

C. V. WOERD.

Watch.

No. 101,398.

Patented March 29, 1870.

Fig. 1

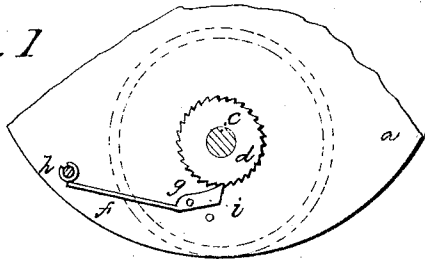


Fig. 5



Fig. 3

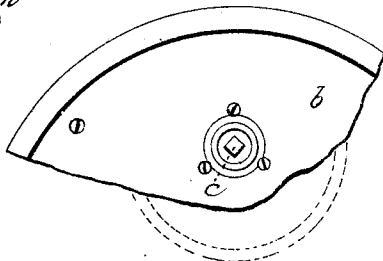


Fig. 2

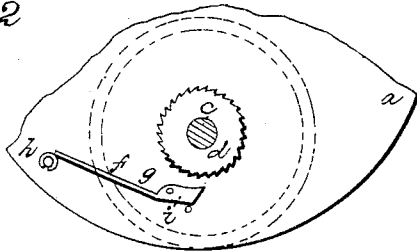
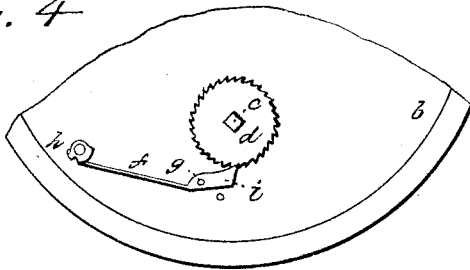


Fig. 4



Witnesses  
C. Warren Brown  
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# United States Patent Office.

CHARLES V. WOERD, OF WALTHAM, MASSACHUSETTS.

Letters Patent No. 101,398, dated March 29, 1870.

## IMPROVEMENT IN WATCHES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES V. WOERD, of Waltham, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Watches; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

This invention relates to a peculiar construction and arrangement of parts in a watch, by which, for convenience of watch-makers or repairers, in assembling the movement, and in taking it down for cleaning or repairs, the detaining-pawl, which holds the mainspring, is thrown in or out of gear with the teeth of the ratchet, fixed on the mainspring winding-arbor.

In the drawing—

Figure 1 exhibits in plan (on an enlarged scale) a portion of the inner surface of the dial-plate of a watch-movement, with the mainspring arbor (journaled therein) in section, and the ratchet-wheel fixed on said arbor in plan, and illustrating my improvement as connected therewith.

Figure 2 is a view similar to fig. 1, except that it shows the position of the parts to which my invention relates, by which the pawl is kept out of gear with the ratchet-wheel, while fig. 1 shows the position of said parts by which the pawl is kept in gear with the ratchet-wheel.

Figure 3 exhibits in plan a part of the opposite plate in which the working-arbor is journaled, and through which protrudes the device through which the position of the pawl is changed.

*a* is the dial-plate of a watch-movement.

*b* is the opposite or back-plate.

*c* is the arbor to which the mainspring is attached, and by which it is wound.

*d* is the ratchet-wheel, which is fixed to the mainspring arbor, and which, in connection with a detaining-pawl, *e*, operated on by a spring, which presses the pawl against the ratchet-wheel, holds the mainspring, as it is wound in the barrel in the ordinary way.

The dotted lines in the figures indicate the main gear on the mainspring barrel, through which the train is operated.

The pawl *e* is made with a long projecting spring, *f*, the pawl being pivoted as seen at *g*.

In the plates *a* and *b* is pivoted an arbor, *h*, with a cylindrical enlargement at that part where the spring *f* bears, so that it will be seen that the tendency of spring *f* to keep the pawl *e* in or out of gear with the teeth of the ratchet-wheel *d*, depends upon the posi-

tion of the end of the spring upon one or the opposite side of the arbor.

This being determined, it only remains to provide suitable means for shifting at will the position of the outer end of the spring *f* from one to the other side of arbor *h*, and for this purpose I slot the end of said arbor, like a screw-head, where it projects through the back-plate, as seen at *i*, fig. 3, near the winding-end of the mainspring arbor *c*, by which slot and a screw-driver the arbor *h* is easily turned, so that a slot formed in the enlarged cylindrical part of said arbor will catch the outer end of spring *f*, and will move it and leave it on one or the other side of arbor *h*, accordingly as the arbor is turned in one or the other direction.

The distance of the outer end of the spring *f* from the pivot *g*, should not exceed the distance of the bottom of the slot cut for its reception from said pivot.

When the end of spring *f* rests against the projection on arbor *h*, as seen in fig. 1, then the spring exerts a yielding pressure to keep the pawl engaged in the teeth of the ratchet-wheel *d*, and when set as seen in fig. 2, then the spring operates to keep the pawl away from the teeth of the ratchet, as seen in said figure.

When the slotted cylinder on arbor *h* is located against the inner surface of plate *a*, as seen in figs. 1 and 2, it is exposed to the view of the watch-maker, who will then govern his manipulations of the arbor in accordance with the requirements made manifest by his observation, but when the ratchet-wheel *d*, the pawl *e*, spring *f*, and slotted cylinder are placed outside of plate *a*, and concealed between it and the dial, then I make the projection on the arbor not only with a slot to receive the spring end, but of the form shown in Figure 4, and with a stop-pin, to prevent turning the arbor *h* too far in either direction.

Figure 5 shows in elevation the movement-plates, with my device attached thereunto, in the manner illustrated in figs. 1 and 2.

Suppose the mainspring fully wound, and the watch-maker desirous of relieving the tension thereof previous to dismembering or taking down the movement, the arbor *h*, being in the position shown in fig. 1, is turned to the position seen in fig. 2.

Then with a cylindrical key start the arbor and the ratchet-wheel in the direction in which the mainspring is wound, and then spring *f* will cause the pawl to fly back out of the ratchet-tooth with which it was engaged, and then the operator, by slackening his pressure on the stem of the key, will allow the mainspring to gently uncoil.

This is done by holding the movement by the fingers of one hand, while the fingers of the other are left free to make use of the screw-driver first and then the key next, for it will be observed that notwithstanding change in the position of the spring *f*, the pawl does not lose control of the ratchet until the operator starts the ratchet with a winding-key, at which time he has full control of the mainspring.

I am aware of the existence of other devices for the accomplishment of the same end, but know of

none so simple and convenient as this which I have described.

I claim the combination of the pawl-spring with a device for changing the position and direction of stress of the spring, substantially as and for the purpose described.

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Witnesses:

GEO. H. SHIRLEY,  
WM. H. GRAVES.