(No Model.) 3 Sheets—Sheet 1.

H. ABBOTT.

STEM WINDING AND SETTING MECHANISM FOR WATCHES.

No. 346,254. Patented July 27, 1886.

Fig. 1.

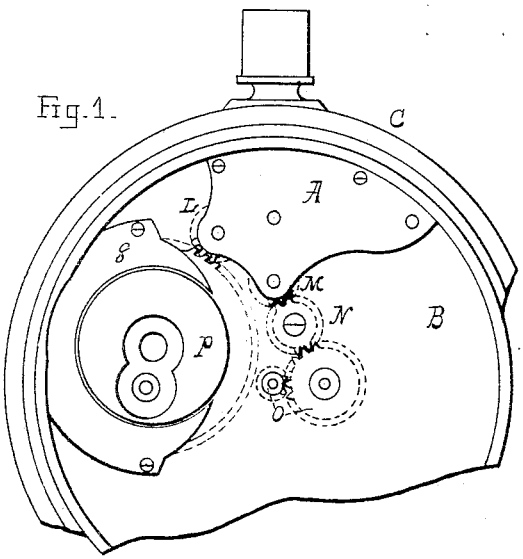


Fig. 2.

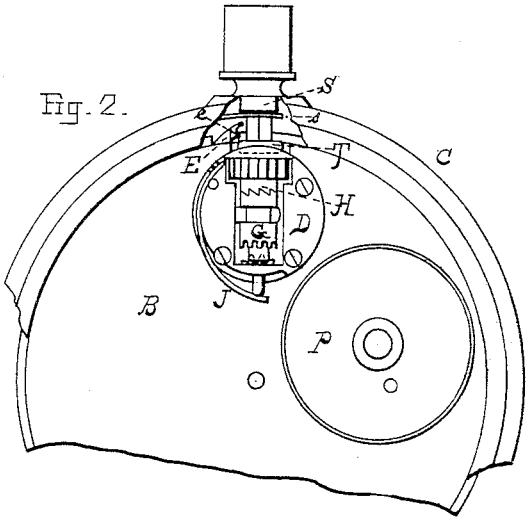


Fig. 3.

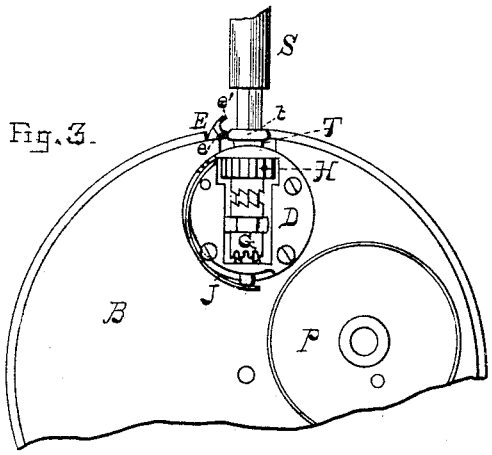


Fig. 4.

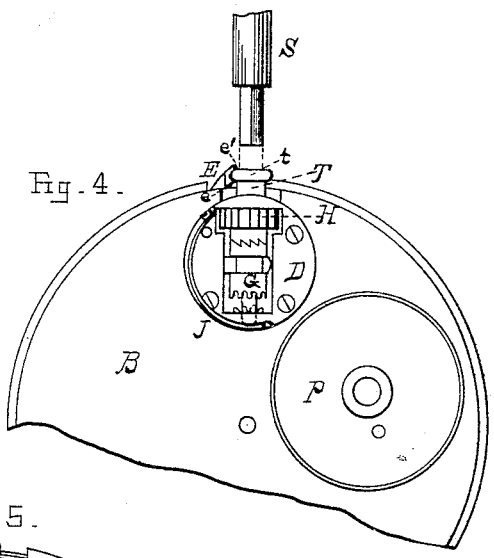
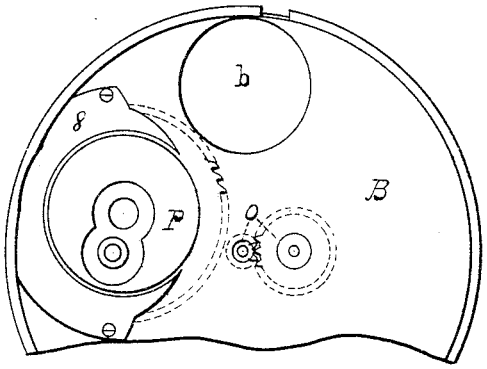


Fig. 5.



Witnesses.

Chas. F. Eglinton

Albert Kamp.

Inventor.

Henry Abbott

(No Model.) 3 Sheets—Sheet 2.

H. ABBOTT.

STEM WINDING AND SETTING MECHANISM FOR WATCHES.

No. 346,254. Patented July 27, 1886.

FIG. 6.

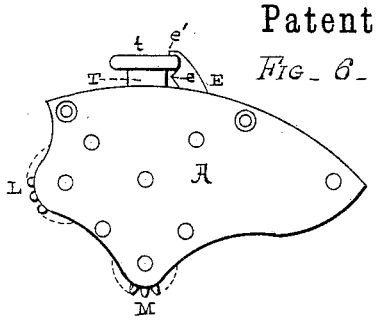


FIG. 7.

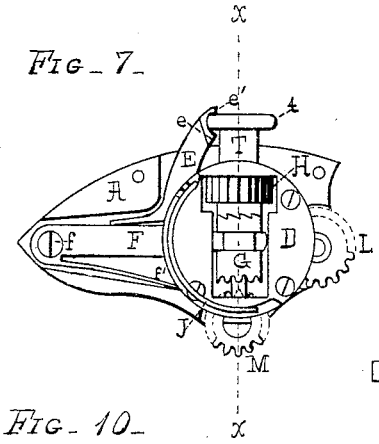


FIG. 8.

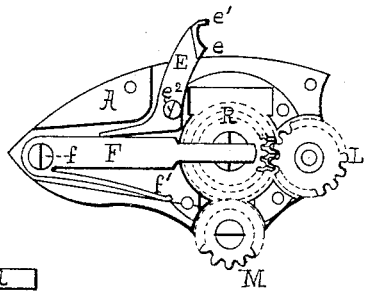


FIG. 9.

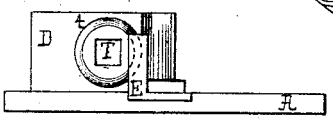


FIG. 10.

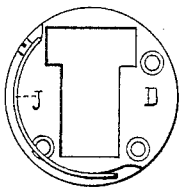


FIG. 12.

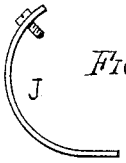


FIG. 11.

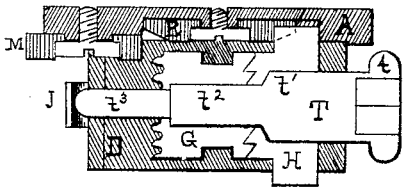


FIG. 13.

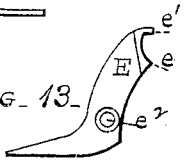


FIG. 14.

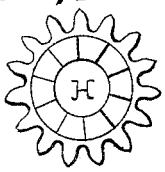


FIG. 15.

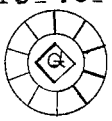


FIG. 16.

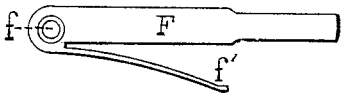


FIG. 17.

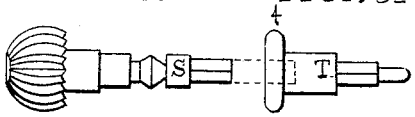


FIG. 18.

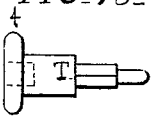


FIG. 19.

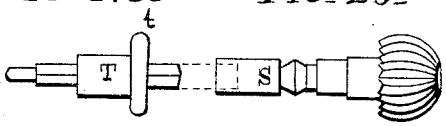
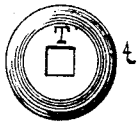


FIG. 20.

FIG. 21.



Witnesses.
Chas F Egler Jr
Albert Kamps.

Inventor.
Henry Abbott

(No Model.) 3 Sheets—Sheet 3.

H. ABBOTT.

STEM WINDING AND SETTING MECHANISM FOR WATCHES.

No. 346,254. Patented July 27, 1886.

Fig. 22.

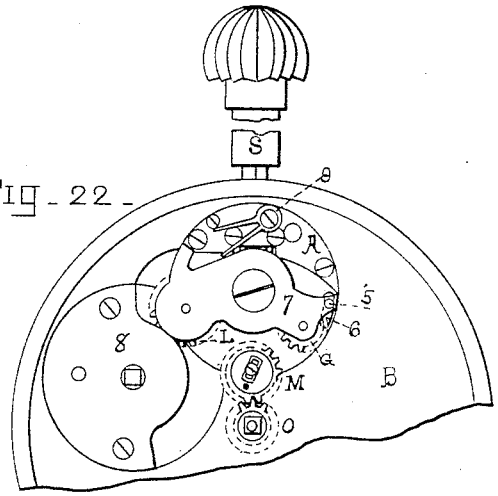


Fig. 24.

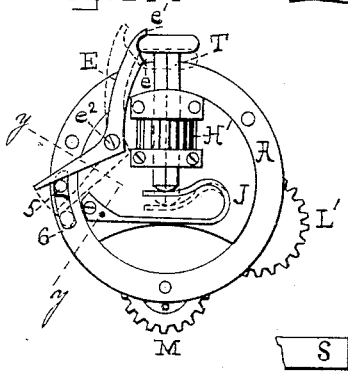


Fig. 26.

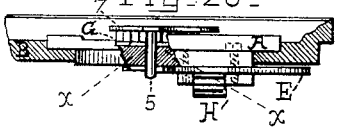


Fig. 25.

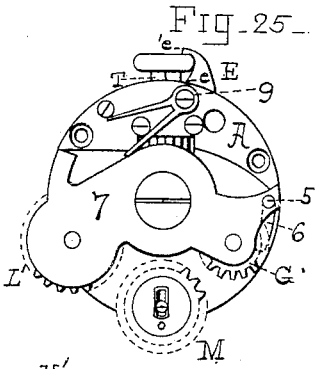


Fig. 27.

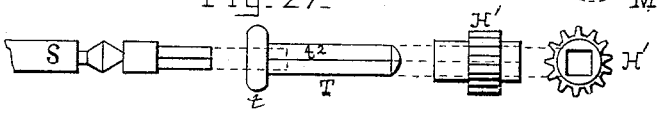


Fig. 23.

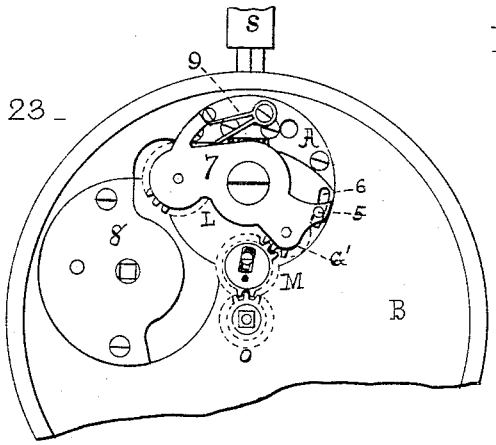
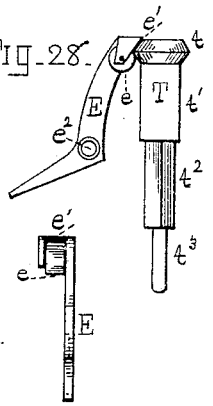


Fig. 28.



Witnesses.

Chas F. Egler Jr.

Albert Kamp.

Inventor.

Henry Abbott

UNITED STATES PATENT OFFICE.

HENRY ABBOTT, OF NEWARK, NEW JERSEY.

STEM WINDING AND SETTING MECHANISM FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 346,254, dated July 27, 1886.

Application filed January 27, 1886. Serial No. 189,886. (No model.)

To all whom it may concern:

Be it known that I, HENRY ABBOTT, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Stem-Winding and Hand-Setting Watches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in that class of stem-winding watches in which the stem-actuated train of wheels and pinions is brought into or out of engagement with the dial-wheels by the movement endwise of said stem.

It relates, also, to improvements in that class of stem-winding watches in which the winding and hand-setting mechanism is attached to a separable plate that is adapted to be removed from the watch without disarranging or separating the parts composing said winding and setting mechanism from each other, for a full description of which reference may be had to Patent No. 236,748, granted to me on January 18, 1881; also to recent improvements on the same, for which I now have applications for patents pending, parts of which are also shown in the annexed drawings, but are not claimed in this specification.

My invention consists in an improved combination and arrangement of parts, and in providing means whereby the class of stem-winding watch-movements above referred to are adapted to be used in a class of cases in which the winding-crown and push-pin are secured to the case and are adapted to be moved endwise in the pendant of said case, for the purpose of engaging or disengaging said stem with mechanism for actuating the hands.

It also consists in such an arrangement of the parts composing said winding and setting mechanism as will make the watch-movement interchangeable and adapted to be readily placed in any case of the class above named without adjustment or alteration.

It also consists in providing means whereby the stem-actuated train is automatically disengaged from the dial-wheels whenever the movement is separated from the case without regard to the position which said train last occupied before said movement was removed from the case.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a portion of a watch-movement and case, showing my improvement as it appears on the dial side of the main plate of the watch. Fig. 2 is a reverse view of the same, showing the parts in gear for winding. Fig. 3 is similar to Fig. 2, but with the parts in position to set the hands. Fig. 4 is a like view showing the position of the parts when the movement is separated from its case. Fig. 5 is a view of the main plate of the watch, showing the opening *b* made to receive the bridge D. Fig. 6 is a view of the winding and setting attachment when separated from the watch-movement, showing the top of the plate A. Fig. 7 is the reverse of Fig. 6. Fig. 8 is the same view as Fig. 7, but with the bridge D removed. Fig. 9 is an end view of Fig. 6. Fig. 10 is a plan view of the bridge D with the spring J attached. Fig. 11 is a sectional view on the line *x x* of Fig. 7. Fig. 12 is an enlarged view of the spring J. Fig. 13 is a view of the lever E. Fig. 14 is an enlarged view of the pinion H, showing the ratchet-teeth on its face. Fig. 15 is a similar view of the sliding clutch G. Fig. 16 is a view of the combined clutch-lever and spring F. Fig. 17 is a view of the winding-crown and push-pin S, having a male square formed on its inner end. Fig. 18 is a view of the winding-stem T, adapted to receive at its outer end a push of the style shown in Fig. 17. Fig. 19 is a winding-stem, T, having a male square formed at its outer end and adapted to receive a push having a key-pipe at its inner end of the form shown in Fig. 20. Fig. 21 is an end view of the winding-stem T. Fig. 22 is a plan view of the winding and setting mechanism of a watch wherein a pivoted yoke, 7, carries a portion of the winding-train, showing also the adaptation of my improvement to this class of watches, in which view the parts are shown in position for winding. Fig. 23 is the same as Fig. 22, but with the parts in position for setting the hands. Figs. 24 and 25

show the reverse and top views, respectively, of the winding attachment shown in Fig. 22 when separated from the watch. Fig. 26 is a sectional view on the line *y y* of Fig. 24, together with a portion of the plate B. Fig. 27 is an enlarged view of the pusher S, stem T, and pinion H′, of the style employed in Fig. 22. Fig. 28 shows a modified form of the lever E, wherein an anti-friction roller is employed for the acting surface at *e*, instead of the wedge-shape point, as in Fig. 13.

Similar letters of reference refer to like parts in each of the views.

A is the separable plate, to which the winding and setting mechanism is attached; B, the main or pillar plate of the watch; C, a portion of the watch-case; D, a bridge covering the crown-wheel R and a portion of the winding-wheel L, and intermediate setting-wheel, M. It also sustains the stem T, on which is journaled the winding-pinion H, and on which also slides the clutch G. These wheels and pinion and sliding clutch do not differ materially from those usually employed in watches.

F is a clutch-lever pivoted at *f*, the opposite end of which engages with the clutch G in an annular groove. It is also provided with the spring *f′*, formed of the same piece of metal, the outer end of which bears against a shoulder on the plate A, and tends to hold the ratchet-face of the clutch G against that of the pinion H.

E is a lever pivoted on the plate A at e^2, and provided at its outer end with a hook, *e′*, and a wedge-shaped bearing-surface, *e*, adapted to engage with and slide over the annular flange *t*, formed on the outer end of the movement-stem T, the inner or opposite end of the lever E engaging with and pressing against the clutch-lever F, except in Figs. 22, 23, 24, 25, and 26, where it bears against the stud 5, attached to the yoke 7.

J is a spring adapted to bear against the inner end of the stem T, and tending to force it outward.

P is the main winding-wheel over the barrel, and is covered and held in position by the bridge 8. The movement-stem T is adapted at its outer end either to receive the square arbor or key-pipe of the pusher S, is provided with a squared portion, t^2, on which slides the clutch G, with a round portion, *t′*, on which turns the pinion H, and which, with the pivot t^3, forms the bearing-surfaces of the stem T in the bridge D. The stem T is adapted to receive both a rotary and an endwise movement, being forced outwardly by the spring J, and inward by pressing against the crown push-piece S.

N is an intermediate setting-wheel.

O are the cannon-pinion and minute-wheel, also called "dial-wheels."

In Fig. 27 the stem T is shown with the squared portion t^2 extending its entire length, except where it is flanged at *t*, and is adapted to slide through the square hole extending through the hollow pinion H′ used in the style of watch shown in Figs. 22 and 23.

s is a case-spring used in hunting-case watches, and acted upon by a shoulder of the pusher S.

In cases of the class for which these stem-winding movements are adapted the pusher S is a fixture of the case, and is arranged to be moved endwise in the neck or pendant of said case within fixed limits, and to be held therein either at the outer or inner limit of its motion by a spring. The stems are also ordinarily made of standard length. The socket, therefore, in the outer end of the stem T being made of the proper depth to adapt the movement to be used in any one of these cases, it is evident that it may be used in all others of the same class, without alteration or special fitting.

The operation is as follows: The movement being in its case, the stem T is forced inward by pressure against the crown-pusher S to the inner limit of its motion. The flange *t* on the outer end of the stem T has passed beyond the acting-surface *e* of the lever E. The clutch-lever F, with the aid of its spring *f′*, holds the clutch G and pinion H in close contact, as shown in Fig. 2. If, now, the crown-push S is rotated in a forward direction, motion will be imparted through the clutch G, pinion H, wheels R L P, and the mainspring will be wound. If the crown-push be rotated backward, the ratchet-teeth on the faces of G and H will slip past each other, and no effect will be produced. If the push S be withdrawn to the outer limit of its motion, the spring J will force the stem T to follow it outwardly. The annular flange *t* will slide up the face of the wedge or incline *e*, causing the lever E to turn on its pivot e^2. The opposite end of E, bearing against F, will cause G to slide down on the stem T until it engages with M. The pusher S may now be rotated and the hands turned in either direction, as shown in Fig. 3. If, now, the crown-pusher S be removed entirely from the case, or if the watch-movement be removed from the case, the stem T will be forced farther outward by J until the flange *t* is caught by the hook *e′*, which prevents it from falling entirely out of the watch. F is now relieved from pressure of the inner end of E, and is free to return the clutch G to contact with H, as shown in Fig. 4. The watch-movement may be wound in this position while out of its case, if desired, and the time-train is also relieved from any contact with the setting mechanism, and is free to run and keep time as well as if in its case.

The action in watches of the pivoted-yoke class, as shown in Figs. 22 and 23, is exactly as described, except that the lever E acts upon the stud 5 and turns the yoke 7 on its pivot instead of moving the clutch G upon the stem. As shown in Fig. 2, after the flange *t* has passed the acting-surface of *e* there is still

sufficient space allowed for pressing the pusher S still farther in, until the case-spring *s* is acted upon by the shoulder of the pusher. It is evident that the hook *e'* might be dispensed with and a screw through D, or other device, employed to prevent the stem T from falling out. It is evident that the form and shape of E might be modified, if required, without changing its essential features. It will also be evident that grooves may be employed as an equivalent of the annular flange on the outer end of the stem T. The spring J may also, if desired, be adapted to act against the flange *t*, for forcing the stem T outward instead of against its inner end. It is also evident that the novel forms of stem T, lever E, and spring J herein shown and described, might with equal facility and advantage be employed in watches of the more ordinary class, or those wherein the winding and setting mechanism is attached to the main plate B, instead of to the separable plate A. If it is desired to employ the anti-friction roller for the acting-surface *e*, as shown in Fig. 28, it will be desirable also to make the flange *t* angular instead of rounded, as shown in the other figures; but this shape is not essential.

I do not claim, broadly, all of the mechanism herein shown and described; but the movement-stem T, constructed as shown and described and adapted to co-operate with the case-stem or pusher S, is a novel and an essential feature of this invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As an improvement in stem winding and hand-setting watches, the rotatable longitudinally-movable stem T, mortise-jointed with the pusher S, but not permanently secured thereto, provided with a boss or flange, *t*, and a square or angular body, t^2, in combination with the pusher S and co-operating mechanism, whereby the watch may be wound or set, substantially as shown and specified.

2. As an improvement in stem winding and hand-setting watch-movements, the rotatable longitudinally-movable stem T, mortised at its outer end, provided with a boss or flange, *t*, and a square or angular body, t^2, in combination with co-operating mechanism whereby the movement is adapted to be used interchangeably in cases provided with the pusher S, and whereby the stem-driven train is automatically disengaged from the dial-wheels whenever the movement is removed from the case, substantially as shown and specified.

3. As an improvement in organized separable stem-winding and hand-setting attachments, the rotatable longitudinally-movable stem T, mortised at its outer end, provided with a boss or flange, *t*, and a square or angular body, t^2, in combination with co-operating mechanism whereby said stem-winding and hand-setting attachment is adapted to be used in a watch having the pusher S, and whereby the stem-driven train will be automatically disengaged from the dial-wheels whenever the said attachment is removed from the watch, or whenever the movement is removed from the case, substantially as shown and described.

4. In a stem winding and hand-setting watch, the combination of the stem T, mortised at its outer end, having boss *t* and angular body t^2, with the lever E, spring J, clutch G, and pusher S, substantially as shown and described, and for the purposes specified.

5. In a stem winding and hand-setting watch, the combination of the stem T, mortised at its outer end, having the flange or boss *t*, and angular body t^2, with the lever E, having surface *c* and hook *e'*, the lever F, clutch G, spring J, and pusher S, substantially as shown and described, and for the purpose specified.

6. In a stem winding and hand-setting watch-movement, the combination of the stem T, mortised at its outer end, and having the boss *t* and angular body t^2, with the lever E, clutch G, and spring J, substantially as shown and described, and for the purpose specified.

7. In a stem winding and hand-setting watch-movement, the combination of the stem T, mortised at its outer end, provided with the flange or boss *t* and the angular body t^2, with the lever E, having the surface *c* and hook *e'*, the lever F, spring J, and spring *f'*, substantially as shown, and for the purpose stated.

8. In an organized separable stem-winding and hand-setting attachment, the combination of the stem T, mortised at its outer end, and having the flange or boss *t* and the angular body t^2, with the lever E, clutch G, spring J, and plate A, substantially as shown and described, and for the purpose specified.

9. In an organized separable stem-winding and hand-setting attachment, the combination of the stem T, mortised at its outer end, provided with the flange or boss *t* and the angular body t^2, with the lever E, having the surface *e* and the hook *e'*, the lever F, spring J, spring *f'*, clutch G, and plate A, substantially as shown, and for the purpose specified.

HENRY ABBOTT.

Witnesses:
A. D. BALEN,
ALBERT KAMP.