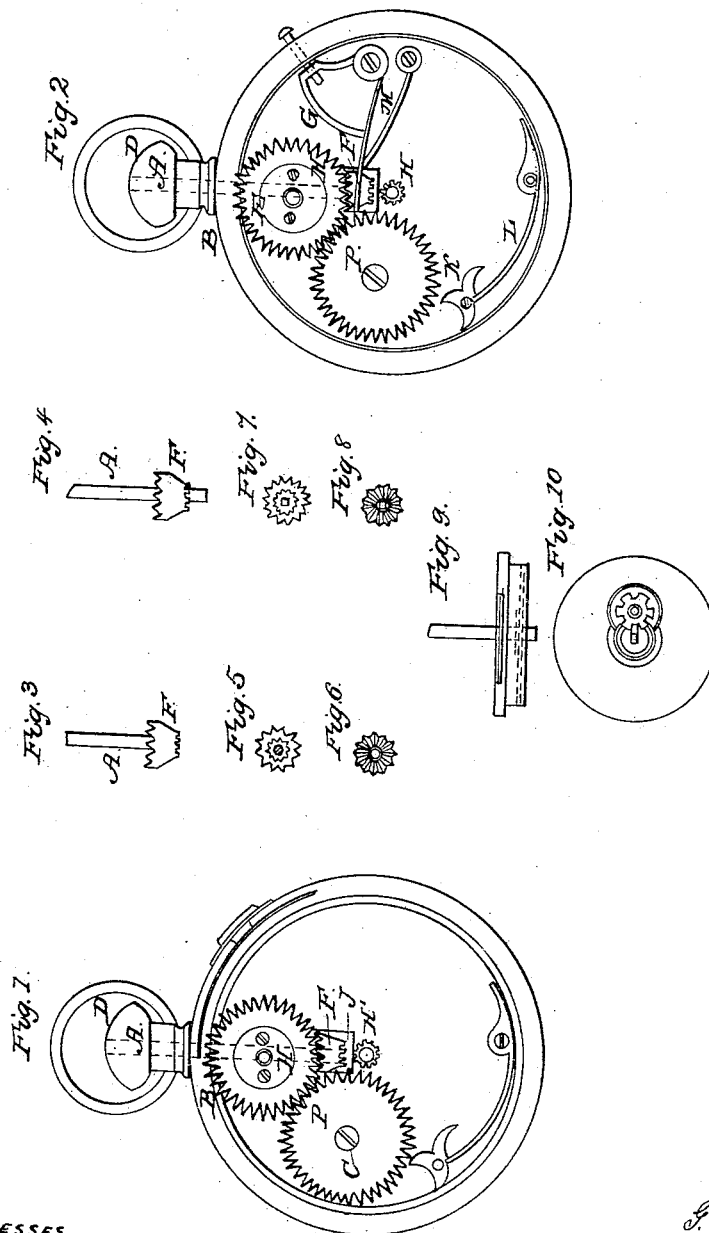


GONDELFINGER & BICKET.
Winding and Setting Watches.

No. 47,369.

Patented April 18, 1865.



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GEORGE GONDELFINGER, OF SELONCOURT, AND J. LOUIS BICHET, OF
BESANCON, FRANCE.

IMPROVEMENT IN WINDING AND SETTING WATCHES.

Specification forming part of Letters Patent No. 47,369, dated April 18, 1865.

To all whom it may concern:

Be it known that we, GEORGE GONDELFINGER and JEAN LOUIS BICHET, manufacturers of watches, residents of Besancon, Department du Doubs, in the Empire of France, have invented an important, new, and useful Improvement in Watches, which we have called and do call "mechanism for winding up watches, applicable to all watches, lever as well as cylinder watches," and for which invention we have obtained a patent in France the 18th of March, 1864; and we declare by these presents that the following is a complete and exact description of our invention, reference being had to our accompanying drawings and the letters of reference hereinafter described, to enable those skilled in the art to make and use our invention.

Our invention consists in a winding-up apparatus on the principle of the total omission of any sort of a fourth wheel; in other words, we do away with all cogged wheels in the two directions—one vertical, the other horizontal. The omission of these wheels relieves the gearing of all the difficulties and imperfections of which they are suffering so frequently, and in simplifying the work of the watch we obtain a winding apparatus which by its peculiarities should render its execution economical and adaptable to universal use. The screw C, Figure 1, or a pin, supports the wheel P on the shaft of barrel, which barrel in all watch-movements incloses the motor-spring. When the spring by which the watch is kept in motion has run down, the wheel H is turned by turning the shaft A, which passes through the plate of the watch and through a hole which penetrates said plate to the center. The shaft A is provided at its end with a pinion, F, and acts on H in such a manner as to impart to it a rotating movement, which it communicates to P in four revolutions from wheel to wheel, imparting to the spring the tension, and thus the motor (moving-power) of the watch-movement is regenerated by means of the shaft A, provided with F.

To keep the wheel F constantly prepared to act on starting the shaft A, a rod is arranged within the watch-case, the forked end of which extends into a groove made in the shaft A, where it is in contact with H', and when the desired hour is to be set on the face

of the watch the rod is acted upon in the direction indicated by the arrow, and the shaft A, being released from the forked end of the rod, can descend down to the pinion J. This pinion, being in gear with the one shown, imparts to the hands a movement to the left or to the right and brings them to the desired time.

To prevent the stopping of the watch by the interposition of the cogs of H' with the pinion, if by neglect they were let therein, a recoil-spring is pivoted to the shaft, and its end bears against the side of the watch-case, thus presses the shaft A upward and isolates H' from the pinion J. The watch-work, thus completely disengaged from the winding-apparatus, follows its regular course. To perfect and assure this isolation and to prevent the consequences of the contact of H' with the pinion, it is necessary to push the rod back to its former position.

Fig. 2 shows a view of the same winding apparatus with combinations which render it preferable to the foregoing. Thus the shaft A has no longitudinal motion, but remains fixed in its position, supported on one side by the center of the watch-plate, on the other by the entire length of the sleeve, which covers it from B to C. It is kept movable in its position (without the rotary movement which the hand at D imparts to it) by a screw, the central part of which extends into a groove formed in the shaft near E, A, its lower part, corresponding with the center of the watch-plate. The shaft terminates in the shape of a square stem, on which is adjusted, but movable in its longitudinal direction, the wheel F. The lever G, moved by the thumb-piece, causes the wheel F to descend until the pinion H' gives by its rotation the desired time, but on releasing the knob the spring M causes the lever to rise and the wheel F is again in gear with H only. In any case it is impossible that F can disturb the regular working of the movement. The wheel P performs the same function as in Fig. 1.

Fig. 3 represents the wheel F detached and fixed on shaft A. Figs. 5 and 6 represent the same shown in two end views. Fig. 4 represents the wheel F, Fig. 2, set on the shaft A. Figs. 7 and 8 show the same wheel seen on its two ends.

Ratchet arrangement (click-work).—At the moment when the winding apparatus operates upon the spring to impart to it the degree of tension as laid down by the principle established in watch making, a ratchet arrangement becomes indispensable. In this, as in all watch-movements, our ratchet arrangement is composed of K and of the great spring L. When P moves from the right to the left, the pawl K lets the teeth of P pass, but that wheel is stopped suddenly as soon as it should take a movement from the left to the right. This ratchet arrangement belongs to Fig. 2.

Stoppage.—The application of our winding apparatus has led us to the search of a stoppage visible, and we have succeeded in changing the old stoppage arranged under the barrel in placing ours above the spring. Using the shaft A, Fig. 9, a portion of which we notch out elliptically, A, Fig. 10, we apply at its center a pivot forming a finger, then completing the mechanism by the application of the Maltese cross our stoppage is ready to operate, and does away by its compactness and strength of the finger with the numerous inconveniences of the old movable finger-stoppages.

We have to state that our system of wind-

ing watches, as shown at Fig. 2, is well adapted to the stoppage. When the spring is wound up to its utmost tension, the stop is made automatically, and the operator may turn the shaft indefinitely without being able to cause any damage, for in that case the teeth of the wheel will escape successively those of H without producing any effect.

Having described our invention, what we declare herein as new, and desire to secure by Letters Patent, is—

1. Combining with the wheels H and H', which respectively control the movements of the watch-hands and of the winding devices, a movable double pinion, F, upon a stationary shaft, which pinion can be set in and out of gear with either of said wheels, substantially as and for the purposes described.

2. The combination, with the wheels H and H', of the movable pinion F, stationary shaft A, and spring-clutch lever G, substantially as and for the purposes specified.

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Witnesses:

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