

E. PELLATON.  
WATCH WINDING AND HANDS SETTING MECHANISM.  
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Fig. 1.

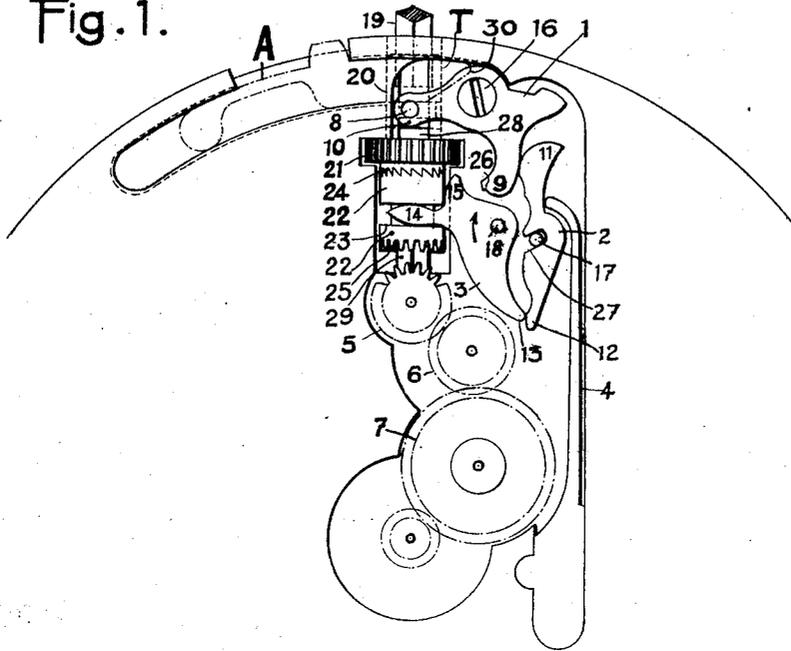
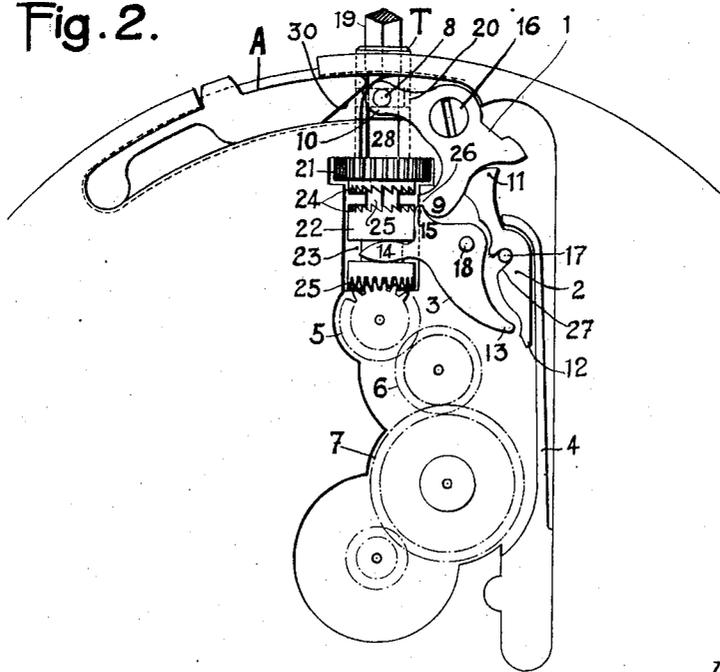


Fig. 2.



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EDMOND PELLATON, OF LE LOCLE, SWITZERLAND, ASSIGNOR TO FABRIQUES DES MONTRES ZENITH SUCESSEUR DE FABRIQUES DES MONTRES ZENITH GEORGES FAVRE-TACOT & CIE.

## WATCH WINDING AND HANDS-SETTING MECHANISM.

1,388,755.

Specification of Letters Patent. Patented Aug. 23, 1921.

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*To all whom it may concern:*

Be it known that I, EDMOND PELLATON, a citizen of the Swiss Republic, and resident of Le Locle, Switzerland, have invented new and useful Improvements in Watch Winding and Hands-Setting Mechanisms, of which the following is a full, clear, and exact specification.

Some known watch winding and hands setting mechanisms comprise, in combination with a hands setting lever two springs, one of which, actuating the hands setting lever, tends to bring a slidably mounted pinion into engagement with a winding pinion by means of the setting lever, while the other spring tends, contrary to the first, to place the said lever in a setting position by means of a part which is constantly in coöperation with the winding spindle and on which part the second spring acts. Such mechanisms have the following drawbacks: (1) The second spring has to be so strong that, while employed for a setting operation as described above, it can overcome the first spring actuating the setting lever for a winding operation and annul its effect. (2) The first spring has thus to be so weak that, in a setting operation, it can be overcome by the second spring whose dimensions, and consequently its strength, are limited for reasons of wear of the spring and notch stop device on the pendant, which, when the setting lever is operated for a winding operation under the action of the first and weak spring, has for result a too feeble unlocking action that does not insure proper working.

The difference in strength between the two springs is difficult to adjust exactly as desired and renders the winding and setting mechanism very sensitive and consequently difficult to make it work normally without settling operations when definitely associated with the clockwork.

The object of the present invention is an improved winding and setting mechanism for watches which obviates such drawbacks. The improved mechanism comprises, in known manner, two levers each pivotable about a fixed axis and adapted to engage, the first or setting lever with a slidably mounted pinion, and the second with the winding spindle, but is characterized, according to the invention, by the combination of these two levers with one single spring and with

an intermediate pivoting part arranged to actuate the two levers. This spring acts directly only on the said part which, by pivoting can assume, under the control of the second lever, different positions in one of which it bears as much on the first as on the second lever and thereby brings the setting lever and the slidable pinion to winding position, while in another position, that for setting, it acts directly only on the second lever so that, during at least a part of its movement from the winding position to the setting position, and so long as it is in the setting position, the setting lever may be free from all action tending to retain it in the winding position.

One form of construction of the improved mechanism is given, by way of example, in the accompanying drawing in which:

Figure 1 is a view showing the mechanism in the winding position and

Fig. 2 is a view showing it in the setting position.

This form of construction comprises a lever 1 which has two noses 9 and 10, and is adapted to turn about a fixed axis 16, a lever 2 with two noses 11 and 12 and pivotable about a fixed axis 17 on which it can also slide by means of a slot 27 that guides it, a hands setting lever 3 with three noses 13, 14 and 15, pivotable about the fixed pivot 18, and a spring 4 acting directly on the lever 2 in a manner tending to turn it always in the same direction (from right to left in this particular case). The lever 2 can, as will be seen later on, turn about the axis 17 fixed with respect to the two axes 16 and 18 of levers 1 and 3, and also be displaced with respect to the axis 17 in a direction across this latter.

The free end of the nose 10 of lever 1 carries a pin 8 that engages a groove 20 in the winding spindle T which comprises, in known manner, a cylindrical part 28 and a part 29 of square section. A winding toothed wheel 21, controlling the winding elements, can turn freely about the part 28 without being displaced along its axis, and a slidable pinion 22 can be displaced along the part 29 without being able to turn with respect to the part that is of square cross section. The slidable pinion 22 can engage by its teeth 25, on the one hand, with movable hands setting gears 5, 6 and 7, and,

on the other hand, with the toothed wheel 21 by means of the gullet teeth 24.

The free end of the nose 14 of the lever 3 engages in a groove 23 on the slidable pinion 22.

The winding spindle T is controlled by the squared portion 29, in known manner. It can be drawn out or pushed by the usual operating knob (not shown) and be held in each of these two positions by a suitable spring and slot stop device disposed on the pendant.

The operation of the described mechanism is as follows:—

The parts being in the winding position shown in Fig. 1, the square portion 19 and the winding spindle T being in the pushed-in position, the lever 1 is held in this position by its pin 8 being engaged in the groove 20; the lever 2, actuated by the spring 4 bears, on the one hand, with its nose 11 on the nose 9 of lever 1, and on the other hand, with its nose 12 on the nose 13 of lever 3, the end of the slot 27 on lever 2 being a certain distance from the pivot 17 (or just touching this pivot without bearing against it) so that the lever 2 is supported only by its noses 11 and 12, assistance from the pivot 17 being excluded. Owing to the action of spring 4, the lever 3 thus tends, by reason of the nose 12 of lever 2 engaging the nose 13, to turn from left to right (in the direction of the arrow) and to hold the slidable pinion 22 in engagement with the toothed wheel 21.

It is easily understood that by turning the operating knob the square part 19 will turn the spindle T and that the teeth 24, locking and unlocking in the known manner of a ratchet under the action of spring 4, will operate the toothed wheel 21 that controls the winding mechanism. In unlocking, the sliding pinion 22 turns slightly from right to left the lever 3 which by means of its nose 13 pushing against the nose 12 of lever 2 causes this latter to pivot from right to left and against the action of spring 4 about the point of contact of its nose 11 with the nose 9 of lever 1.

A change from the winding position to the hands setting position shown in Fig. 2 is effected by pulling out, by means of the operating knob, the square part 19 and the winding spindle. Under the action of the spring 4, the lever 2 and lever 1, the winding spindle T is pushed upwardly by the pin 8, while the lever 2, at the bottom of its slot 27, abuts against the pivot 17, around which it tends to turn from right to left, its nose 12 abandoning the nose 13 of the hand-setting lever 3 which is thus liberated from any action tending to maintain it in the winding position, which is contrary to what is found in the known mechanisms mentioned above and comprising two

springs, one of which tends always to maintain the hands setting lever in winding position and which has, for a hands setting operation to be overcome by the second spring. The nose 9 of lever 1 engages against the nose 15 of the lever 3 and causes it to pivot from right to left till the slidable pinion 22, disengaging its teeth from the toothed wheel 21, engages by its teeth 25 with the movable hand-setting gear 5.

The nose 15 of lever 3 is then engaged under the claw 26 on nose 9 of the lever 1 which then locks lever 3 and prevents its turning from left to right. By turning the operating knob, the hands setting parts are actuated.

The rôle of the claw 26, with which is engaged the nose 15, is to prevent, during the setting operation, the denture 22 of the sliding pinion from disengaging from the gear 5 when the hands setting gears are hardly engaged together, an inconvenience that presents itself in some known mechanisms.

On pressure being again applied to the knob the nose 15 of lever 3 is disengaged and turns from right to left the lever 1 which causes to turn from left to right around axis 17 the lever 2 which, with its nose 12, causes the lever 3 to turn from left to right. The mechanism is thus returned, against the action of spring 4, to the winding position (Fig. 1).

The bolt A, brought into the position shown in broken lines in Fig. 1, serves, by its inclined portion 30 engaging the pin 8 projecting also from the lever 1 on the side opposite to spindle T, to maintain the mechanism in the winding position while the clockwork is withdrawn from the casing and is no longer controlled by the square part 19.

The mechanism described is much stronger than the previously mentioned known mechanisms and operates much more surely. It is placed under the dial in such a way that by removing this latter the mechanism is completely visible and is quite accessible without any more trouble, which from a practical point of view is of great advantage.

What I claim is:—

1. In a winding and hands setting mechanism for watches, an actuating spindle, a winding pinion thereon, a hands setting gear, a slidable pinion on the actuating spindle arranged to be coupled alternately with the winding pinion or with the hands setting gear, two levers each pivotable about a fixed axis and engaging, the first or hands setting lever, with said slidable pinion and the second with said winding spindle, one single spring for said two levers and a common rocking member between them and said spring, the latter being arranged so as to

directly attack said common rocking member, substantially as and for the purpose described.

2. In a winding and hands setting mechanism for watches, an actuating spindle, a winding pinion thereon, a hands setting gear, a slidable pinion on the actuating spindle arranged to be coupled alternately with the winding pinion or with the hands setting gear, two levers each pivotable about a fixed axis and engaging, the first or hands setting lever, with said slidable pinion and the second with said winding spindle, one single spring for said two levers and a common rocking lever between them and said spring, arranged to turn about a fixed axis and to also be displaceable transversely thereto, said spring being arranged so as to directly attack said common rocking lever, substantially as and for the purpose described.

3. In a winding and hands setting mechanism for watches, an actuating spindle, a winding pinion thereon, a hands setting gear, a slidable pinion on the actuating spindle arranged to be coupled alternately with the winding pinion or with the hands setting gear, two levers each pivotable about a fixed axis and engaging, the first or hands setting lever, with said slidable pinion and the second with said winding spindle, operating noses on said two levers, one single spring for said two levers and a common rocking lever between them and said spring, noses on said common rocking lever to engage with the noses of said two levers to act thereon, said spring being arranged so as to directly attack said common rocking lever, substantially as and for the purpose described.

4. In a winding and hands setting mechanism for watches, an actuating spindle, a winding pinion thereon, a hands setting gear, a slidable pinion on the actuating spindle arranged to be coupled alternately with the winding pinion or with the hands setting gear, two levers each pivotable about a fixed axis and engaging, the first or hands setting lever, with said slidable pinion and the second with said winding spindle, one single spring for said two levers and a common rocking lever between them and said spring, a fixed axis for said common rocking lever, the latter being provided with a slot for free angular movement and transverse displacement on its fixed axis, said spring being arranged so as to directly attack said common rocking lever, substantially as and for the purpose described.

5. In a winding and hands setting mechanism for watches, an actuating spindle, a winding pinion thereon, a hands setting

gear, a slidable pinion on the actuating spindle arranged to be coupled alternately with the winding pinion or with the hands setting gear, two levers each pivotable about a fixed axis and engaging, the first or hands setting lever, with said slidable pinion and the second with said winding spindle, one single spring for said two levers and a common rocking member between them and said spring, the latter being arranged so as to directly attack said common rocking member, and interlocking means being provided between the said two levers to lock the hands setting lever in its setting position, substantially as and for the purpose described.

6. In a winding and hands setting mechanism for watches, an actuating spindle, a winding pinion thereon, a hands setting gear, a slidable pinion on the actuating spindle arranged to be coupled alternately with the winding pinion or with the hands setting gear, a coupling ratchet device between said slidable pinion and the winding pinion, two levers each pivotable about a fixed axis and engaging, the first or hands setting lever, with said slidable pinion and the second with said winding spindle, one single spring for the two levers and a common rocking lever between them and said spring, the latter being arranged to directly attack said rocking lever and to serve at the same time as coupling spring for said ratchet device in the winding position of the mechanism, substantially as and for the purpose described.

7. In a winding and hands setting mechanism for watches, an actuating spindle, a winding pinion thereon, a hands setting gear, a slidable pinion of the actuating spindle arranged to be coupled alternately with the winding pinion or with the hands setting gear, two levers each pivotable about a fixed axis and engaging, the first or hands setting lever, with said slidable pinion and the second with said winding spindle, one single spring for said two levers and a common rocking lever between them and said spring, the latter being arranged so as to directly attack said common rocking lever, a manually operable locking device being provided for holding for certain cases the mechanism in the winding position, substantially as and for the purpose described.

In witness whereof I have hereunto signed my name this 26th day of April, 1921, in the presence of two subscribing witnesses.

EDMOND PELLATON.

Witnesses:

FRIDA KURZ,  
AMAND ZRAM.