(No Model.)

A. BARTON.

STEM WINDING AND SETTING MECHANISM FOR WATCHES.

No. 532,520. Patented Jan. 15, 1895.

Fig. 1.

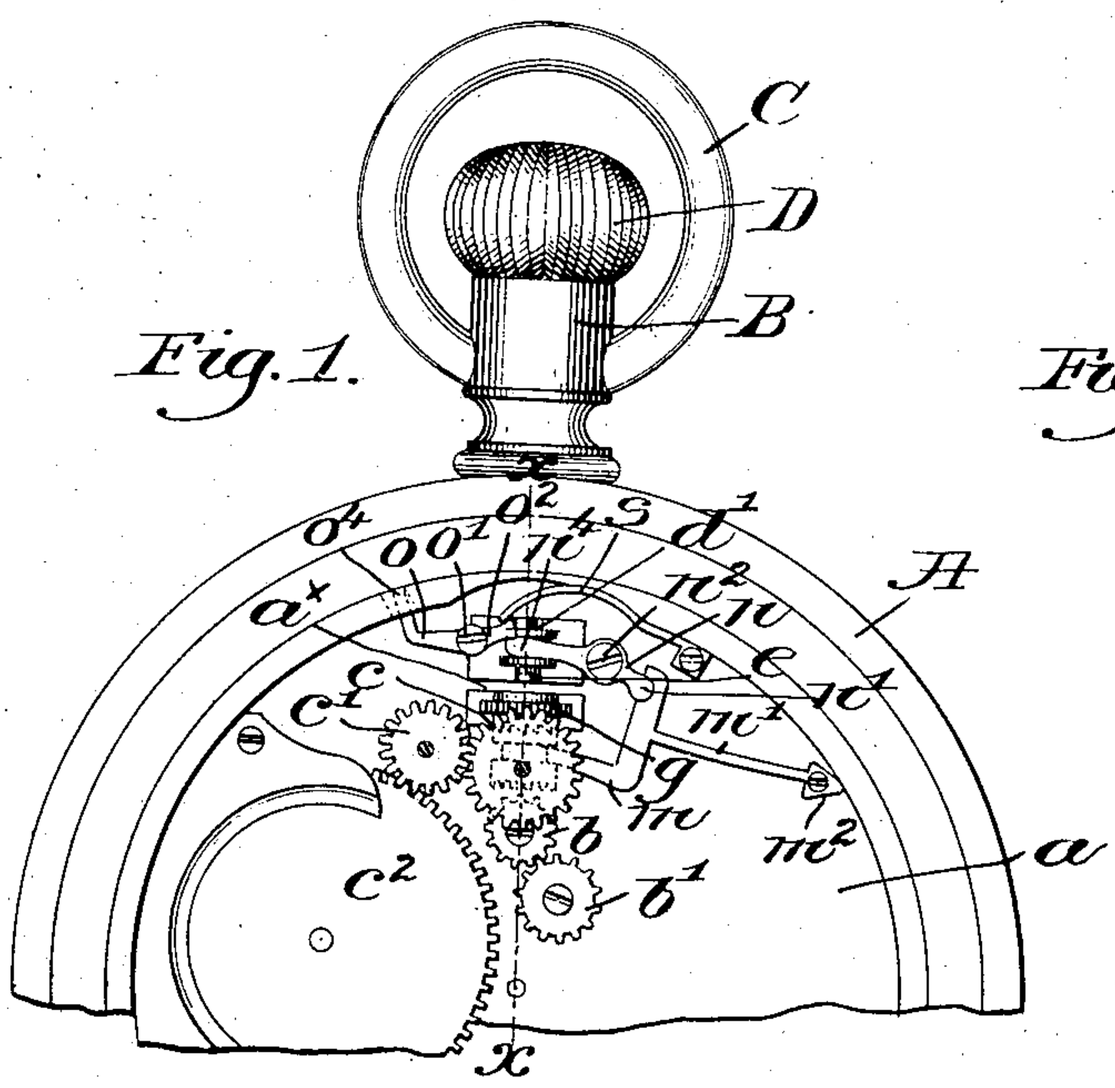


Fig. 2.

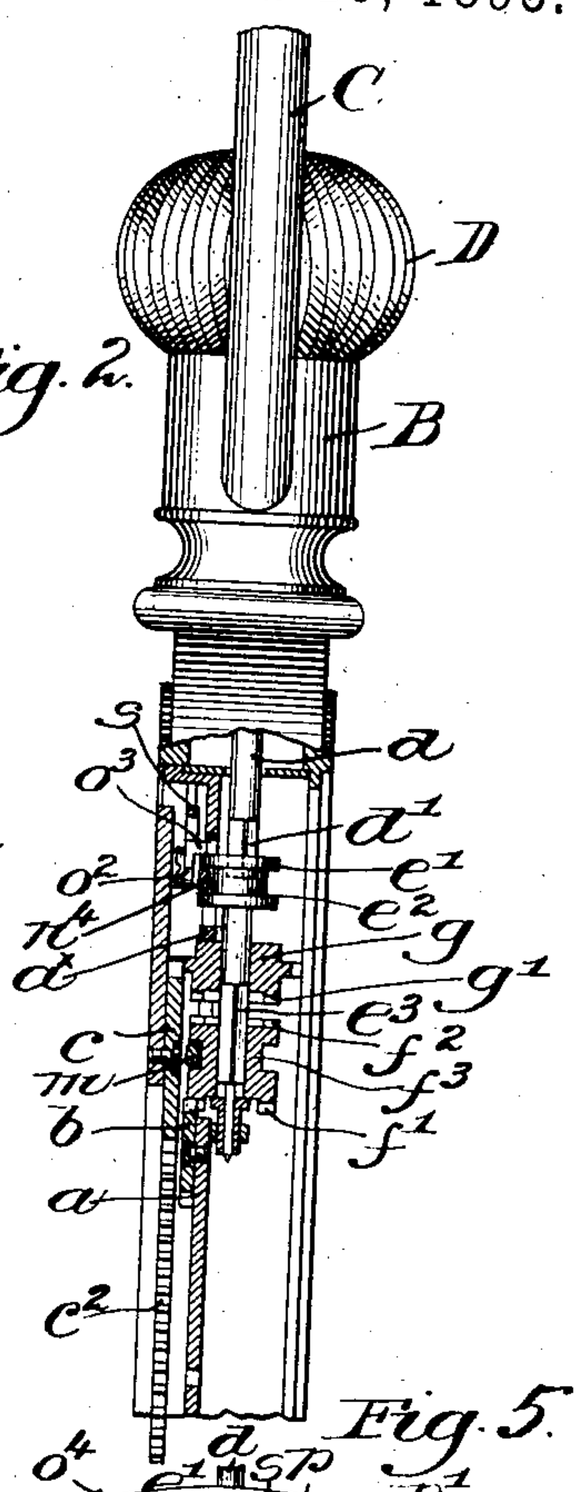


Fig. 3.

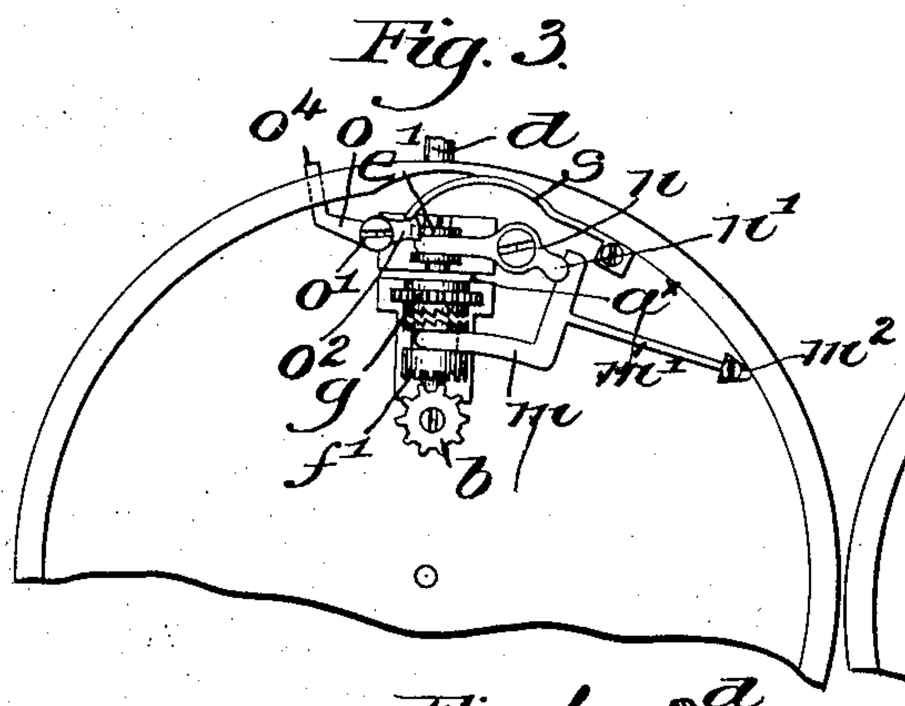


Fig. 5.

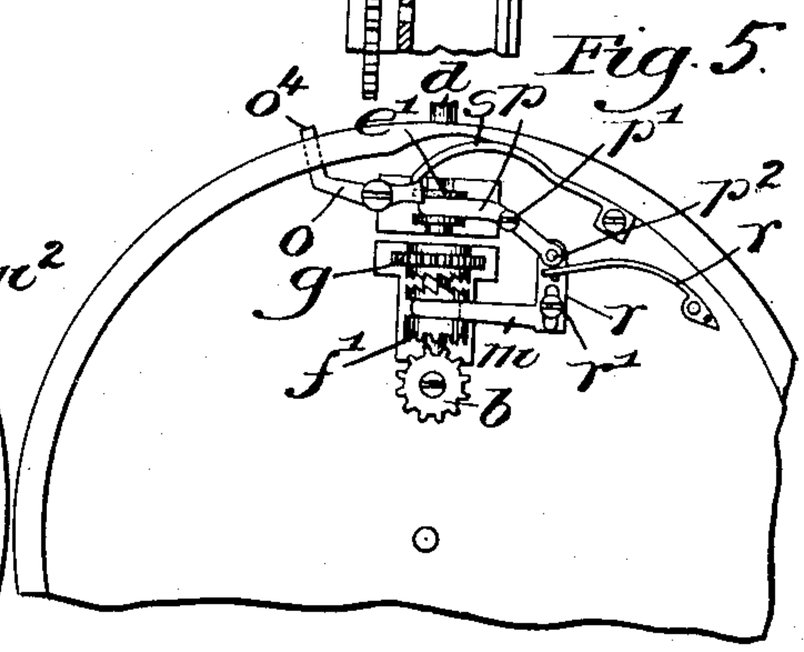
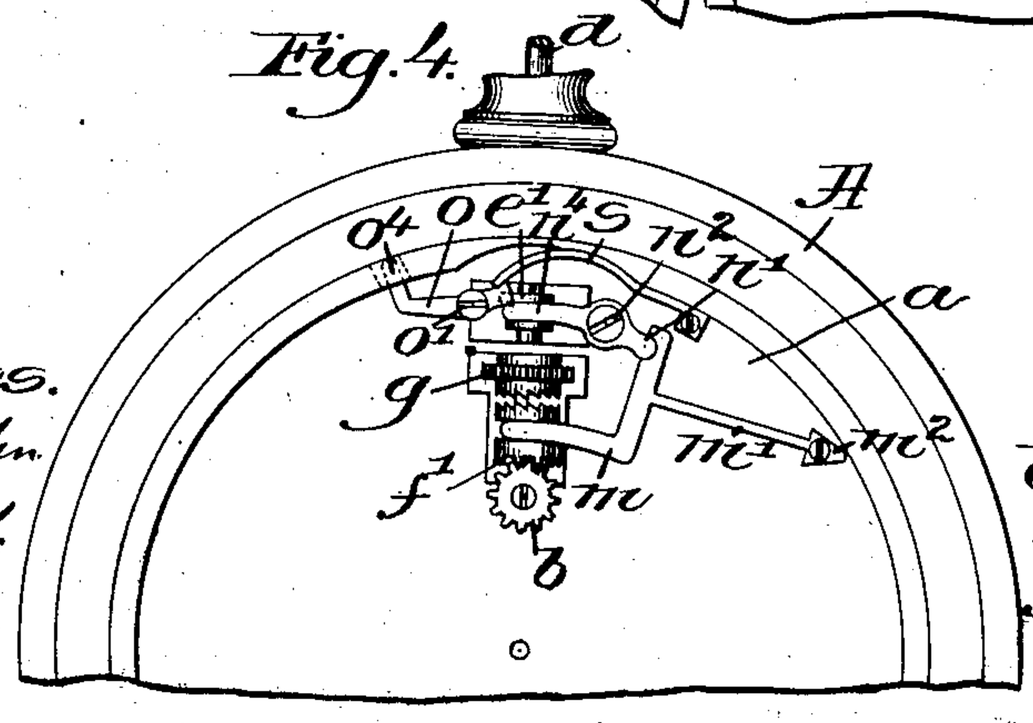


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALFRED BARTON, OF BOSTON, MASSACHUSETTS.

STEM WINDING AND SETTING MECHANISM FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 532,520, dated January 15, 1895.

Application filed January 15, 1894. Serial No. 496,838. (No model.)

To all whom it may concern:

Be it known that I, ALFRED BARTON, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Stem Winding and Setting Mechanism for Watches, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to stem winding and setting mechanisms for watches.

One of the objects of this invention is to simplify and improve the construction and operation of the mechanism, and another object of the invention is to provide mechanism, the winding and setting connection or clutch member of which, when the movement is removed from the watch-case, shall be out of engagement with the setting train, as distinguished from any mechanism heretofore constructed in which the clutch member or connection, when the movement is out of its case, is in engagement with the setting train.

Other features of this invention will be hereinafter described and set forth in the claims.

In the drawings, Figure 1 represents in face view a sufficient portion of a watch-case and its movement to enable this invention to be understood; Fig. 2, an enlarged vertical section of a part of the same taken on the dotted line *x—x;* Fig. 3, a view showing the parts in the position they will assume when the movement is removed from the case. Fig. 4 is a similar view to Fig. 3, showing the clutch member in engagement with the setting train; and Fig. 5, a modification to be described.

Referring to the drawings, the watch-case A, pendant B, bow C, the crown D with its attached long stem *d* longitudinally movable within the pendant and provided with suitable devices therein to retain it in either its in or out position, are and may be of usual or desired construction common to watches of the present time.

The pillar-plate *a*, of the watch movement, together with the wheels *b*, *b'*, constituting a part of the setting train, and the wheels *c*, *c'* and c^2, constituting a part of the winding train, are and may be of usual construction and arrangement.

Mounted in suitable bearings at the under side of the pillar-plate is the longitudinally movable short or inner stem *e* socketed at its upper end, see Fig. 2, to receive the squared end *d'* of the long stem *d*, said short stem *e* at its socketed end being provided with an enlarged head *e'*, grooved, as at e^2, for a purpose to be described. Near its lower end the stem *e* is squared, as at e^3, or otherwise adapted to receive the clutch member *f* which in the present construction constitutes the winding and setting connection, said clutch member being rotatable with but longitudinally movable on the said short stem, said clutch member at its lower end being toothed, as at *f'*, or otherwise adapted to engage with and to rotate the wheel *b* of the setting train, said clutch member at its opposite or upper end being, in the present instance, ratchet toothed to engage the ratchet teeth *g'* on the pinion *g* loosely journaled upon the short stem *e* and in mesh with the wheel *c* of the winding train, said pinion *g* thereby constituting a part of the winding train. The pinion *g* is retained in position at one side by the bridge pipes $a^\times$ of the pillar-plate in which the short stem *e* has one of its bearings, and at its opposite side by the winding wheel *c* with which it is in mesh.

The clutch member *f* is grooved, as at f^3, to receive the free end of the clutch operating lever *m* having a resilient tail portion *m'* rigidly secured at m^2 to the pillar-plate, said operating lever being T-shaped, and at its upper end socketed to receive the rounded end *n'* of the clutch actuating lever *n* pivoted at n^2, and with its free end n^4 lying in the groove e^2 in the head of the short stem *e*.

The resiliency of the tail *m'* of the operating lever *m* tends to move said operating lever and the clutch member *f* into its lowermost position in engagement or mesh with the wheel *b* of the setting train, such movement of the operating lever and clutch member also acting through the actuating lever *n* to throw the short stem *e* into its elevated position, such movement of the said short stem, however, being resisted by the crown D and its long stem *d* within the pendant, the usual devices within the pendant being sufficient to prevent the said spring tail *m'* from itself

moving the said member into engagement with the setting train except when the crown is first drawn out by hand.

When the crown is drawn out by hand, the spring tail m' is then free to throw the clutch member f into engagement with the setting train, in order that rotation of the crown may cause movement of the setting train; but when the crown is again pushed to its inmost position, the short or inner stem e is also pushed in, causing the actuating lever n to be thrown into its position Fig. 1, to thereby move the clutch operating lever m into its elevated position with the clutch member in engagement with the pinion g of the winding train, this being the normal position of the clutch member when the movement is in the case and the watch in use.

In mechanisms of this class as now most commonly constructed, when the watch movement is removed from the case, and the inner or short stem e is relieved of the action of the crown with its attached stem, the clutch member is automatically thrown into engagement with the setting train, so that the watch movement when removed from the case always leaves the short stem in engagement with and to operate the setting train. In this my present invention, however, I have provided suitable mechanism whereby the clutch member is thrown out of engagement with the setting train by the removal of the movement from the case.

The devices referred to are best shown in Figs. 1 and 3, referring to which, in the form shown, o is a disengaging device shown as a short lever pivoted at o' and having a tail portion o^2 provided with a down-turned end o^3, see Fig. 2, which drops down into the path of movement of the head e' of the short stem e. A spring s rigidly held at s' acts upon the said tail-portion and moves the said lever o into position with its down-turned end o^3 pushing the said stem e and its head downwardly or in opposition to the action of the spring tail m' of the operating lever, the two normally balancing each other, so that the clutch member f, when the movement is out of its case stands in an intermediate position out of engagement with the setting train, and also preferably out of engagement with the winding train.

As herein shown, the lever o is provided with a finger-like end o^4 which projects beyond the periphery of the movement and is adapted to be acted upon by the watch case. When the movement is out of the case this finger projects a short distance beyond the periphery of the movement, but when the movement is inserted in the case this finger is necessarily pushed in in order that the movement may be properly seated in the case, such inward movement of the finger raising the tail portion o^2 of the said lever against the action of the spring s to relieve the short stem from the action of the said spring, leaving the clutch entirely under the control of the operating lever and crown.

In order to insure a central or intermediate position of the clutch member f when the movement is out of its case and to prevent either the spring s or m' from overpowering the other and throwing the said member into engagement with either the setting or the winding train, I make the opening in the side of the movement through which the finger o' passes, of such size as to limit the movement of the lever o by its spring s, whereby I am enabled to make the spring s stronger than the spring m', and to cause said spring s to always throw the lever o and the stem e down into such position determined by the stop formed by the wall of the opening through which the finger passes, as shall bring the clutch member into the proper intermediate position.

The extreme simplicity of the mechanism is clearly shown in Fig. 1, wherein it will be seen that only two parts, the actuating and the operating levers are necessary to connect the sliding stem with the sliding clutch member, and that in the preferred construction, Fig. 1, the tail m' of the operating lever itself constitutes the spring for throwing the parts when permitted so to do by the movement of the stem. By thus reducing the number of parts, certainty and accuracy of operation are insured.

In Fig. 5 I have shown one modification of my invention in which the actuating lever p pivoted at p' is jointed at p^2 to one arm of a bell crank lever r provided with a slot through which the pivot screw r' is passed, an independent spring r^2 acting to press the operating lever with the clutch member down into their lowermost positions, such movement being permitted by the pivot screw passing through the slot referred to.

This invention is not limited to the particular construction shown, for it is evident the same may be varied in many ways without departing from the spirit and scope of the invention.

This invention is not limited to the particular form of winding and setting connection herein shown, for while I prefer to construct said connection as a clutch member, as shown, for certain watch movements, yet the term "winding and setting connection" as employed in the claims includes any device moved by longitudinal sliding of the stem into and out of engagement with the winding and setting trains of the watch movement.

The resilient tail portion of the operating lever constitutes one form of controlling spring, and the spring s a disengaging spring.

Having described my invention, and without limiting myself as to details, what I claim, and desire to secure by Letters Patent, is—

1. In a stem winding and setting mechanism for watches, a longitudinally movable stem, winding and setting trains, an interme-

diate winding and setting connection, and an operating lever for the same, an actuating lever for and positively connected to said operating lever and also connected with said stem, inward movement of the latter acting through the said positively connected levers to throw said intermediate connection into the engagement with said winding train, and a single spring exerting a constant force tending to throw both the positively connected levers in an opposite direction to move the said intermediate connection into engagement with said setting train, substantially as described.

2. In a stem winding and setting mechanism for watches, a longitudinally movable stem, a clutch member mounted to slide on and to be rotated by and with the said stem, winding and setting trains, positively connected clutch operating and actuating levers, the latter being acted upon by said stem, whereby inward movement of the latter causes movement of said intermediate connection into engagement with said winding train, and a spring exerting a constant force tending to move the said positively connected levers in an opposite direction to throw said clutch member into engagement with said setting train, substantially as described.

3. In a stem winding and setting mechanism for watches, a longitudinally movable stem, winding and setting trains, an intermediate winding and setting connection, and an operating lever for said intermediate connection, an actuating lever for and positively connected to said operating lever and also connected to said stem, inward movement of the latter acting through said positively connected levers to move said intermediate connection into engagement with said winding train, and a spring forming an integral part of and constituting a support for one of the said levers and operating through the said levers to move said intermediate connection in an opposite direction into engagement with the said setting train, substantially as described.

4. In a stem winding and setting mechanism for watches, a longitudinally movable stem, winding and setting trains, an L-shaped operating lever having one of its arms connected with and to move said intermediate connection, an actuating lever pivoted intermediate its ends and positively connected with the other arm of said L-shaped operating lever to move the latter, said actuating lever at the opposite side of its pivot being acted upon and moved by said stem whereby movement of said stem moves the said intermediate connection in one direction, and a spring forming an integral part of the said L-shaped operating lever to move the said connection in an opposite direction, substantially as described.

5. In a stem winding and setting mechanism for watches, a longitudinally movable stem, winding and setting trains, an intermediate winding and setting connection, a controlling spring to normally control the movement of said intermediate connection when the watch movement is in its case, a disengaging spring opposing the action of said controlling spring and tending to move said intermediate connection out of engagement with both said setting and winding trains, and a disengaging device moved by insertion of the watch movement in its case, to oppose the action of said disengaging spring and thereby leave said intermediate connection under the control of said controlling spring while the watch movement is in its case, whereby said intermediate connection is removed from engagement with both the winding and setting trains when the watch movement is removed from its case, substantially as described.

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

ALFRED BARTON.

Witnesses:
FREDERICK L. EMERY,
AUGUSTA E. DEAN.