(No Model.) 2 Sheets—Sheet 1.

E. SEITZ.

STEM WINDING AND SETTING WATCH.

No. 401,074. Patented Apr. 9, 1889.

Fig. 1

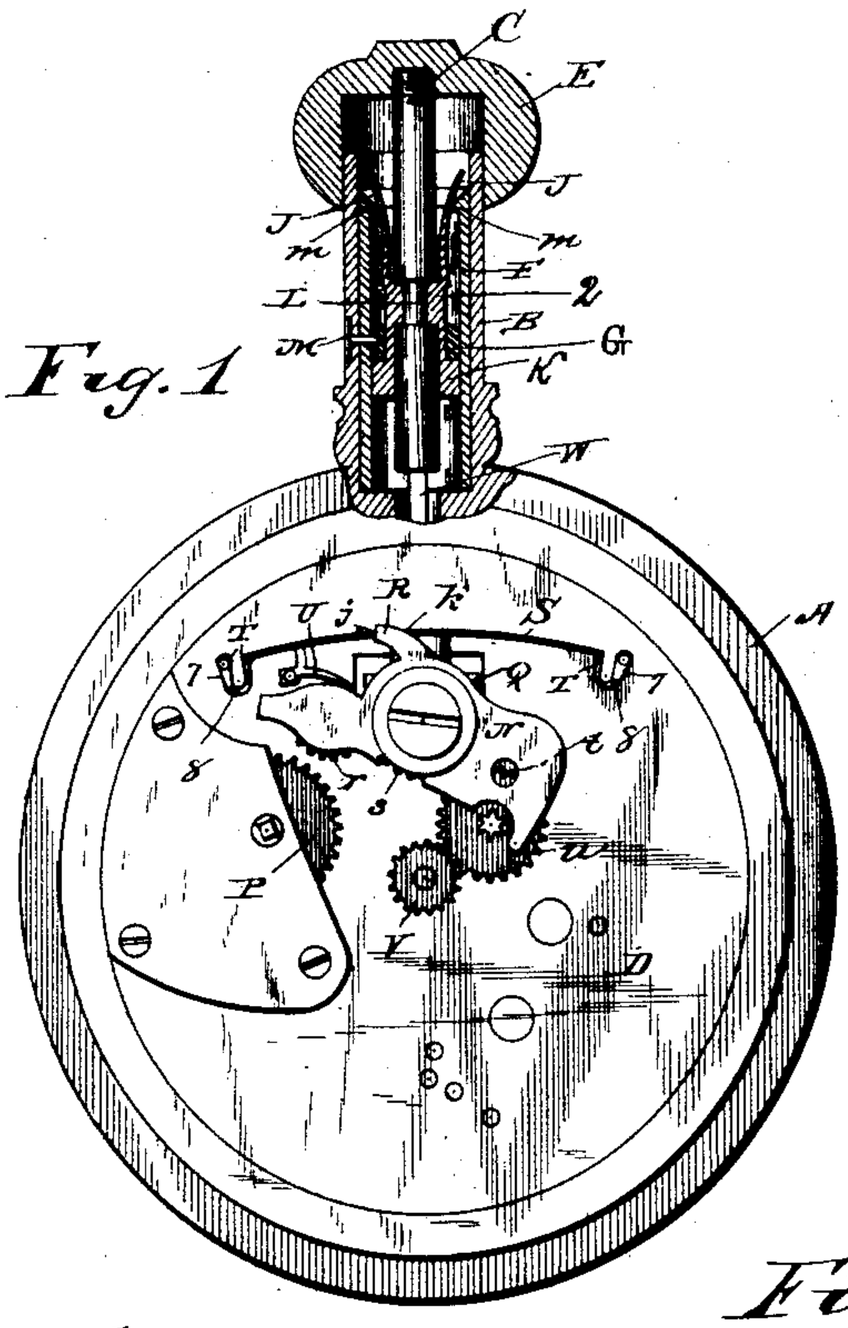


Fig. 2

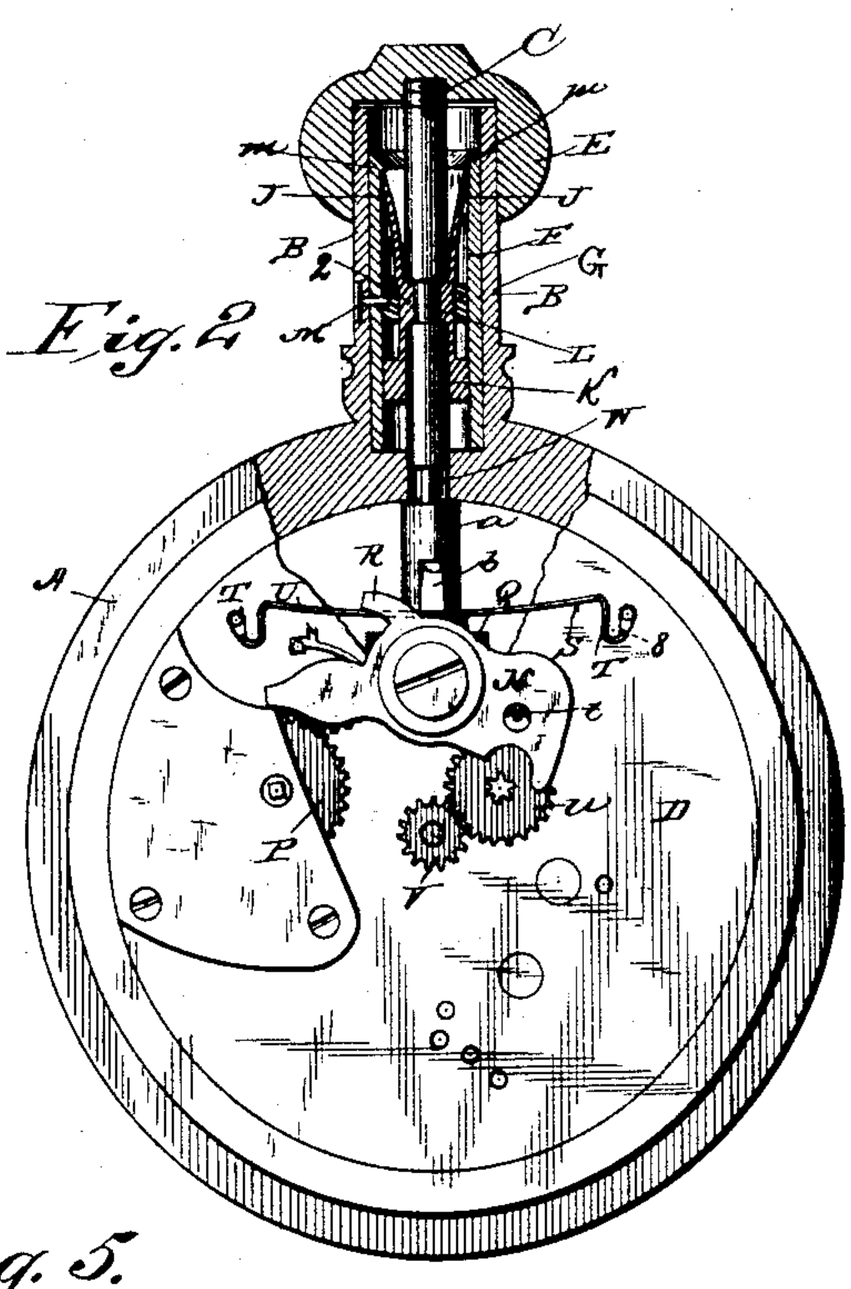
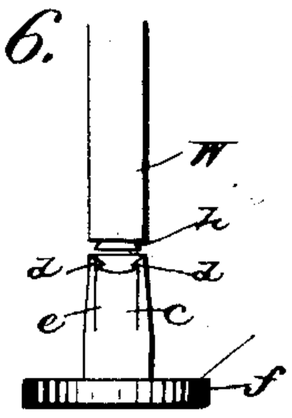


Fig. 5.

Fig. 6.



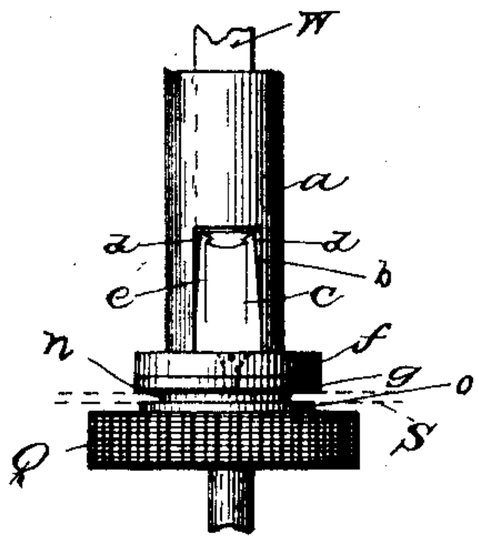


Fig. 7.

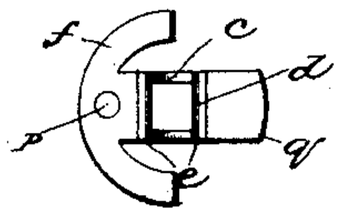


Fig. 9.

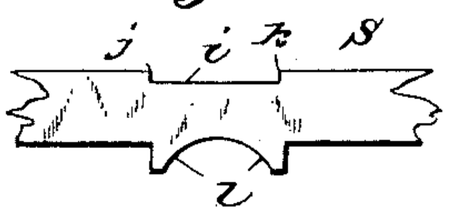


Fig. 3.

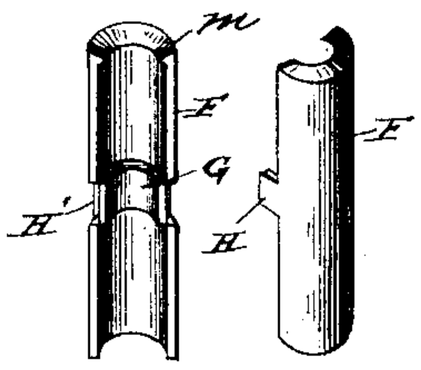


Fig. 4.

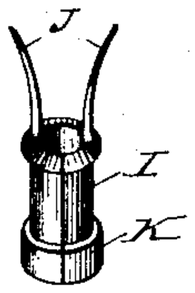


Fig. 8.

Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

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STEM WINDING AND SETTING WATCH.

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Fig. 10.

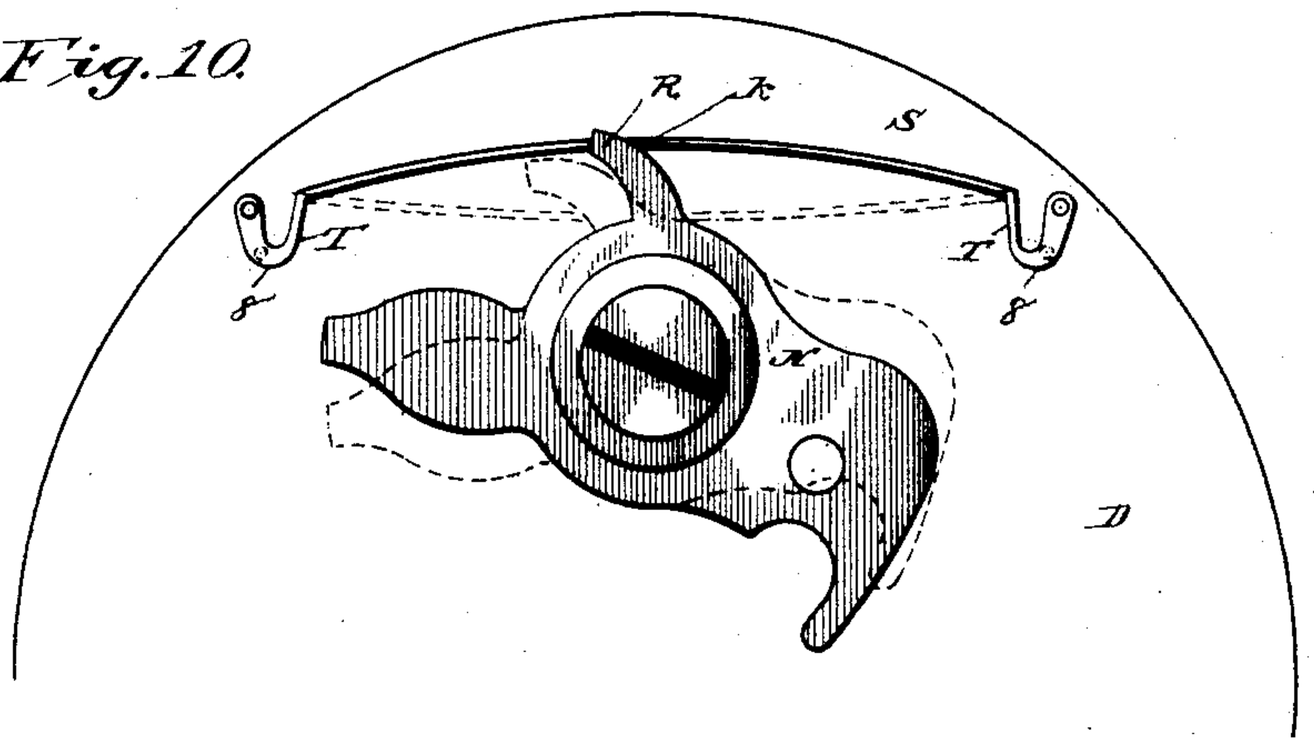


Fig. 12.

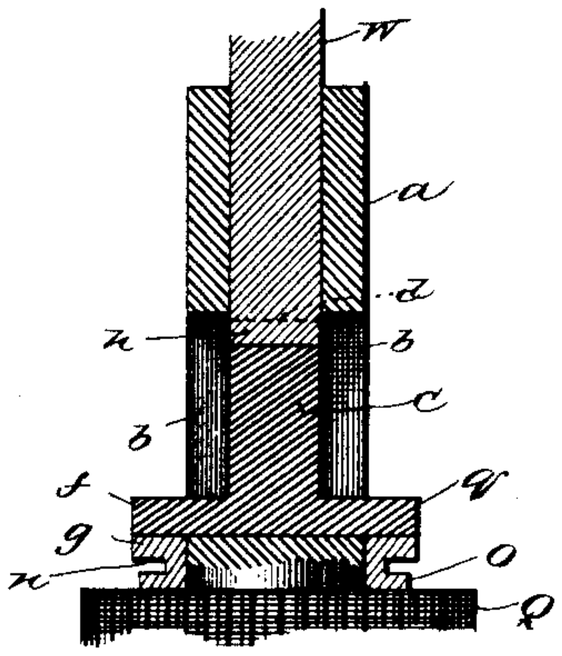
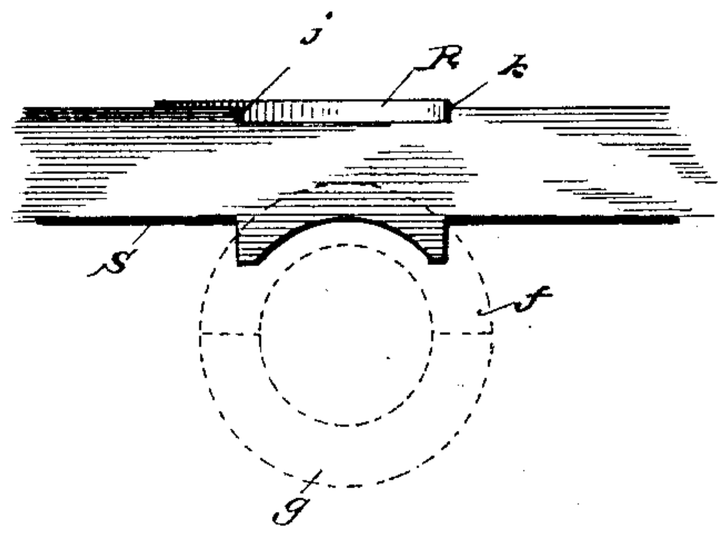


Fig. 11.



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UNITED STATES PATENT OFFICE.

EDWARD SEITZ, OF PEORIA, ILLINOIS.

STEM WINDING AND SETTING WATCH.

SPECIFICATION forming part of Letters Patent No. 401,074, dated April 9, 1889.

Application filed July 17, 1888. Serial No. 280,170. (No model.)

To all whom it may concern:

Be it known that I, EDWARD SEITZ, a resident of Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Stem Winding and Setting Mechanism for 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 pertains to make and use the same.

My invention relates to stem-winding and stem-setting mechanism, and involves the common oscillating yoke bearing a train of gears that is caused to engage and rotate either the winding or the hands-setting mechanism by force applied to the stem alone.

In the drawings, Figure 1 shows the front of a case with a movement therein, a portion of the stem being in section and the train in engagement with the hands-setting gears. Fig. 2 is a similar view with the stem-connections exposed by breaking away parts of the case and movement and the train being in engagement with the winding-gear. Figs. 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 are detail views on a larger scale.

In the drawings, D is the front plate of a movement inclosed in a case, A, having the usual pendant, B. A yoke, N, is pivoted upon the plate and bears upon its inner face three gears, *r s t*, of which the middle one, *s*, is concentric with the yoke-pivot and meshes with a gear, Q, mounted in the plate D and actuated by the rotation of the stem. The gear *s* at all times engages the gears *r t*, and these latter, according to the position of the yoke N, engage, respectively, either the winding-gear P or a gear, *u*, transmitting motion to the hands. The yoke is oscillated by the movements of a spring, S, secured at each end to the plate and engaging an arm, R, upon the yoke. The spring is provided with U-shaped ends, of which the outer limbs are rigidly secured to the plate by pins 8 and screws 7 in such position that the middle portion of the spring is normally curved as shown.

From the construction it follows that the spring may yield by pressing the limbs T of its U-shaped ends apart, and that if the spring be carried past a straight line joining the ends of these limbs it instantly reverses and presses in the opposite direction, with no tendency to return to its original position. The arm R rests in a notch, *i*, Fig. 9, in the upper edge of the spring S, and when the latter passes from the position of Fig. 1 to that of Fig. 2 the shoulder K of the notch presses the convex side of the arm and swings the yoke until the gear *r* engages the winding-gear P. The yoke is held in this position with a yielding pressure that permits the cogs to slip during the reverse motion of winding. The click-spring U, commonly used to allow slipping of the cogs, may still be employed, if desired; but it now serves only to partially neutralize the force of the spring S while the latter holds the gears *r* P in engagement. When the spring passes from its lowest to its highest position, the shoulder *j* strikes the concave side of the arm R and swings the yoke into engagement with the hands-setting gear, and passes the lower angle of the arm end, Fig. 1, and stops at such a point that the arm, and consequently the yoke, is locked in position. No slipping of cogs is necessary here, and owing to this locking none is possible. The stem forces the spring S in each direction by positive connections. (Shown in Figs. 5, 6, 7, 8, 9, and 13.)

The gear Q, which actuates directly the train *r s t* upon the yoke N, is provided with a large hub, *a*, with a squared axial cavity adapted to receive the squared end W of the stem. The hub is, further, slotted through from front to rear at *b*, Figs. 2, 5, and 13, and on this slot is placed a detachable portion, *c*, of the stem. To the end of the part *c* is secured a narrow base-plate, *q*, bearing a semicircular collar fitting the outer surface of the hub, and this when in place is fastened rigidly to a collar, *o q*, sliding loosely upon the hub, and having an annular groove, *n*, in which rests the saddle *l*, Fig. 9, of the spring S.

The part *c* of the stem is recessed in dovetail form at its upper end to receive the correspondingly-formed end of the part W, and is slit at *e* upon each side, so that the engaging projections *d* of the dovetail can spring outward to permit engagement or disengagement of the end *h* of the part W. Now when the part *c* is in position in the slot it is pre-

cisely in line with the part W, and if the latter be pressed inward with some force its end *h* springs and enters into engagement with the projections *d*, and the two parts become one so far as actuating the yoke and gear Q is concerned, for as the part *c* is of the same size as the axial opening in the hub *a* withdrawal of the stem raises the part *c* (with the collar *o g* and spring S) until the base-plate *f* meets the upper limit of the slot, and as the base-plate *f* cannot rotate in the slot rotation of the stem must cause rotation of the hub *a* and gear Q. At the same time, if the stem be drawn with great force after the base-plate *f* has reached the upper limit of the slot, the inclined sides of the end *h* spread the dovetail projections *d* and the two parts of the stem separate.

The upper portion, C, of the stem bears an actuating-crown, E, and rotates in a two-part bearing, K, Figs. 1, 2, and 4, provided with an internal annular projection, 2, lying in a corresponding depression, L, of the stem with an external depression, I, and with two opposite outwardly-curved springs, J, at its upper end. The whole is inclosed in a longitudinally-divided sleeve, F, Fig. 3, which fits the pendant closely, and is fixed thereto by a screw, M, Fig. 1. Longitudinal displacement of the two parts of the sleeve with reference to each other is prevented by lugs H upon one part entering corresponding recesses, H′, in the outer surface of the other part. The sleeve is provided at its upper end with an internal annular V-shaped projection, *m*, below which the ends of the springs J lie when the stem, as in Fig. 2, is at its inner limit. Evidently since, owing to the projection 2, the bearing K and stems C must move longitudinally together, the projection *m* resists the outward movement of the stem; but if the force applied be sufficient the ends of the springs slide along the inclined surface of the projection, pass its edge, and expand slightly as they pass beyond the limit of the sleeve, thus slightly resisting return to the original position. The projection G in the sleeve F, lying at all times in the depression I of the bearing K, acts as a stop, limiting both the inward and the outward movement of the bearing and stem.

What I claim is—

1. In stem winding and setting mechanism, the stem consisting of the part W, having at its inner end the lateral V-shaped notches, and the part *c*, having corresponding spring-catches with V-shaped ends adapted to automatically engage said notches when the parts are pressed together end to end and to automatically disengage when the parts are forcibly drawn apart, whereby a strong pull upon the crown leaves the movement with a portion of the stem mounted therein free from the parts within the pendant.

2. The combination, with the pendant, of the sleeve F, fixed therein and having the inward projection *m* at its own outer end, the stem-bearing K, having a limited sliding movement in said sleeve, the divergently-curved springs J, formed integrally with said bearing and engaging said projection, and the stem rotating without sliding in said bearing, substantially as and for the purpose set forth.

3. In stem winding and setting mechanism, the combination, with the watch-pendant, of a sleeve fixed therein and internally contracted at its upper or outer end, a sliding stem-bearing closely fitting said sleeve, provided at its upper end with opposite divergent springs whose free ends fall within and without said contracted sleeve end as the bearing slides back and forth in the sleeve, and a stem having a rotary but not a sliding motion in said bearing.

4. In stem winding and setting mechanism, the combination, with the pivoted yoke and the winding and hands-setting train mounted thereon, of a spring fixed at each end and at its middle engaging an arm of said yoke, and a detachable portion of the stem sliding in the movement and engaging the middle of said spring at all times, whereby the sliding of the stem in either direction may impart positive motion to said yoke, substantially as set forth.

5. The combination of the stem *c* C, the slide-bearing K, surrounding and sliding with said stem, the sleeve F, inclosing said bearing and secured in the pendant, the internal annular projection, *m*, upon said sleeve, the divergent springs J, projecting from said bearing and resisting its sliding in said sleeve, the collar *o g*, fixed to the stem *c* C, and the spring S, engaging an arm of the yoke N and engaged by said collar, substantially as set forth.

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

EDWARD SEITZ.

Witnesses:
SCHUYLER DURYEE,
HARRY S. ROHRER.