H. R. SMITH & R. FOLSOM.

Improvement in Stem-Winding and Setting Watches.

No. 133,264. Patented Nov. 19, 1872.

Fig. 1.

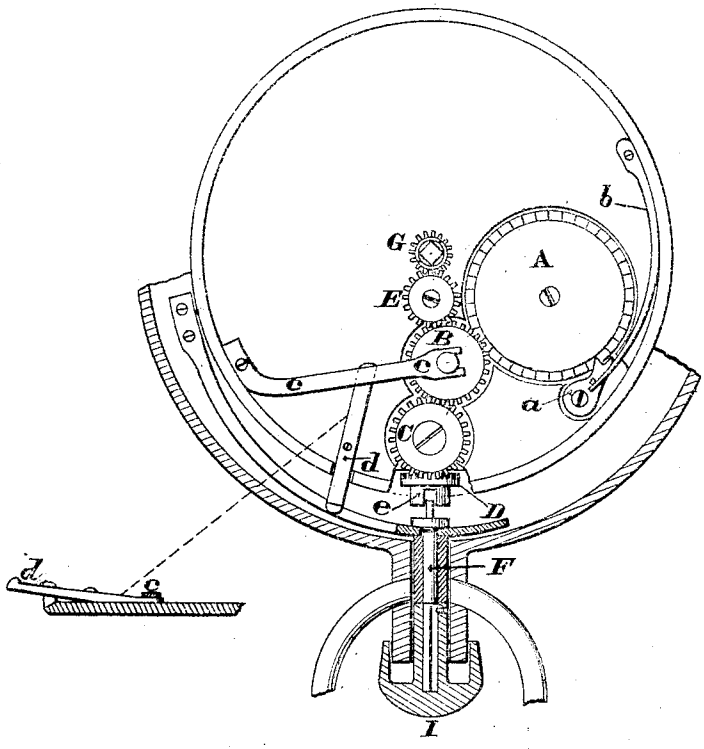
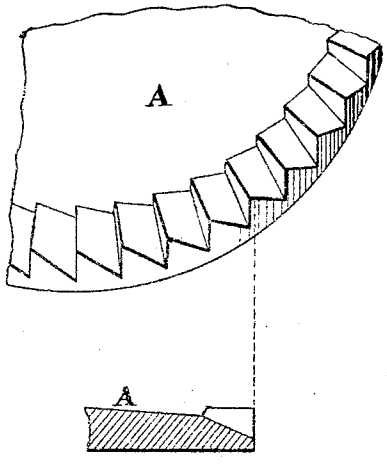


Fig. 2.



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UNITED STATES PATENT OFFICE.

HARRY R. SMITH AND RUFUS FOLSOM, OF CINCINNATI, OHIO.

IMPROVEMENT IN STEM WINDING AND SETTING WATCHES.

Specification forming part of Letters Patent No. **133,264**, dated November 19, 1872.

To all whom it may concern:

Be it known that we, HARRY R. SMITH and RUFUS FOLSOM, of Cincinnati, Hamilton county, Ohio, have invented an Improvement in Stem Winding and Setting Watches, of which the following is a specification:

Figure 1 is a perspective view of a watch embodying our improvement, the dial being removed so as to show the dial-plate of the watch, and the greater part of the winding mechanism. Fig. 2 is a section of the winding-wheel, and showing the shape of the teeth of the same.

Our improvement consists in making the wheel A, on the end of the mainspring-arbor, not only a winding-wheel, but, in connection with the wheel B that meshes into it, a "ratchet-back" arrangement, the object of which is to prevent damage being done to the watch in case of the winding-stem being turned the wrong way—that is, the reverse way of the winding direction. The wheel A is also a click-wheel, for holding the mainspring as the watch is wound up, as will be seen by its having a pawl, *a*, and spring *b*, as seen in Fig. 1. By having a row of teeth cut on one side of the wheel A in the contrate style, and giving these teeth the ratchet form, or nearly so—that is, perpendicular on one side, or nearly so, to the plane of the wheel—and on the other slanting back, thus making the latter side an inclined plane for the teeth of the meshing-wheel B to play in, and this meshing-wheel B having not only a rotary motion in the plane of the dial-plate, but an "up-and-down" motion perpendicular to it, even if the meshing-wheel be made a common spur-wheel in form, the following result will be attained, viz.: By turning the winding-stem I in the direction proper for winding the watch, the teeth of the wheel B will press against the perpendicular side of the teeth of the winding-wheel A, and the watch will wind up, the pawl *a* holding the wheel in the meantime; but reverse the winding-stem I, and the wheel B will rise sufficiently to slide along the inclined plane of the tooth on the wheel A, and thus slip easily by. Thus, the wheel B may be revolved backward on the teeth of the wheel A, or, in other words, "ratcheted back," without any disturbance to the watch mechanism. There is a spring, *c*, and lever *d*, under it, as is seen in drawing, Fig. 1. The spring *c* being fixed at one end to the arbor of the wheel B, while screwed fast at the other end near the edge of the watch-plate, will, if moved up or down, correspondingly raise or lower that wheel; also, as the lever *d* is curved, or so shaped on the lower side, it follows that, by pressing down its outer end, a rocking motion will be given to it, and the inner end teetered up; thus, by pressing down the outer end of this lever, we can raise the spring *c*, and at the same time the wheel B. Now, the normal condition of the wheel B is in connection with the wheel A, so that by turning the knob I the watch may be wound or "ratcheted back;" nevertheless, by a downward pressure, which may be done with the thumb on the outer end of the lever *d*, the wheel B will be raised into connection with the hand-wheel E, when, if the knob I is turned, the action will be off the winding-wheel A and on the hand-wheel E, and the watch can be set in either direction by the turning of the winding-knob I. Thus, by turning the winding-knob I, the watch may be wound, "ratcheted back," or the hands set, while the entire machinery will be cheap, easily made, and effective. Our third improvement is in the push-piece which passes through the case pendent stem. By having this push-piece short—that is, terminating a short distance inside of the case-spring—and having it made flat and broad—that is, screw-driver form—and having this screw-driver end go into a slot in the winding-arbor *e*, the said slot being cut something like the slot in the head of a screw, it is evident that, as the winding-stem I is turned in either direction, the arbor *e* will be turned likewise. Now, the arbor *e* is fastened to the watch-plate by bearings, which hold it firmly in place, and upon its outer end is a contrate-wheel, D, meshing into the wheel C. It follows that, when the push-piece *f* is in connection with the arbor *e*—and it will always be when the movement is properly put into the watch-case—by turning the winding-knob I the arbor *e* will be turned, and the winding or setting mechanism operated quite as well as would be the case if the push-piece were made long, as in many Swiss and American watches.

The advantage we claim for this plan is, that the winding and setting mechanism is

wholly inside of the watch-movement, while the push-piece is in the case pendent, and need not be removed either when the movement is to be taken out or put into the case. The screw-driver end being broad gives sufficient strength, and it is an easy matter to slip the movement in the case, and bring the end of the push-piece inside of the slot in the arbor, the connection having a close fit. We claim this form of connection between the push-piece and the winding-arbor to have an advantage in strength over plans heretofore used, while the push-piece, passing through the pendent stem, need not be removed in putting the movement in and taking it out of the case.

We claim as new and of our invention—

1. The combination and arrangement of the shifting-wheel B with a crown-ratchet on the barrel-wheel A, for the purpose of winding in one direction and allowing slip in the reverse direction, substantially as shown and described.

2. The screw-driver connection of the winding-stem F with the winding-arbor *e*, substantially as shown and described.

3. The plan of changing the connection of the winding-stem F from the winding to the setting mechanism, and vice versa, by the use of the lever *d*, which has a rocking instead of a sliding motion, substantially as shown and described.

In testimony of which invention we hereunto set our hands.

HARRY R. SMITH.
RUFUS FOLSOM.

Witnesses:
JAMES H. LAYMAN,
EDEN STROHM.