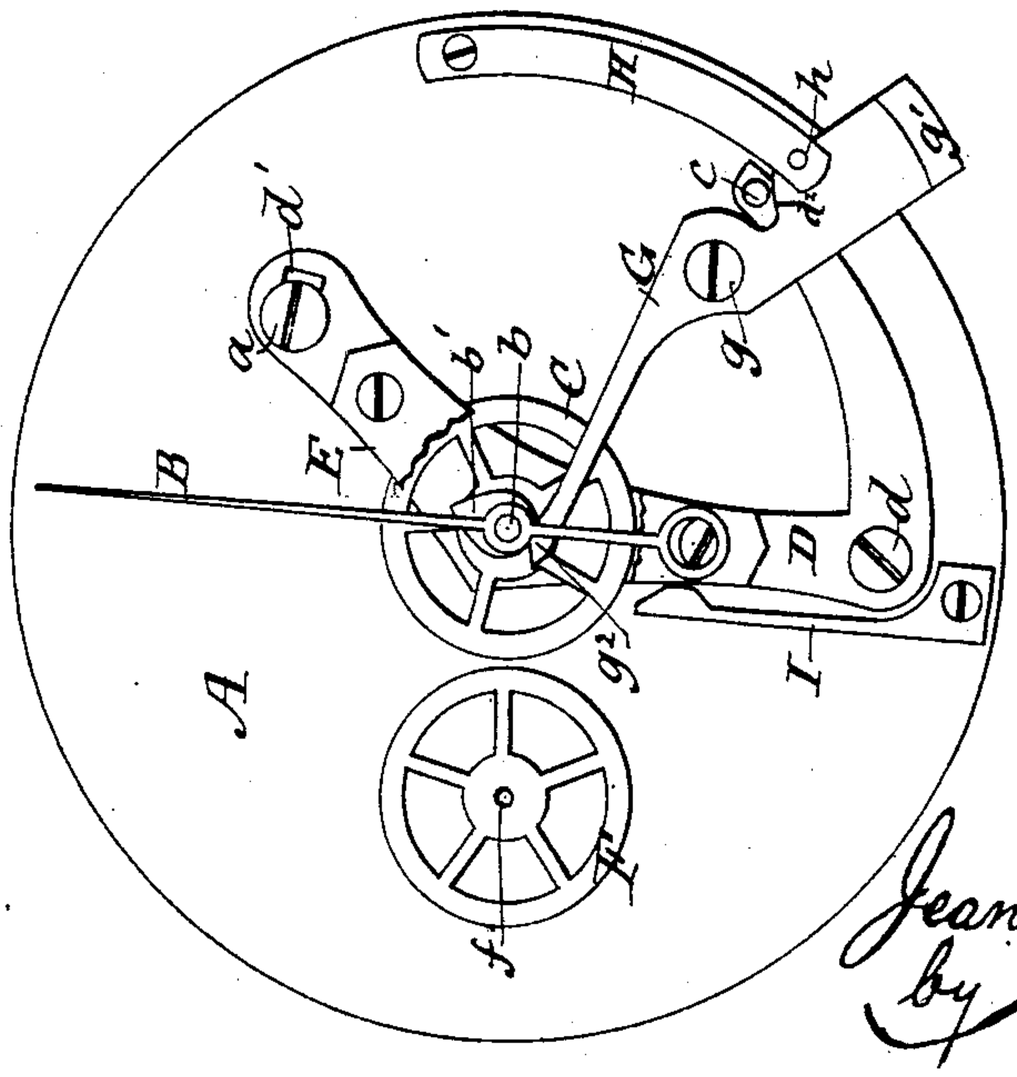


Fig. 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

JEAN S. AUBERT, OF CHAUX DE FONDS, SWITZERLAND.

CHRONOGRAPH-WATCH.

SPECIFICATION forming part of Letters Patent No. 238,203, dated March 1, 1881.

Application filed December 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, JEAN SAMUEL AUBERT, of Chaux de Fonds, Switzerland, have invented a new and useful Improvement in Chronograph-Watches, which improvement is fully set forth in the following specification.

The present invention relates to that class of watches known as "chronographs" or stop-watches, in which an independent hand or hands are provided, adapted to be started or stopped at will without interfering with the movement of the watch itself, and has for its object to provide an independent timing attachment which shall be effective and exact in operation, simple in construction, inexpensive, and not liable to get out of order.

In such timing-watches it is desirable that the operations of starting, stopping, and setting the independent hand should all be performed by a single operating-knob or projecting device, and at the same time that it should be possible to start the hand from any point on the dial without first having to set it back to the starting-point, as is necessary in chronograph-watches as heretofore constructed. In the present invention this is accomplished by giving to the operating knob or lever three effective movements, the first of which starts the timing mechanism, the second stops it, and the third sets the hand back to the zero or starting-point.

The independent hand is mounted upon an arbor on which a suitable gear-wheel is fixed, said arbor being carried by a pivoted frame, movable on its pivot, so as to put the said wheel into or out of gear with a wheel connected with the train of the time-piece. By moving the frame, therefore, in one direction or the other, the independent hand can be started by engagement of the two wheels, or stopped by disengaging them, whenever desired. The wheels employed are or may be ordinary spur-gears.

In order that the pivoted frame may not interfere with the ordinary time-keeping movement of the watch it is secured to the back plate, and the independent hand is provided with a separate dial at the back of the watch.

The usual heart-cam for setting the independent hand is fixed upon the arbor of the latter, and is acted upon by a lever, the inner end of which terminates in a suitable finger, while the outer end, extending outside the case, forms the operating knob or device with which the devices for starting and stopping the independent hand are connected, so as to be operated thereby.

The particular construction, combination, and arrangements of the several parts will be hereinafter set forth.

The following description will enable those skilled in the art to which this invention relates to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a face view of the chronograph attachment, with the parts in their normal condition of rest, the dial being removed; Fig. 2, a similar view with the hand in motion; and Fig. 3, a central section, partly in elevation, showing the position of the attachment relatively to the time-keeping mechanism. In Fig. 3 the operating-lever is not represented.

The barrel, trains of gearing, and escapement of the watch are or may be of ordinary or suitable construction.

A movable frame, D, is pivoted at *d* to the back of the plate A, and it is steadied and limited in its movement by the screw *a*, projecting through the slot *d'* at one end of frame D, and engaging in a screw-threaded opening in the plate A. The middle part of the frame is partly cut away, and a bridge, E, secured across the recess thus made. An arbor, *b*, turns in bearings in the frame D and bridge E, and to this arbor are fixed the independent or stop hand B, a heart-cam, *b'*, and a wheel, C.

The arbor *f* of the ordinary seconds-hand of the watch projects through the plate A and carries the wheel F. This wheel has the same number of teeth as the wheel C, and the frame D is so arranged relatively to it that the wheel C can be put into and out of gear with it by moving the frame D on its pivot. When in gear it is obvious that the arbors *f* and *b* revolve together at the same speed. The teeth on wheels C and F are very fine, and as the seconds-hand of a watch ordinarily moves, or can be made to move, by a quarter-second at a time, the hand B, its dial being properly marked, can be made to indicate quarter-seconds, which is sufficiently close for accu-

racy in the observations in which chronograph-watches are ordinarily employed. If desired, however, an additional independent hand to indicate quarter-seconds could be geared to wheel C, so as to derive a more rapid movement therefrom.

A spring, I, fixed at one end to the plate A, bears at the other against the frame D, and tends to hold the latter in the position shown in Fig. 1, with the wheels C and F out of gear, and the hand B consequently stationary.

G is a lever, pivoted at *g* to the plate A, and having its end extending outside the case to form the operating knob or projection *g'*. At the inner end of this lever is formed a setting-finger, g^2, adapted to operate by pressing upon the heart-cam *b'*, to restore the hand to the starting-point, in the usual manner.

From the top of frame D projects a pin, *c*, in the path of said lever, and the latter is notched, as shown at d^2, to engage therewith. When the lever is pushed forward (to the right in Fig. 1) the inclined side of the notch d^2 acts upon the pin *c* and moves the frame into the position shown in Fig. 2, so as to throw the wheel C into gear with the wheel F, and thus start the independent hand B.

A spring, H, secured to plate A bears at *h* upon the lever G with sufficient pressure to retain it in whatever position it may be placed. This keeps the wheels F and C in gear as long as desired, notwithstanding the pressure of spring I. When the pin *c* is released by pushing the lever G to the left, the frame D is immediately restored to its first position by the action of spring I, and the wheel C is thereby thrown out of gear with the wheel F and the hand B arrested.

The operation will be readily understood. The frame D being in its normal position, as shown in Fig. 1, to start the independent seconds-hand B, the lever G is pushed forward, (to the right in the figure.) No effect is produced except to draw back the finger g^2 until the inclined or cam surface of the notch d^2 in lever G acts upon pin *c*, when immediately the frame D is shifted and the wheel C put into gear with the wheel F, so that it revolves therewith and the hand starts on its course. When it is desired to arrest the movement of the hand and set it back to zero, the lever G is pushed back to its first position, whereupon the action of spring I restores the frame D to its normal position, Fig. 1, throwing wheels C and F out of gear and stopping the hand, and the finger g^2, acting upon the heart-cam *b'*, sets the hand. By stopping the lever midway on its backward movement after the wheels C and F are disengaged and before the finger g^2 acts upon the cam *b*, the hand B is stopped without being set back, and can be started again from the same point by pushing the lever G again to the right. If pushed to the left, the lever sets the hand to the starting-point.

Having now fully described the said invention, and the manner of carrying the same into effect, what I claim, and desire to secure by Letters Patent, is—

1. In a chronograph or stop watch, the combination, with the independent hand, its heart-cam, and devices for effecting the starting and stopping of said hand, of a lever terminating at its inner end in a setting-finger, and at its outer end in an operating knob or projection, and connected with the aforesaid devices, substantially as described, so as to have three effective movements, as set forth.

2. The combination, with a laterally-moving frame carrying the arbor of the independent hand and heart-cam and gear-wheel, of a lever connected with said frame, and provided on its outer end with an operating-knob, and on its inner end with a setting-finger, substantially as described.

3. In a chronograph, a pivoted or laterally-moving frame, in combination with the arbor of the independent hand, supported in bearings in said frame and movable bodily therewith, and the heart-cam and operating-gear fixed on said arbor, substantially as described.

4. The combination, in a stop-watch having a separate dial at the back, of a gear connected with the train of the watch, a laterally-moving frame supported on the top of the back plate, an independent hand carried by an arbor supported in bearings in said frame and moving over the dial at the back of the watch, and an operating-gear fixed on said arbor, substantially as described.

5. The combination of a gear-wheel connected with the train of a time-piece, a pivoted frame, an arbor turning in bearings in said frame, a gear-wheel fixed on said arbor and adapted to be put into and out of gear with the first-named wheel, a hand and heart-cam, also fixed on said arbor, a spring arranged to bear against said frame, a lever having a setting-finger at its inner end, a pin on said frame in the path of the lever, and a spring arranged to bear on the latter, all substantially as described.

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

JN. SAMUEL AUBERT.

Witnesses:

ALVIN L. STRASBURGER,

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