Feb. 3, 1942. H. JACOT GUYOT 2,271,593

WATCH

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FIG. 1

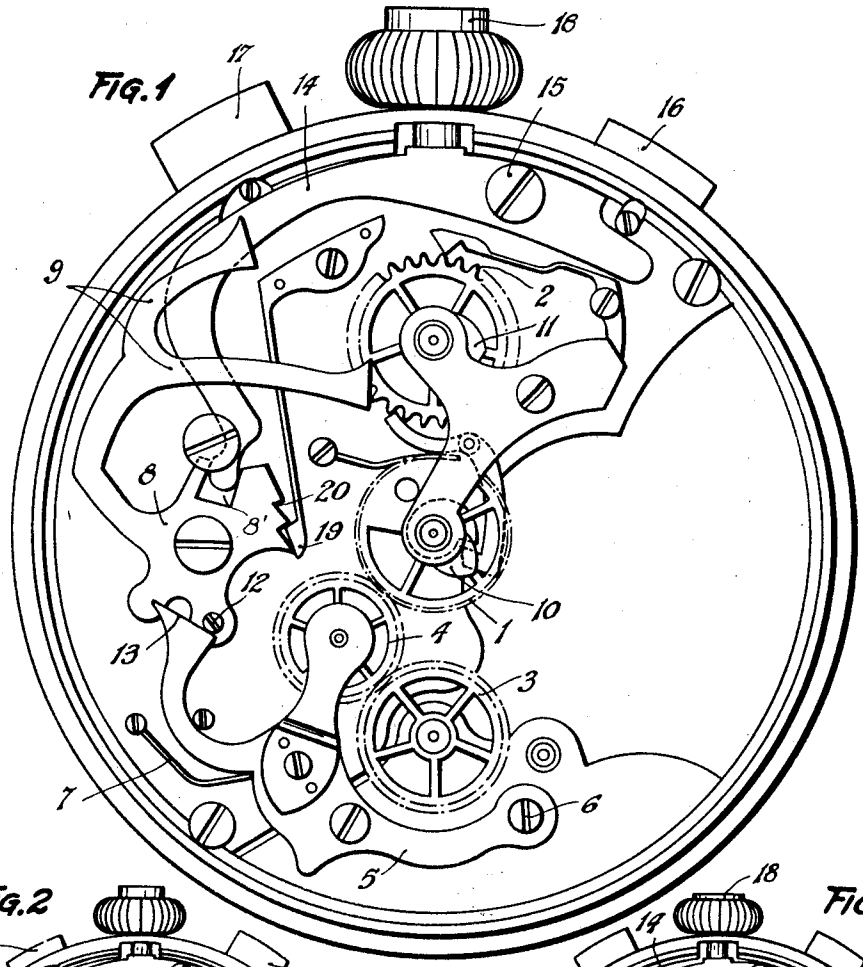


FIG. 2

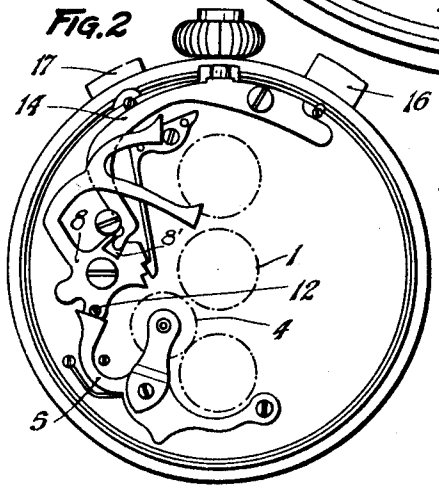
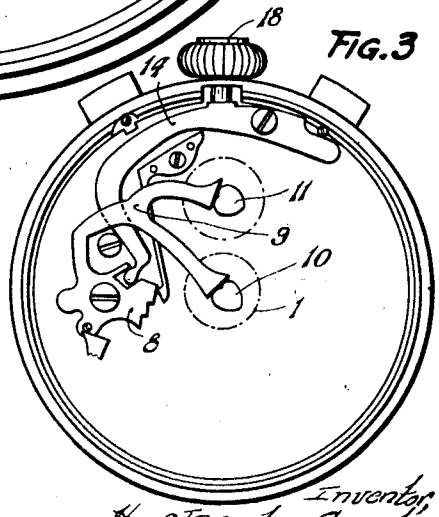


FIG. 3



Inventor,
H. Jacot Guyot
By: Glascock Downing & Seibold
Attys.

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FIG. 4

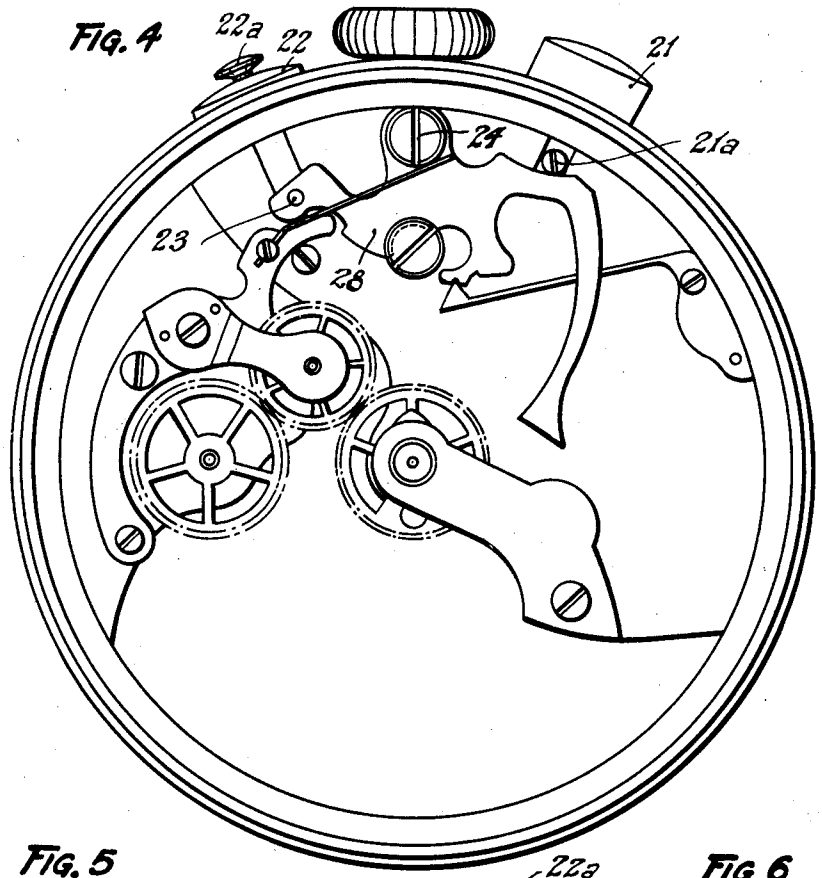


FIG. 5

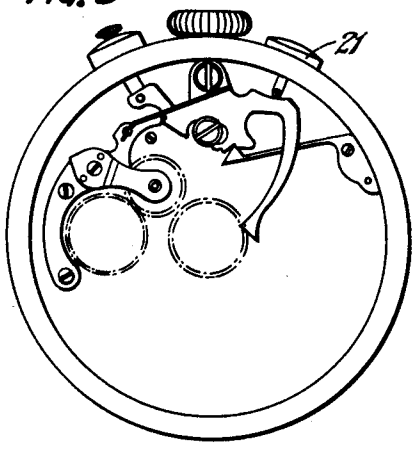
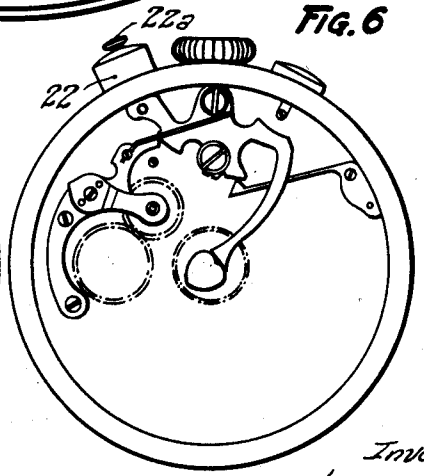


FIG. 6



Inventor;
H. Jacot Guyot

By: Glascock Downing & Seebold
Attys.

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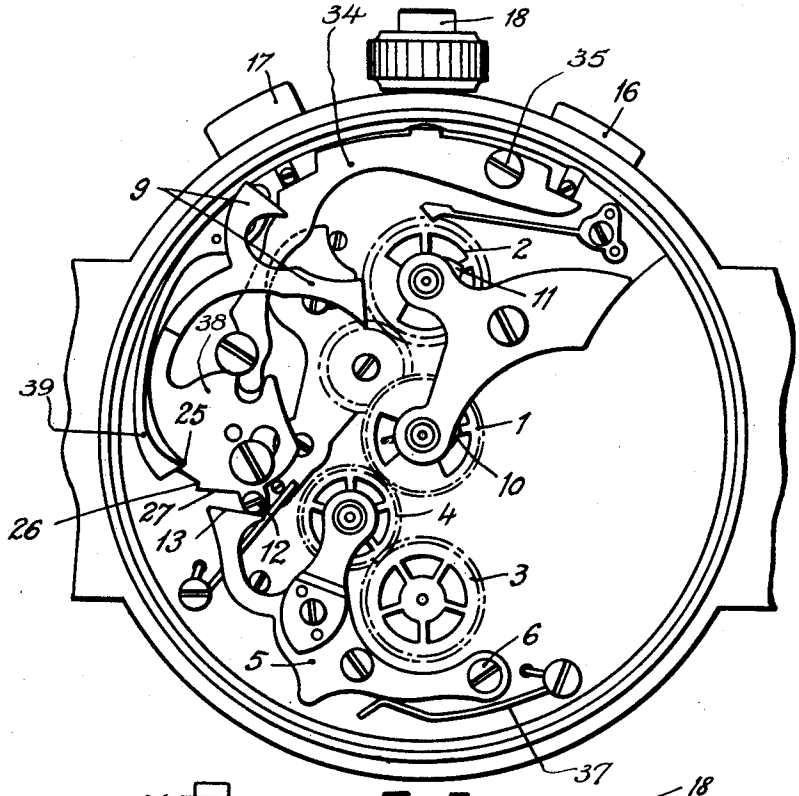


FIG. 7

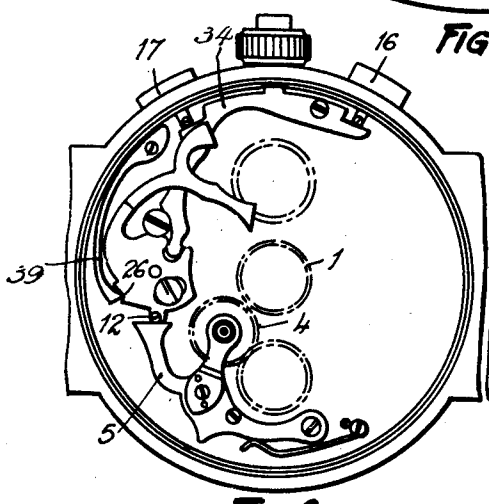


FIG. 8

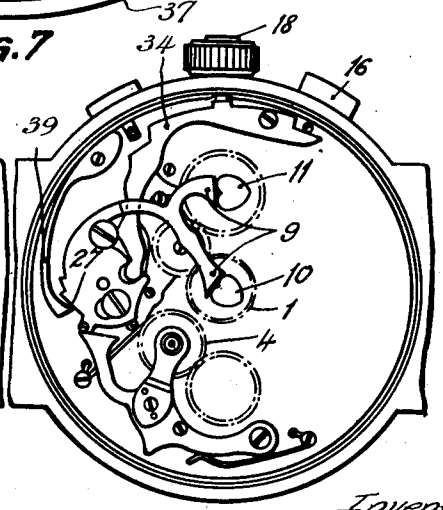


FIG. 9

Inventor;
H. Jacot Guyot
by: Mascock, Downing & Seabold
Attys.

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UNITED STATES PATENT OFFICE

2,271,593

WATCH

Henri Jacot Guyot, Neuchatel, Switzerland, assignor to the firm Ebauches S. A., Neuchatel, Switzerland, a firm of Switzerland

Application July 31, 1939, Serial No. 287,633
In Switzerland August 15, 1938

3 Claims. (Cl. 58—74)

This invention relates to watches, and more particularly stated, to chronograph movements of the type comprising at least one hammer for effecting the resetting to zero of the chronograph indicating means, and a lever carrying an intermediate wheel which is constantly in gear with one of the watch movement wheels and which for starting the chronograph is put into gear with the chronograph wheel carrying the seconds hand.

The object of the present invention is the provision of a chronograph movement of the abovementioned type, wherein an oscillatable tappet is provided of which said hammer forms a substantial part and which is adapted to operate said wheel carrying lever.

Another object of the invention is the provision of manipulating organs to which said pivoted tappet is subjected for effecting the starting and stopping of the chronograph mechanism and the resetting to zero of the chronograph indicating means.

A still further object is the provision of means adapted to maintain said pivoted tappet automatically in the working position and the stop position of the chronograph mechanism, as well as in the position of rest for the resetting to zero of the chronograph indicating means respectively.

Other objects of the invention will become apparent as the specification proceeds.

In the drawings:

The Figures 1, 2 and 3 concern a first embodiment of the invention.

Figure 1 is a plan view showing the chronograph mechanism in working position.

Figures 2 and 3 are two plan views drawn to a smaller scale, showing the chronograph mechanism in other positions.

Figures 4, 5 and 6 are three similar views of a second embodiment, and Figures 7, 8 and 9 illustrate a third embodiment of the invention.

1 is the center wheel of the chronograph mechanism carrying the seconds hand in the center, and 2 is the minutes counter wheel, these two wheels being kinematically related by a mechanism of the type described in the Swiss Patent No. 197,349, and which will here not be described in details. A driving wheel 3 is mounted on the axle of and above the ordinary seconds wheel of the watch movement and constantly meshes with an intermediate wheel 4. The latter is carried by a rocking lever 5 pivoted at 6 and acted upon by a spring 7 tending to constantly displace said lever so as to bring the intermediate wheel 4 into gear with the center wheel 1.

8 is an oscillatable tappet pivoted at its center and formed integral with a two branched hammer 9 which is adapted to act upon the heart-cams 10 and 11 carried by the wheels 1 and 2, respectively, for resetting the counter hands to zero. This tappet is provided with an U-shaped notch 8', a series of V-notches 20 and an eccentric projection 12 disposed side by side on its circumference and at approximately the same distance from its center. The projection 12 cooperates with a plane face 13 of the lever 5. The oscillatable tappet is operated by a rocking lever 14 pivoted at 15 on the watch frame and which is shown having a rounded end engaging the U-shaped notch 8' of said tappet. The lever 14 is itself subjected to the operation of three pushers 16, 17 and 18. A spring pawl 19 is also provided to cooperate with the V-notches 20 of the tappet so as to maintain the latter in the desired one of different position.

In Figure 1 the pusher 16 is pressed down and brings the tappet 8 into the working position shown in this figure, whereby the wheel 4 is put into gear with the wheel 1 by the spring 7, so that the chronograph mechanism is set to work. When the pusher 17 is pressed down, the tappet 8 is moved by the lever 14 into the stop position shown in Fig. 2, while the pusher 16 is pushed back into its position of rest. The projection 12 of the tappet thereby acts upon the lever 5 to release the wheel 4 from engagement with the wheel 1, and the chronograph mechanism is thus stopped. For the resetting to zero of the hands the pusher 18 has to be pressed down; the tappet 8 is then moved by the lever 14 to assume the position of rest shown in Fig. 3 where the two-branched hammer is applied against the heart shaped cams 10 and 11, while wheel 4 remains disengaged from wheel 1. In this moment the pawl 19 ceases to cooperate with one of the notches 20 of the tappet and rests on a plane surface of said tappet. The tappet 8 under the action of spring 7 provided consequently returns to the stop position shown in Fig. 2 as soon as the pusher 18 be set free, and will be held in this position owing to the renewed intermeshing of pawl 19 and one of the notches 20. When actuating again the pusher 16 to obtain the forward movement, said pusher will cause the various organs to move from the stop position of Fig. 2 to the working position shown in Fig. 1.

The embodiment shown in Figures 4 to 6 differs from the preceding one in that the pivoted ham-

mer or tappet 28 is directly operated by two pushers 21 and 22 provided on either side of the winding crown. This tappet 28 is therefore disposed immediately below this crown. The pusher 21 bears with the head of a screw 21_a against said tappet, whereas the inner end of the pusher 22 is pivoted on this tappet at a point 23 which is symmetrical to the point 21_a with respect to the axis of rotation 24 of the tappet 28.

In Figure 4 the pusher 22 is pressed down and the chronograph mechanism is thereby put into gear. If the pusher 21 is pressed down the various organs move into the stop position shown in Fig. 5. If, at last, the pusher 22 is drawn back by means of the button 22_a, the position obtained corresponds to the resetting to zero, as shown in Fig. 6, whereby the hammer which is a single one, acts upon the heart shaped cam of the center wheel of the chronograph.

In the embodiment illustrated in Figures 7 to 9 the rocking lever 5 pivoted at 6 is subjected to the action of a spring 37, and the oscillatable tappet 38 is again formed integral with a two branched hammer 9 and operated by a rocking lever 34 pivoted at 35 and operable by three pushers 16, 17, 18 as has been described relative to Figs. 1 to 3. However, the said embodiment differs from the first embodiment shown in that the oscillatable tappet 38 presents three V-notches 25, 26 and 27 cooperating with the spring pawl 39. Figure 7 shows the working position of the chronograph mechanism, the tappet 38 being maintained automatically in this position by the pawl 39 engaging the notch 25. In Figure 8, the pawl 39 engages the notch 26 to hold the tappet in the stop position while in Figure 9 said pawl engages the notch 27 for the resetting to zero of the hands. In this way the hammer 9 remains in contact with the heart shaped resetting cams as long as the seconds hand is at zero, so as to maintain said hand and the minutes counter hand perfectly stationary.

I claim:

1. Chronograph mechanism having in combination a seconds wheel, a driving wheel mounted on the axle of and above said seconds wheel, a counter wheel provided with a heart-cam, an oscillatable tappet pivoted in its center and having an U-shaped notch, a series of V-notches and a projection which are disposed side by side on the circumference of said tappet and at approximately the same distance from the center thereof, said tappet forming also a bent extension terminating in a resetting hammer adapted to act upon the heart-cam of said counter wheel, an operable first rocking lever having a substantially rounded end engaging said U-shaped notch in the tappet for oscillating the same, a spring pressed second rocking lever pivoted at one end and being applied at its other end against said projection on the tappet, an intermediate wheel carried by said second lever, said wheel being constantly in gear with said driving wheel and adapted to be brought into gear with said counter wheel upon rocking said second lever by means of said tappet, and a spring pawl adapted to engage said V-notches in the tappet for maintaining said tappet in determined positions.

2. Chronograph mechanism having in combination a seconds wheel, a driving wheel mounted on the axle of and above said seconds wheel, a seconds counter wheel and a minutes counter wheel each provided with a heart-cam and being kinematically connected to each other, an oscillatable tappet pivoted in its center and having an U-shaped notch, a series of V-notches and a projection which are disposed side by side on the circumference of said tappet and at approximately the same distance from the center thereof, said tappet forming also a bent extension terminating in a two-branched resetting hammer adapted to act upon the heart-cams of said counter wheels, an operable first rocking lever having a substationally rounded end engaging said U-shaped notch in the tappet for oscillating the same, a spring pressed second rocking lever pivoted at one end and being applied at its other end against said projection on the tappet, an intermediate wheel carried by said second lever, said wheel being constantly in gear with said driving wheel and adapted to be brought into gear with the seconds counter wheel upon rocking said second lever by means of said tappet, and a spring pawl adapted to engage said V-notches in the tappet for maintaining said tappet in determined positions.

3. Chronograph mechanism having in combination a seconds wheel, a driving wheel mounted on the axle of and above said seconds wheel, a counter wheel provided with a heart-cam, an oscillatable tappet pivoted in its center and having an U-shaped notch, a series of V-notches and a projection which are disposed side by side on the circumference of said tappet and at approximately the same distance from the center thereof, said tappet forming also a bent extension terminating in a resetting hammer adapted to act upon the heart cam of said counter wheel, an operable first rocking lever having a substantially rounded end engaging said U-shaped notch in the tappet for oscillating the same, a spring pressed second rocking lever pivoted at one end and being applied at its other end against said projection on the tappet, an intermediate wheel carried by said second lever, said wheel being constantly in gear with said driving wheel and adapted to be brought into gear with said counter wheel upon rocking said second lever by means of said tappet, push buttons acting upon the first rocking lever to successively oscillate said tappet by means of said lever into three determined positions according as to start operation of the chronograph mechanism, to stop said mechanism, or to restore the counter wheel to zero by means of said hammer, and a spring pawl adapted to engage said V-notches in the tappet for maintaining the same in said three determined positions, substantially as specified.

HENRI JACOT GUYOT.