

(No Model.)

E. H. FLINT.
STEM WINDING AND SETTING WATCH.

No. 503,533.

Patented Aug. 15, 1893.

Fig. 1.

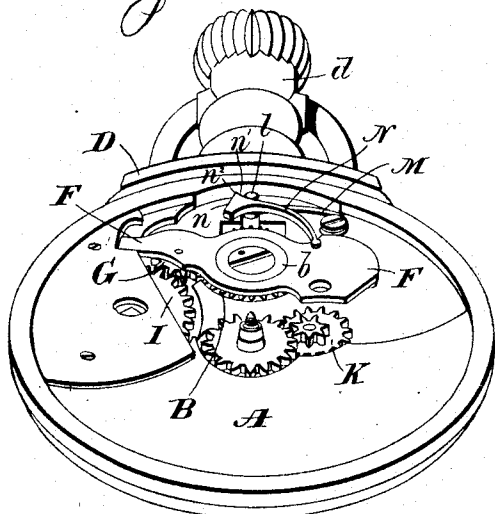


Fig. 2.

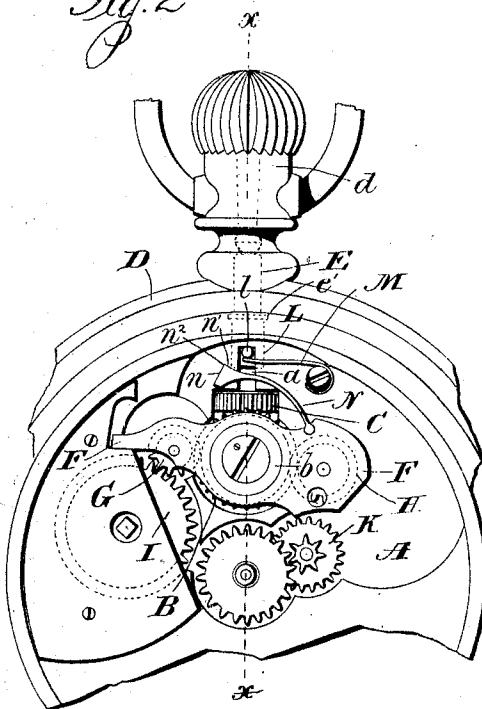


Fig. 3.

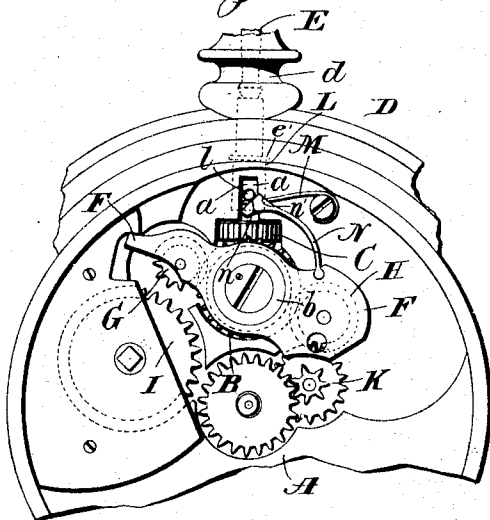


Fig. 4.

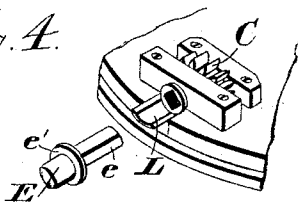


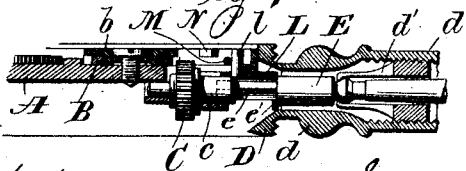
Fig. 5.



Fig. 6.



Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDWIN H. FLINT, OF CINCINNATI, OHIO, ASSIGNOR TO GEORGE S. PRINDLE,
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STEM WINDING AND SETTING WATCH.

SPECIFICATION forming part of Letters Patent No. 503,533, dated August 15, 1893.

Application filed April 10, 1893. Serial No. 469,795. (No model.)

To all whom it may concern:

Be it known that I, EDWIN H. FLINT, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, and in the State of Ohio, have invented certain new and useful Improvements in Stem Winding and Setting Watches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view, from the front side, of a watch containing my improvements, the dial being removed and the stem actuated parts shown in position for winding the main-spring. Fig. 2 is a plan view of the same with the stem arbor drawn out, and the other parts in the positions they occupy before the yoke is turned to setting position. Fig. 3 is a like view with the parts shown in position for setting the hands. Fig. 4 is a perspective view of the stem-arbor engaging portion of the movement from the rear side, the back plate being removed and the stem or pendant and the case center broken away and the parts shown with said arbor at the outer limit of its longitudinal motion. Fig. 5 is an enlarged perspective view, from the front side, of the device used for communicating the inward thrust of the stem arbor to the engagement locking mechanism. Fig. 6 is a like view of said device from the rear, and Fig. 7 is a section upon line x, x , of Fig. 2.

Letters of like name and kind refer to like parts in each of the views.

My invention relates to stem-winding and setting watches in which the entire manipulation of the winding and setting train is effected by means of a stem arbor that has no positive connection with the movement, and it consists in the means employed for effecting the winding and setting engagements, and for locking the stem driven train in such engagements, substantially as and for the purpose hereinafter specified.

In the carrying of my invention into practice, I employ a watch movement of usual construction in which there is journaled upon the front of the dial plate A, a toothed wheel B, that has constant engagement with a cannon pinion C, which pinion is journaled upon the rear side of such plate in a line, axially, with

the stem or pendant d of the case D, and is adapted to receive the squared inner end e of a stem-arbor E, that is journaled in such pendant, and is adapted to be moved longitudinally within certain limits,—the arrangement being such as to enable said stem-arbor to slide longitudinally within said pinion, while connected therewith rotatively.

Upon the axial bearing b of the wheel B is pivoted a yoke F, which has journaled upon opposite ends, two pinions G and H, that are in constant engagement with said wheel, and are caused to rotate whenever the stem arbor E is rotated. Said yoke is adapted to oscillate upon its pivotal bearing, and when thus moved in one direction will cause said pinion G to engage with the winding wheel I of the movement, and when moved in an opposite direction, will release said pinion from said wheel I, and cause the pinion H to engage with a wheel K which forms one of or engages with the dial wheels of said movement.

Fitted between the barrel c of the cannon pinion C and its upper bearing, is a block L which transversely is curved to adapt it to the form of said pinion and has such length as to cause it to extend from or near the toothed portion of the latter, outward beyond the edge of the plate A, where its outer end may be engaged by a shoulder e' formed upon the stem arbor E,—the construction being such that said plate is capable of a certain longitudinal motion within its bearing, and is held with a yielding pressure, at the outer limit of such motion by means of a spring M which has one end secured upon the plate A, and its opposite free end in engagement with a stud l , that projects from said block L forward through a slot a in said plate.

Secured to the yoke F, adjacent to the pinion H, is a bar or arm N, which from thence extends in a curve to or slightly beyond the stud l , and, from thence toward the center of the movement, as shown, forming at such point two bearings n and n' which have nearly a right angle to each other and intersect at a point n^2 that coincides with said stud when said yoke is in a mid-position, between winding and setting engagement. When the stem arbor E is at the outer limit of its longitudinal motion, and the block L, with its stud l in a like po-

sition, said bar or arm N, is entirely free from contact with said stud *l*, so that by rotating said arbor in either direction, the friction between the wheel B, and its pinions G and H, will cause said yoke to turn upon its pivotal bearing until one of such pinions is in engagement with its proper wheel, and by reversing such rotary motion of said arbor, said yoke will immediately swing to its opposite position of engagement, but when said stem arbor is moved to the inner limit of its longitudinal motion, said stud *l* will engage with one of said spring faces *n* or *n'* and pressing inward upon said bar or arm, cause the yoke to move into and be held in winding or setting engagement.

The normal position of the stem arbor is at the inner limit of its longitudinal motion where it is locked yieldingly by means of a suitable spring detent *d'*, and it is only intended that it shall be moved outward when it is necessary to change the winding or setting engagements. When thus moved outward, the setting engagement is produced—under the construction and arrangement shown—by partially rotating said arbor to the left until the point *n*² of the bar or arm N, has been moved to the same side of the stud *l*, when by pushing said arbor to the inner limit of its motion, said stud will engage with the face or bearing *n* of said bar and arm and will operate to press the latter inward and to the left, and thus press the pinion H into and hold it in engagement with the dial wheel K. To produce winding engagement, the stem arbor is drawn outward, turned to the right and then pushed to the inner limit of its motion, by which means the stud *l* will be caused to engage with the bar or arm bearing *n'*, and, pressing the bar or arm N inward and toward the right, will cause the pinion G to permit the teeth of said pinion and wheel to slip by each other, or to “back ratchet” when said stem arbor is turned rearward. The bar N is made springy or elastic so as to hold the pinion G with a yielding pressure in engagement with the wheel I.

In the construction shown, it will be seen that there is no normal tendency to either setting or winding engagement upon part of the stem driven train, but that in both of such engagements said train is entirely under the control of one and the same part, which part is caused to operate with equal facility in either of two practically opposite directions, by the manipulation of a stem-arbor that has no positive connection with the movement, but is a part of the case.

While the construction of the parts shown between the stem-arbor and the winding wheel, and the dial wheels, is preferably employed, I do not confine my invention to such, as many other forms of intermediate mechanism may be employed with equal facility.

Having thus described my invention, what I claim is—

1. As an improvement in stem winding and

setting watches, the combination of a rotatable, longitudinally movable stem arbor, winding and dial wheels adapted to be alternately actuated by said arbor, and means shiftable by the rotation of said arbor for producing alternate connection between the stem arbor and said wheels, whose movements are controlled by a part connected therewith having inclined faces adapted for cooperation with a part actuated by the stem arbor, substantially as and for the purpose specified.

2. As an improvement in stem-winding and setting watches, the combination of a rotatable, longitudinally movable, stem arbor, winding and dial wheels adapted to be alternately actuated by said arbor and shiftable means for producing alternate connection between the stem arbor and said wheels, whose movements are controlled by a spring arm or bar connected therewith to hold the same yieldingly in engagement with the winding wheel and adapted for cooperation with a part actuated by the stem arbor, substantially as and for the purpose shown.

3. A stem winding and setting watch in which is combined a rotatable, longitudinally movable stem arbor a train of wheels adapted by the rotation of said arbor to alternately produce winding and setting engagement, and means controlling the production of such engagement, comprising a part actuated by the longitudinal movement of the stem-arbor, and an arm or bar adapted for engagement thereby so as to be caused to act in either of two directions, substantially as and for the purpose set forth.

4. A stem winding and setting watch in which is combined a rotatable, longitudinally movable stem arbor, a pivoted, wheel-carrying yoke adapted to be oscillated by the rotation of said arbor to produce winding or setting engagement, and an arm or part connected with said yoke to control its oscillations adapted for cooperation with a part actuated by the stem arbor, said arm being disengaged from and engaged with the stem-arbor actuated part, by the longitudinal movements of said arbor in opposite directions, substantially as and for the purpose described.

5. A stem winding and setting watch in which is combined a rotatable, longitudinally movable stem-arbor that has no positive connection with the movement, a stem actuated mechanism which, by the oscillation of a pivoted yoke, is adapted to produce a winding or setting engagement, a spring arm or bar that controls the positions of such yoke, and a slide which is actuated by the longitudinal movement of the stem-arbor, and operates to cause said spring arm or bar to act in either of two practically opposite directions, substantially as and for the purpose set forth.

6. A stem winding and setting watch in which is combined a rotatable, longitudinally movable stem-arbor that has no positive connection with the movement, a device which operates to lock the stem-arbor yieldingly at

the inner limit of its longitudinal motion, a stem actuated mechanism which, by the oscillation of a pivoted yoke, is adapted to produce a winding or setting engagement, a
5 spring arm or bar that controls the positions of such yoke, and a slide which is actuated by the longitudinal movement of the stem-
arbor, and operates to cause said spring arm or bar to act in either of two practically op-

posite directions, substantially as and for the purpose described. 10

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of January, 1893.

EDWIN H. FLINT.

Witnesses:

GEO. S. PRINDLE,

GEO. H. HIGH.