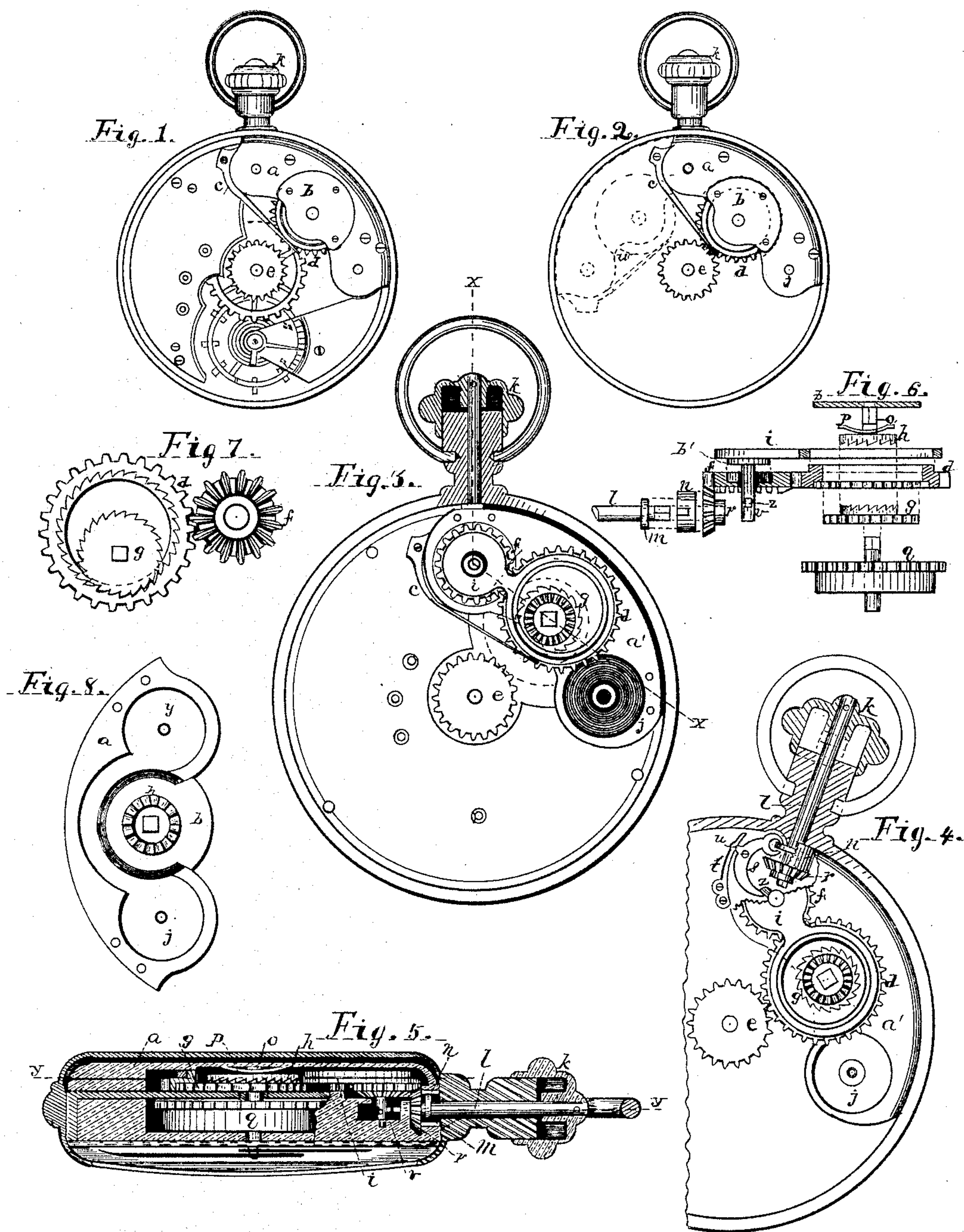


(No Model.)

A. L. KELLER.
STEM WINDING WATCH.

No. 353,687.

Patented Dec. 7, 1886.



Witnesses:

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UNITED STATES PATENT OFFICE.

ABRAHAM L. KELLER, OF ELGIN, ILLINOIS, ASSIGNOR OF ONE-THIRD TO
OTTO JOHNSTON, OF SAME PLACE.

STEM-WINDING WATCH.

SPECIFICATION forming part of Letters Patent No. 353,687, dated December 7, 1886.

Application filed January 9, 1886. Serial No. 188,080. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM L. KELLER, a citizen of the United States, residing at Elgin, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Stem-Winding and Hand-Setting Mechanism for Watches, of which the following is a specification.

My invention relates to improvements in stem-winding and hand-setting mechanism in which the works of the watch can be shifted and changed for either a right or left hand person. In other words, when the watch is held in either right or left hand that the dial will be in an upright position.

My improvements further relate to the arrangement and constructions of the gear mechanism, that by pulling the knob or crown button near the pendant ring the mechanism changes from the winding to the hand-setting gear, and a push on the crown-button causes the mechanism again to resume its normal position with the winding-gear.

It further consists in a gear-ring having an internally-toothed ratchet and mounted loosely in a pendant swinging yoke which operates in conjunction with the endwise-moving crown stem.

The object of my improvements are, first, to enable any watch-dealer or jeweler to change the mechanism to suit for either a right or left handed person by simply reversing the winding and setting gears and moving the works around one-quarter turn in the watch-case; second, in simplifying the mechanism and having an easy-moving action; third, by having a positive and reliable action, not likely to get out of order. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a full top view of the gear side of a watch with my mechanism in its normal place. Fig. 2 is also a full top view of the gear side of a watch with my mechanism in gear with the gear-wheel on the hand-arbor. Fig. 3 is a top plan of my gear arrangement with the top plate removed. Fig. 4 is also a top plan of my gear mechanism partially in section taken on the line Y Y of Fig. 5; and Fig. 5 is a transverse section taken on the line

X X of Fig. 3. Figs. 6, 7, and 8 are detail views of my mechanism.

Similar letters of reference refer to similar parts throughout the several views.

In the drawings, *k* is a knob or crown-button next to the pendant ring, but is independent of it, and movable with a rotatory motion, as well as an endwise motion, on the axis or crown-stem *l* of this crown-knob. There is a bevel-pinion, *r*, having a square hole to receive the stem, which stem has a corresponding square formed on its end to receive said pinion. The said pinion acts by means of an intermediate pinion, *f*, having both bevel and spur cogs, and this acts on a gear-ring, *d*, which is carried in a pendant swinging yoke, *i*, and which encircles a double-ratchet wheel, *g*, that is rigidly secured upon the axis of the winding-drum *q*. This ratchet-wheel with its teeth formed on its periphery acts with corresponding teeth formed internally on the geared ring *d*, as shown in Fig. 7, a spring, *c*, holding said gear-ring in contact with the ratchet-wheel *g*, as shown in Fig. 3. The crown ratchet-teeth formed on the upper side of the ratchet-wheel *g* act with a corresponding ratchet *h*, loosely mounted on a square stud, *o*, that is rigidly secured to the top plate, *b*, (see Figs. 5 and 8,) and a spring, *P*, holding said ratchet in gear with the ratchet *g*, thereby preventing the unwinding of the mainspring as the winding has been completed. This completes the winding-up part of the watch. That for setting the hands consists of a pinion, *e*, attached to the arbor of the minute-hand. This pinion, it must be observed, is free of the gear-ring *d*, or, in technical language, not in gear with it; but it can be put so by simply pulling the crown-knob *k* on the end of the pendant until it stops moving out. This causes the bifurcated lever *s*, by means of the collar *m*, to act on the stud *z*, that is rigidly secured on the arbor *v* of the pendant swinging yoke *i*. This action on the stud *z* will cause the geared ring *d* to move from its normal position and fall into action with the pinion *e*, as shown in Figs. 2 and 4. The click *t*, by means of the pin *u* on the bifurcated lever near its pivot, holds said wheels in gear until the adjustment of the hands is completed. In the

meantime the winding-ratchet *g* has been disengaged from the action of the gear-ring *d*, as shown in Fig. 4. When the setting of the hands has been completed, a push on the crown-stem will relieve the bifurcated lever *s* from the stud *z*, and the spring *c* will carry the gear-ring *d* to its normal position and hold it in action with the winding-ratchet *g*.

The object of making the teeth of the ratchet *g* on the hooked plan is for the purpose to prevent slipping in winding up the watch, and thereby permit the use of a light spring for holding winding-gear in action, and also to prevent injury to the watch should the winder turn the crown-stem in the wrong direction.

A sleeve, *n*, fits loosely over the collar *m* on the crown-stem *l*, and is on one side slotted to admit of the bifurcated lever *s* to engage the collar on said crown-stem. This sleeve serves to hold the bevel-pinion *r* to its place when the crown-stem is moved endwise, and also permits of taking the works of the watch out of its case without removing the crown-stem from the pendant by simply removing the plates *a* and *a'*.

The plates *a* and *a'* are so constructed that the pinions *r* and *f*, the pendant swinging yoke *i*, the bifurcated lever *s*, its click *t*, and the sleeve *n* can readily be changed to either side of the winding-drum *q*, (see Figs. 8 and 4, *j* and *y*,) and thereby make it either a right or left handed watch, at the option of the dealer or jeweler. When this change is made from right to left hand, the works are moved in the case one-quarter of a turn, as indicated in the dotted lines *w*, Fig. 2. This will then change the position of the dial in relation to the pendant of the watch and present the dial in an upright position when held by the pendant in the left hand by the wearer.

The intermediate pinion, *f*, is placed in the seat formed in the top of the plate *a'*, and resting on the boss raised around the hole in said seat. The upper side of this pinion has a true counterbore to fit the boss *b'* of pendant-yoke *i*. (See Fig. 6.) The ends of the arbor *v* are pivoted in the top and bottom plates respectively. The pinion *f* therefore forms its axis on the boss *b'* of pendant-yoke *i*, and thereby allows of a large hole in said pinion, to permit of the arbor *v* on the swinging yoke with its stud *z* to be readily removed. By this construction the entire winding and setting mechanism can readily be taken apart by simply removing the top plate, *a*, and the mechanism adjusted from right to left hand, or vice versa.

Having thus fully described my invention, what I therefore desire to secure by Letters Patent is—

1. The combination, with the endwise-moving stem *l*, having its end formed in a square to receive the pinion *r* thereon, of the intermediate pinion, *f*, provided with both bevel and spur cogs, as shown, and operating

in conjunction with the gear-ring *d*, and pendant swinging yoke *i*, constructed, arranged, and operating substantially as and for the purpose set forth.

2. The combination, with the endwise-moving stem *l* and bevel-pinion *r*, of the double intermediate pinion, *f*, internally and externally geared ring *d*, externally and crown-ratched wheel *g*, stationary crown-ratchet *h*, spring *P*, stationary square stud *o*, and pendant swinging yoke *i*, these members being combined for operation substantially in the manner and for the purpose set forth.

3. The combination, with the pendant swinging yoke *i*, having arbor *v*, and forming the axis of the intermediate pinion, *f*, of the stud *z*, placed on the arbor *v*, below the said pinion, and operating in conjunction with the bifurcated lever *s* or its equivalent, and the endwise-moving crown-stem *l*, combined and arranged for operation substantially as and for the purpose set forth.

4. The externally and internally geared ring *d*, mounted in the pendant swinging yoke *i*, and operating in combination with the endwise and rotatory moving crown-stem, for the purpose set forth.

5. The externally and crown faced ratchet wheel *g*, rigidly fixed to the stem of the winding-drum *q*, and operating in conjunction with a crown-faced ratchet, *h*, movably fixed on a stationary square stud, *o*, or its equivalent, a spring, *P*, for holding said ratchet in gear, for the purpose described, combined with the externally and internally geared ring *d*, mounted in a swinging yoke, for alternately engaging and disengaging with the ratchet *g* by the crown-stem, for the purpose set forth.

6. The combination, substantially as hereinbefore set forth, of the endwise and rotatory moving crown-stem *l*, bifurcated lever *s*, click *t*, pendant swinging yoke *i*, sleeve *n*, bevel-pinion *r*, intermediate pinion, *f*, externally and internally geared ring *d*, gear-wheel *e*, spring *c*, externally and crown faced ratchet *g*, crown-ratchet *h*, spring *P*, and winding-drum stem, combined and arranged for operation as shown, for the purpose specified.

7. The externally and crown-faced ratchet-wheel *g* and crown-ratchet *h*, operating in conjunction with the externally and internally geared ring *d*, mounted in a swinging yoke and operating in combination with the endwise and rotatory moving crown-stem.

8. The combined externally and internally geared ring *d*, mounted in a pendant swinging yoke, and capable of being alternately thrown in gear with the hand setting and winding gears by the endwise and rotatory moving crown-stem.

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Witnesses:

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