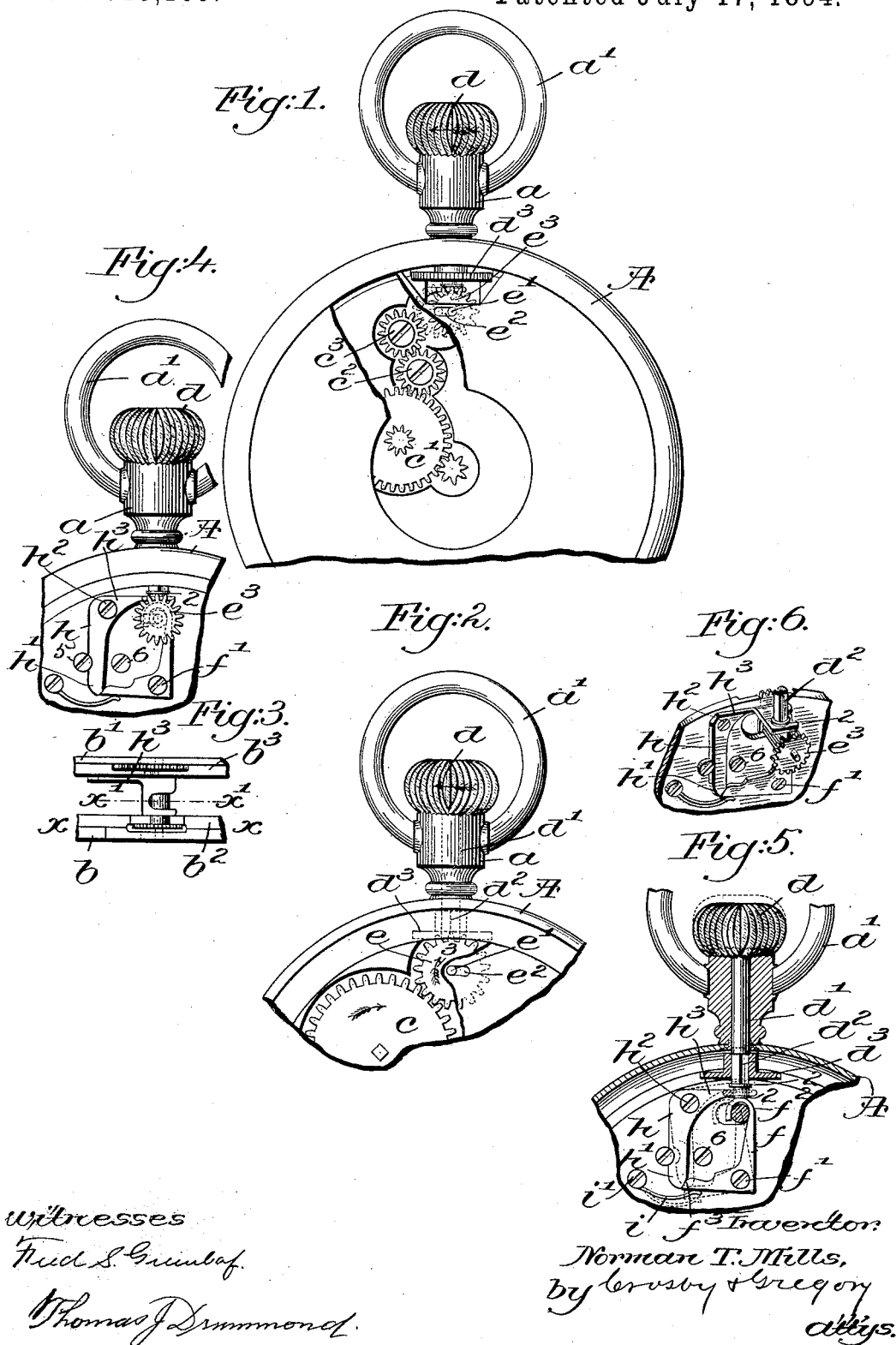


(No Model.)

N. T. MILLS.
STEM WINDING AND SETTING WATCH.

No. 523,169.

Patented July 17, 1894.



UNITED STATES PATENT OFFICE.

NORMAN T. MILLS, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO HENRY A. PRENTICE, OF SAME PLACE.

STEM WINDING AND SETTING WATCH.

SPECIFICATION forming part of Letters Patent No. 523,169, dated July 17, 1894.

Application filed November 22, 1893. Serial No. 491,648. (No model.)

To all whom it may concern:

Be it known that I, NORMAN T. MILLS, 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 and figures on the drawings representing like parts.

This invention has for its object to provide a novel, simple and inexpensive stem winding and setting mechanism for watches.

In accordance with this invention I have provided a toothed connecting device rotatable by the stem and adapted to be moved into position engaging and to rotate either the winding or the setting wheel at will, suitable means being also provided by which to lock said connecting device in either of its positions.

In the drawings, Figure 1 represents in face view, partially broken away, a sufficient portion of a watch of common construction to enable my invention to be understood; Fig. 2 a partial rear side view of the watch shown in Fig. 1; Fig. 3 a detail top view of the tooth connecting device and mechanism for shifting the same shown in Fig. 1; Fig. 4 a section on the dotted line $x-x$, Fig. 3; Fig. 5 a section taken on the dotted line $x'-x'$, Fig. 3; and Fig. 6 a perspective view showing the mechanism for shifting the connecting device.

Referring to the drawings, A, represents a watch case, provided with a pendant, a , and bow a' , all of usual or desired construction. The bridge plates b, b' , top plate b^2 and pillar plate b^3 , and the watch mechanism including the winding ratchet wheel c let into the pillar plate b^3 , the minute wheel c' , and setting wheels c^2, c^3 , let into the top plate b^2 , are and may be of any usual construction such as found in watches now in common use.

In accordance with this invention I mount the crown d upon the outer end of a stem d' rotatable in the pendant a , and movable longitudinally therein, said stem at its inner end within the case being preferably made square or other than round, as at d^2 , to receive the winding pinion d^3 in which the said stem has a longitudinal or sliding movement, as will be described.

Referring now particularly to Figs. 2 and 5, the teeth on the winding pinion d^3 which are in effect crown teeth, and mesh with the teeth of a pinion e fast on an arbor e' projecting at its ends into and having its bearings in the slots e^2 in the bridge plates b, b' , see Figs. 1, 2 and 3, in which slots said arbor is laterally movable to carry the pinion e into and out of mesh with the winding wheel c in Fig. 2.

The shifting arbor e' at the side of the watch adjacent the setting wheels c^2, c^3 , is shown as provided with a second fast pinion e^3 , which, when the arbor is in its position Figs. 1 to 3 is out of mesh with the setting wheel c^3 , but which, when the said arbor is moved to the right Fig. 2 and left Fig. 1, to move the pinion e out of mesh with the winding wheel c , is thereby moved into mesh with the setting wheel c^3 , see dotted lines Fig. 1.

Lateral shifting movement of the arbor e is effected in the present instance by means of a shifting lever f , shown as a bell crank lever pivoted at f' and having one of its arms f^2 curved over to embrace the arbor e , the end of the other arm being beveled as at f^3 . The beveled end f^3 of the shifting lever is acted upon by the tail h' of an actuating lever h , also shown as a bell crank lever and pivoted at h^2 , its arm h^3 being forked to straddle the inner end of the stem d' between the shoulders 2, 2, on the latter, see Fig. 5, whereby longitudinal or in and out movement of the stem acts to throw the actuating lever as will be described.

A spring i held by a suitable pivot or screw i' acts to retain the shifting lever f in either of its extreme positions, said spring also cooperating with the bevel end f^3 of the shifting lever to throw the actuating lever and stem quickly back into their inmost or normal positions.

The operation of my improved mechanism is as follows, viz:—With the parts in their normal full line positions in the drawings, rotation of the stem in the direction of the arrow Fig. 2, acts through the winding wheel d^3 and pinion e to rotate the winding or ratchet wheel c in the direction of the arrow thereon to wind the spring, the arbor during such operation hugging closely the left-hand end of its

slots e^2 , Fig. 2. Rotation of the stem in an opposite direction causes the pinion e to rotate in the direction of the arrow 3 thereon, and as the arbor e' on which the pinion e is fast, is free to slide in the slots e^2 to the right, Fig. 2, rotation of the pinion in that direction will simply slide the arbor to the right sufficiently to permit the teeth on the pinion to slip past the teeth on the winding wheel c without rotating the latter, the said wheel c thus acting as a ratchet toothed wheel. To set the watch the crown with its attached stem are drawn out into their dotted line position Fig. 5, thereby turning the actuating lever h into its dotted position and causing its tail h' to act upon the beveled end f^3 of the shifting lever to throw the same also into its dotted position to shift the arbor e' to the left Fig. 1, in the slots e^2 , carrying the pinion e , out of mesh with the ratchet wheel c , and the pinion e^3 into its dotted position in mesh with the setting wheel c^3 , so that rotation of the crown and stem will act to set the watch without winding it. When the stem is drawn out the tail of the actuating lever h after sliding up the beveled end f^3 of the shifting lever, moves over the top of the beveled end, as shown in dotted lines Fig. 5, the spring i acting as a locking device to retain the parts in such positions. When the stem is again pushed in, the actuating lever h is returned to its normal full line position, and the spring i throws the shifting lever and arbor also back to their normal winding positions with the end of the shifting lever lying in front of the tail of the actuating lever, as shown, thus locking said actuating lever against movement except by the exercise of sufficient force to overpower the spring i .

The arbor e' with its two pinions e and e^3 constitutes what I term a laterally movable or shifting toothed connecting device which engages either the winding or setting wheels according to its position, and if the construction of the watch movement is such that both the winding and setting wheels are at the side of the movement at which the pinion e is located it is evident that the pinion e^3 may be omitted.

This invention is not limited to the particular arrangement or construction herein shown for it is evident the same may be varied without departing from the invention.

This invention is not restricted to the particular watch movement shown, for the same is applicable to many watch movements other than the one shown.

The stop screws 5, 6, limit the movements of the actuating lever and stem in both directions.

It will be noticed that in my invention the

toothed connection is moved laterally, *i. e.*, its axis is shifted to one side into a new position, to carry said connection from engagement with the winding train into engagement with the setting train, as distinguished from devices heretofore constructed wherein the toothed connection or pinion is moved longitudinally *i. e.*, along or in the line of its axis without changing the position of the latter.

I claim—

1. A stem winding and setting mechanism for watches containing the following instrumentalities, viz:—two bridge plates provided with slots a rotatable stem; a winding pinion rotated thereby; a winding wheel; a setting wheel; a toothed connecting device mounted and to slide in said slots and means to move the said connecting device laterally in said slots from a position connecting said winding pinion and wheel into position connecting said winding pinion and setting wheel, substantially as described.

2. A stem winding and setting mechanism for watches, containing the following instrumentalities, viz:—two bridge-plates provided with slots a longitudinally movable stem; a winding pinion on and rotated thereby; a winding wheel; a setting wheel; a toothed connecting device mounted to slide in said slots and in mesh with said winding pinion, and connections between said connecting device and stem whereby longitudinal movement of the latter slides the former laterally in said slots into engagement with either the said winding wheel or setting wheel at will, substantially as described.

3. A stem winding and setting mechanism for watches containing the following instrumentalities, viz:—a longitudinally movable stem; a winding pinion on and rotated thereby; a winding wheel; a setting wheel; an arbor; two toothed wheels thereon, one of which is normally in mesh with said winding pinion and winding wheel; a spring-actuated shifting lever to change the position of said arbor; and an actuating lever interposed between said shifting lever and stem whereby longitudinal movement of the latter operates to move the said arbor laterally to disengage said winding pinion from said winding wheel, and to automatically place said winding pinion in engagement with said setting wheel, substantially as described.

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

NORMAN T. MILLS.

Witnesses:

FREDERICK L. EMERY,
AUGUSTA E. DEAN.