

(No Model.)

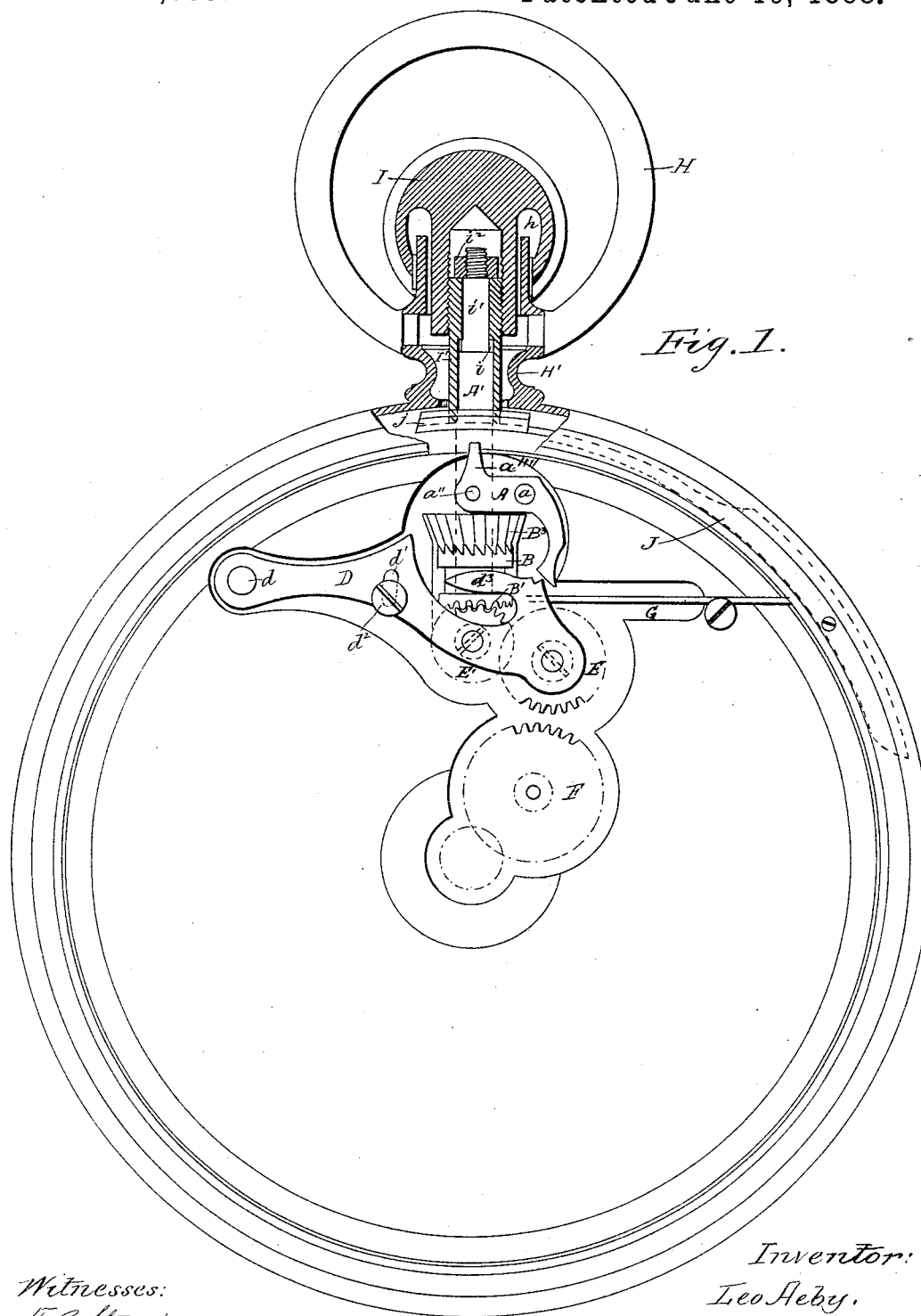
3 Sheets—Sheet 1.

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## STEM WINDING AND SETTING WATCH.

No. 384,669.

Patented June 19, 1888.



Witnesses:  
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Inventor:  
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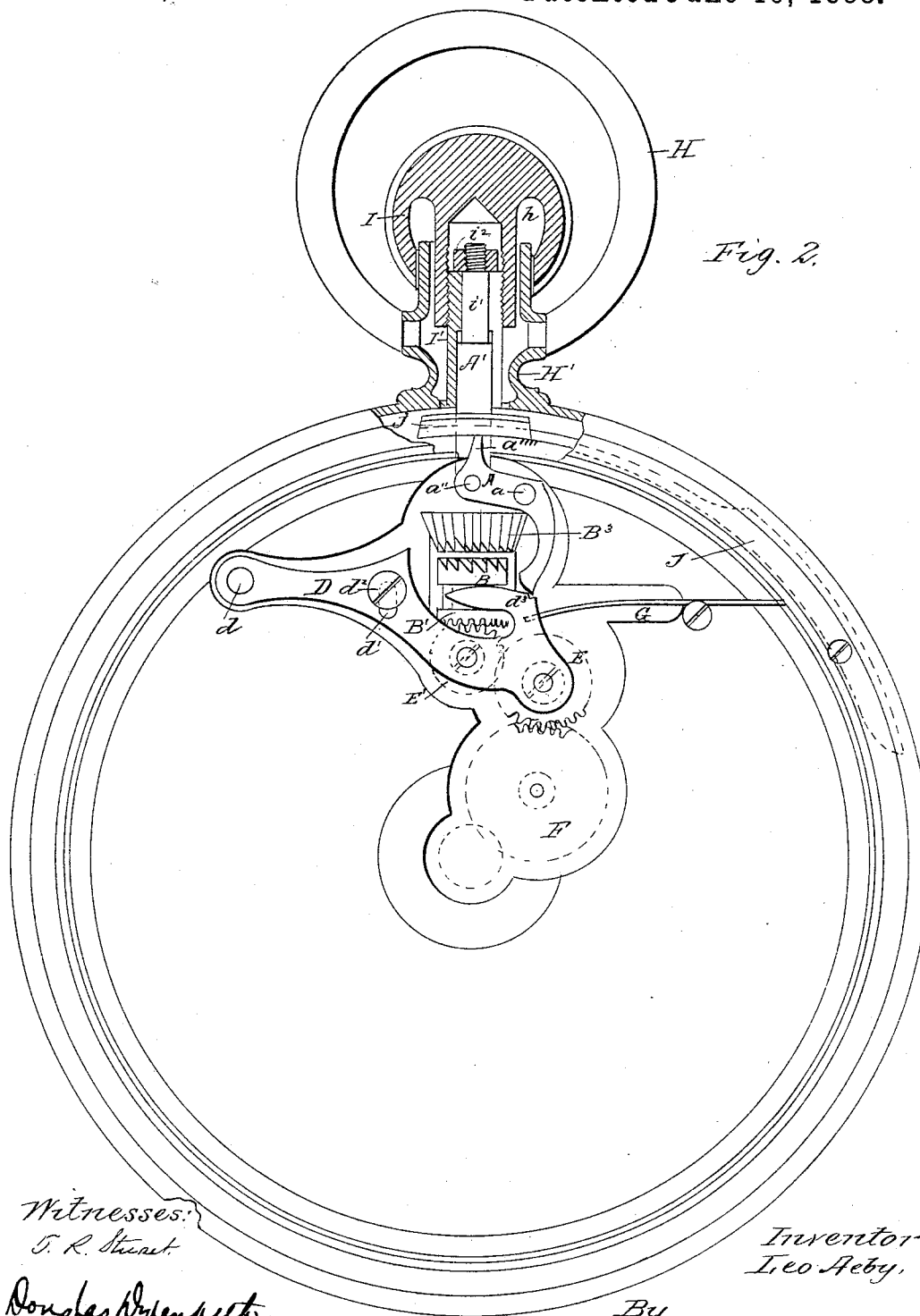
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## STEM WINDING AND SETTING WATCH.

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Fig. 3.

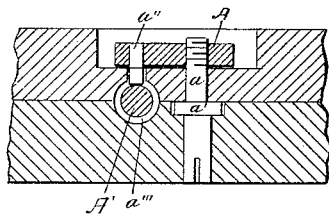


Fig. 4.

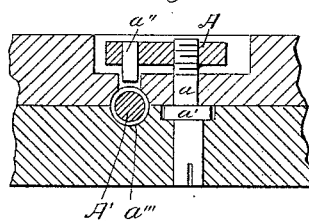


Fig. 6.



Fig. 5.

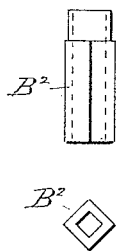


Fig. 8.

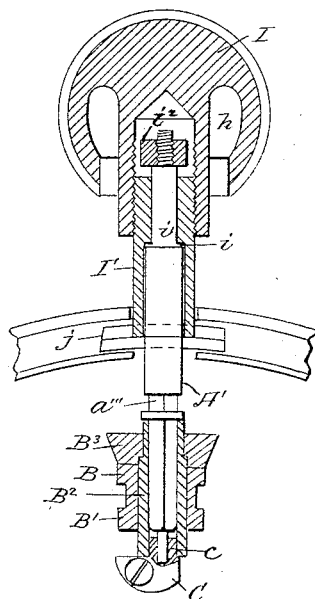
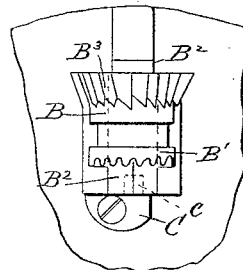


Fig. 7.



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# UNITED STATES PATENT OFFICE.

LEO AEBY, OF COLUMBUS, OHIO.

## STEM WINDING AND SETTING WATCH.

SPECIFICATION forming part of Letters Patent No. 384,669, dated June 19, 1888.

Application filed January 19, 1888. Serial No. 260,342. (No model.)

*To all whom it may concern:*

Be it known that I, LEO AEBY, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Stem Winding and Setting Watches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to stem-winding and stem-setting watches, and has for its object to simplify and perfect the construction and arrangement of the parts of the ordinary mechanisms, in which an outward pull of the stem and its connections throws the winding mechanism out of gear and the setting mechanism into gear, and in which a reverse or inward movement of said stem and its connections restores the winding mechanism to normal position and disconnects the setting mechanism; and it consists in the construction, arrangement, and combination of parts, hereinafter disclosed in the description and claims.

In the accompanying drawings, forming part of this specification, and wherein the same reference letters indicate the same parts, Figure 1 represents a vertical side elevation of a watch and a portion of its movement with my improvements applied thereto, parts being in section and the dial removed, and showing the Breguet clutch in position for winding and the setting or intermediate wheels out of gear with the dial-wheels; Fig. 2, a similar view of the same parts with the mechanism in position for setting the hands; Fig. 3, a horizontal section through the setting-lever, showing the pin thereon resting in the annular groove in the stem and the device for adjusting the same into and out of said groove; Fig. 4, a similar view with the setting-lever disconnected from the stem, or with the pin adjusted out of the annular groove to permit of the removal of said stem; Figs. 5, 6, and 7, detail side elevations, respectively, of the interiorly-squared sleeve, the potence or crutch, and the clutch-pinions; and Fig. 8, a side elevation of the stem and a vertical section of the pusher or crown devices for operating the same, the crown devices being shown as moved down for opening the case, and the clutch-pinions, the sleeve,

and the step and crutch being shown in section.

In the drawings, A represents a pivoted setting-lever, which is adapted to be raised by means of a screw-pivot, *a*, provided with an annular shoulder or collar, *a'*, as shown in Figs. 3 and 4, so as to permit the stem A' to be raised from the watch-movement and lowered back into normal position again. To assist in effecting this result, the end of the upper or horizontal arm of said lever is provided with a pin, *a''*, which fits in an annular groove, *a'''*, formed in said stem.

The ordinary Breguet clutch-pinions, B B', are loosely mounted upon a sleeve, B<sup>2</sup>, formed with a square exterior and interior and provided at its upper end with a bevel or angle wheel, B<sup>3</sup>, which communicates motion to the winding mechanism, which is not shown in the drawings. This sleeve B<sup>2</sup> is supported at its lower end upon a potence or crutch, C, Figs. 6, 7, and 8, firmly secured to the pillar-plate and having a step or extension, *c*, fitted in the lower end of said sleeve, as indicated by dotted lines in Fig. 7 and in full lines in Fig. 8. This sleeve turns upon the step, and the lower end of the stem is journaled in said step, as clearly shown in Fig. 8. These parts are so constructed and arranged, as shown in detail in Figs. 5, 6, and 7, as to keep the clutch-pinions in fixed position during the removal and insertion of the stem.

D represents a setting-bar, which is pivoted at one end at *d* and carries at its opposite end the setting-wheels E E'. It is also provided near its middle with an elongated slot, *d'*, through which a screw, *d''*, passes. This screw not only holds the setting-bar in proper position, but acts as a stop to limit and regulate the depth of mesh of the cogs or teeth on the setting-wheels E E' and the minute-wheel F when the parts are in position for setting the hands.

The setting-bar D is provided at its inner end with an upwardly and horizontally extending projection, *d'''*, which engages in the ordinary annular groove of the sliding clutch. A spring, G, holds this projection against the clutch-pinion B and forces the same with a yielding pressure into mesh with the bevel or angle pinion B<sup>3</sup>.

H represents an ordinary ring or band attached to a hollow pendant, H', in the usual manner, said pendant projecting upwardly into an annular recess, h, in the pusher or crown I, as shown in Figs. 1 and 2. The lower tubular portion of this crown is interiorly screw-threaded and fitted over the exteriorly screw-threaded upper portion of a sleeve, I', which is formed interiorly square along said upper portion and provided with an interior shoulder, i, at the lower termination of its square part. The upper portion, i', of the stem is squared to correspond to but extends for a greater length than the squared portion of the sleeve I', for the purpose hereinafter stated. The upper end of the winding-stem is reduced and formed into a screw, upon which is placed a nut, i'', for holding the sleeve I' from undue upward movement.

In open and hunting case watches the setting-lever A is formed with a projection or point, a''', of proper length to just touch the head j of the case-spring J when the case is closed, so that in the event of the watch being pulled out of the pocket by the crown the strain incident thereto can have no effect upon the setting mechanism, as said point a''' projects against the spring head and prevents such an effect; but when the case is sprung open the head of the case-spring will move outwardly a sufficient distance to permit the pulling action upon the crown to move the setting-lever A and setting-bar D, and thus bring into action the train of setting and minute wheels E, E', and F. Also, the action of the head j of the case-spring J when the case is closed has the effect of automatically pressing upon the point a''' of the pivoted setting-lever A, releasing the latter from the spring-controlled setting-bar D and causing the parts to assume their normal or winding positions, thus dispensing with pulling the stem outward by hand for effecting this result.

The operation of my invention, excepting as is obvious and thus far described, is as follows: The movement being in the case and the parts in the position shown in Fig. 1, the main-spring will be wound up by rotating the crown forward, as in the ordinary Breguet clutch-watch. By rotating the crown backward the setting-wheels E' and E will also be set in motion, as they are in constant gear with the clutch-pinion B', but they will have no effect on the minute or dial wheels F, as sufficient space is provided between them and said setting-wheels to allow of a slipping action between the ratchet-teeth of the clutch-pinion B and of the angle-wheel B<sup>3</sup> during the backward rotation of said crown. When the crown and stem are drawn outward, the setting-lever A will follow their movement, and thus be turned on its pivot a, when its lower arm will force the setting-bar D downward against the upward pressure of the spring G for a distance equal to the length of the slot d', in which the screw d<sup>2</sup> is located, as shown in Fig. 2. The

clutch-pinion B will then be disengaged from the angle-wheel B<sup>3</sup> and the winding-train and the setting-wheels brought into connection with the minute or dial wheels, when the crown and stem may be rotated and the hands turned in either direction. In order to remove the movement from the case, the screw-pivot a is turned, thus raising the setting-lever A and disengaging its pin a'' from the annular groove a''' in the stem A', which can then be taken out and the movement removed. The interiorly-square sleeve B<sup>2</sup>, fitted upon the step of the potence or crutch C, keeps the clutch-pinions and angle-wheel in fixed position during this operation, as shown in Figs. 7 and 8, and also permits the stem to be reinserted without trouble in recasing the movement. In order to provide for the necessary play for actuating the case-spring without affecting the stem and setting mechanism the interior square portion i' of the sleeve I' is made shorter than the corresponding square part of the stem A', and provided with the interior shoulder, i, for contacting with the shoulder on the stem adjacent thereto. By this construction and arrangement of the parts, in connection with the nut i'' on the upper end of the stem, sufficient play is allowed said sleeve to cause it to press against the head of the case-spring and permit the case to be opened when the crown is pushed inward; also, on pulling the crown outward said sleeve will abut against the nut i'' and move the stem and horizontal arm of the setting-lever outward, and thus actuate the setting mechanism.

Having thus fully described the construction and arrangement or combination of the parts of my invention and its operation, what I claim as new is—

1. In a stem winding and setting watch, the combination of the dial-wheels and the setting wheel or wheels with an end-pivoted setting-bar carrying said setting wheel or wheels and the sliding stem and clutch-pinions for actuating said bar for throwing said setting and dial wheels into and out of mesh, substantially as and for the purpose described.

2. In a stem winding and setting watch, the combination of the dial-wheels and one or more setting-wheels with an end-pivoted setting-bar carrying said setting wheel or wheels, and provided near its middle with an elongated slot, a screw passing said slot and acting to limit the depth of mesh of the cogs or teeth of said setting and dial wheels, and devices for moving said wheels into and out of mesh, substantially as described.

3. In a stem winding and setting watch, the combination of the dial and setting wheels, the end-pivoted bar carrying said setting-wheels and provided with an upwardly and horizontally extending projection, the spring supporting the inner end of said bar with an upward pressure, the pivoted setting-lever, and the endwise-movable stem, substantially as described.

4. In a stem winding and setting watch, the combination of the dial and setting wheels, the end-pivoted bar carrying said setting-wheels and provided with an upwardly and horizontally extending projection, the spring supporting the inner end of said bar with an upward pressure, the setting-lever having a pin on its horizontal arm, the adjustable or screw pivot for said lever, and the stem formed with an annular groove in which said pin engages, substantially as described.

5. In a stem winding and setting watch, the combination of the pillar-plate, the potence or crutch firmly secured to said pillar-plate and provided with a step or extension, the exteriorly and interiorly square sleeve rigidly fitted at its lower end upon said step or extension and provided at its upper end with the angle-pinion, the sliding clutch-pinions, and the stem having a square lower portion fitting in said sleeve, the parts being so constructed and arranged as to retain said pinions in fixed position during the removal and insertion of said stem, substantially as described.

6. In a stem winding and setting watch, the combination of the dial and setting wheels, the spring-controlled end-pivoted setting-bar D, having the projection  $a''$ , the stem A', the clutch-pinions, the pivoted setting-lever A, having the projection or point  $a'''$ , and the case-spring J, arranged to have its head  $j$  in contact with

said projection  $a'''$ , the construction and arrangement of said projection and case-spring being such as to prevent the outward movement of the stem when the case is closed to permit the outward movement of said stem for setting the hands when the case is open and to automatically force said stem inward and secure the normal or winding position of the parts in closing the case, substantially as described.

7. In a stem winding and setting watch, the combination of the case having the hollow pendant, the crown provided with an interiorly-threaded tubular portion, the exteriorly-threaded sleeve formed interiorly square along its upper portion and provided with an interior shoulder, the case-spring upon which the lower end of said sleeve rests, and the stem provided with a square upper portion of greater length than the interior square portion of said sleeve and having a nut upon its upper end, whereby the necessary play for actuating the case-spring and opening the case is effected without affecting the setting mechanism, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LEO AEBY.

Witnesses:

CHARLES WILLIS WARD,  
J. ALFRED AEBY.