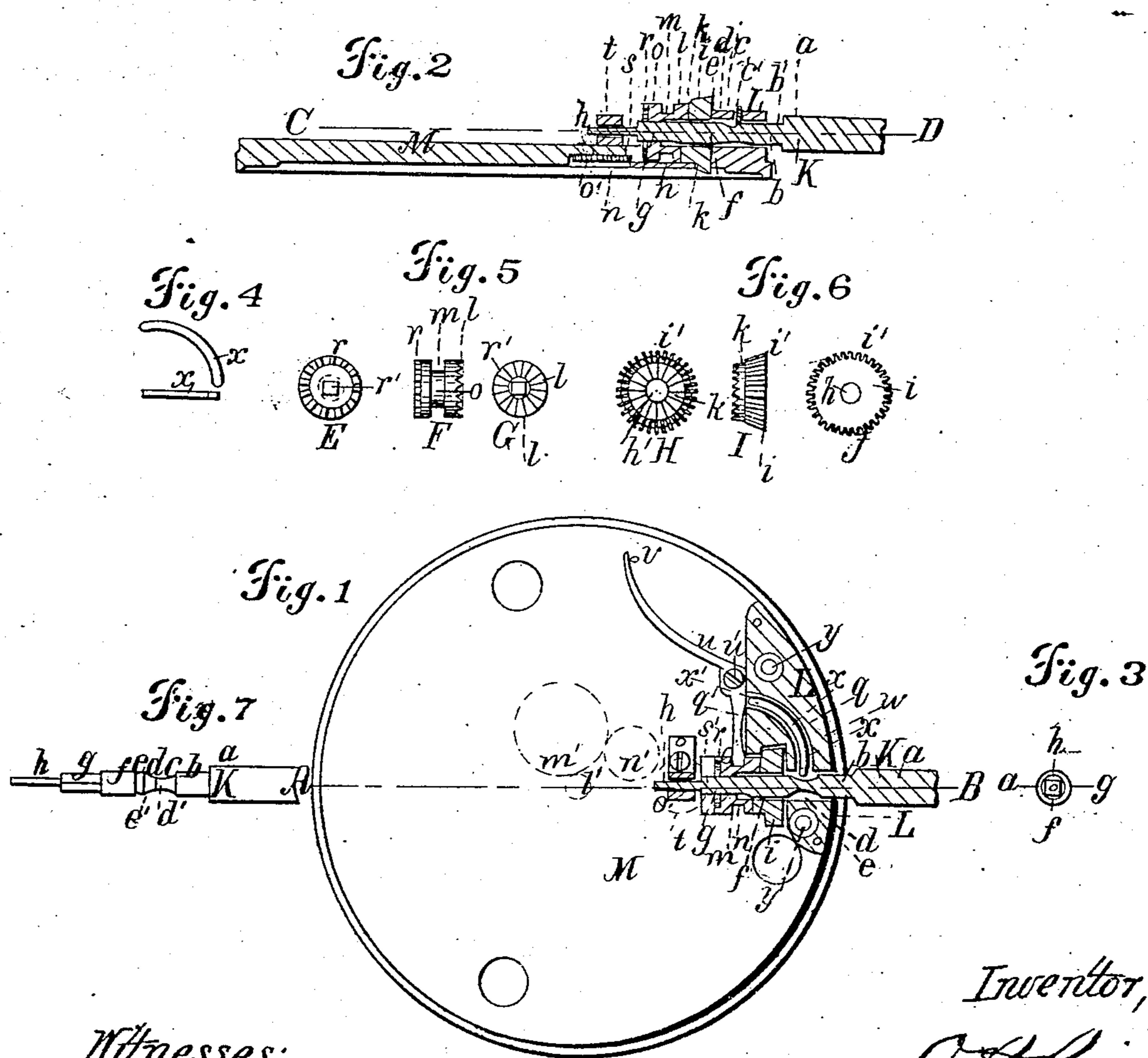


RICE & GERRY.
Stem Winding and Setting Watch.

No. 78,693.

Patented June 9, 1868.



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Letters Patent No. 78,693, dated June 9, 1868.

IMPROVEMENT IN STEM-WINDING AND SETTING 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 we, O. P. RICE and J. H. GERRY, of Springfield, in the county of Hampden, and Commonwealth of Massachusetts, have invented a new and useful Improvement in Apparatus for Stem-Winding and Setting Watches; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a horizontal section of the winding and setting-apparatus of the watch through line C D of fig. 2.

Figure 2 is a vertical section of the winding and setting-apparatus through line A B of fig. 1.

Figure 3 is an end view of the arbor.

Figure 4 is a plan and end view of the segment.

Figure 5. E is an end view, F is a side elevation, and G a reverse end view of the clutch.

Figure 6. H is an end view, I is a side elevation, and J a reverse end view of the winding-gear or wheel, and

Figure 7 is a side view of the arbor.

The nature of our invention consists in the construction and arrangement of the several parts of a stem-winding and setting watch, whereby the watch may be wound, when the winding-arbor is in one position, and by slightly withdrawing the winding-arbor from the stem of the watch, the winding-gear is disengaged, and the gear engaged for setting the hands.

As stem-winding watches are ordinarily constructed, the operation of winding the watch is performed by turning the winding-arbor which protrudes through the stem, and if it is desired to set the hands, it is either done with a key through the case, or a push-pin or lever, which protrudes from the working-parts through the case, is pressed in or moved, which disengages the winding-gear and engages the setting-gear. In this case provision has to be made, in casing the works, for the position of the said push-pin or lever, which involves more or less labor and expense, which, in our invention, it is our purpose to avoid.

The ordinary arrangements of stem-winding and setting watches involve a system of levers, which are both complicated and delicate in form and construction, and consequently liable to get out of order. We endeavor to obviate these objections, and in our invention produce an arrangement which insures simplicity, durability, and quickness of operation.

Our improvement consists in constructing the winding-arbor in such manner, and so combining it with a segment and spring-lever, that the operation of pulling out the said arbor causes the lever and clutch to be forced or carried in the opposite direction, by means of the segment and an incline or taper made upon the said arbor.

That others skilled in the art may be able to make and use our invention, we will proceed to describe its construction and mode of operation.

In the drawings—

K represents the winding and setting-arbor, the part *a*, in practice, terminating in a milled head, for the purpose of more easily turning the arbor in the operation of winding and setting the watch, the part *b* being somewhat smaller in diameter, and beyond the part *b* we make a short portion of the arbor, as *c*, smaller than the part *b*, and that portion *d* of the arbor, between the points *d'* and *e'*, we make in the form of a truncated cone. Beyond this conical portion *d* is the cylindrical part *f*, having a small annular groove, *e*, upon one end, adjacent to the conical part *d*, and we make the part *g* prismatic in form, the portion *h* being of smaller diameter than the part *g*.

All of these different parts of the arbor K, except the portions *d*, *g*, and *e*, which have been above described, we make cylindrical, to secure compactness and facility in operation, although the arbor would perform its functions if its cylindrical portions were made prismatic or polyhedral.

To the plate M is secured the bridge L, by means of the screws *y y*, and in said bridge L, upon its under side, is cut the segmental groove *w*.

To the plate M is also attached the spring-lever *q'*, by means of the screw or pivot *u'*, one end of said lever *q'* terminating in the spring *u*, the end of which bears against the pin *v* inserted in the plate M.

z is a wheel, having a circular hole, h' , therein, and the ratchet-teeth k upon one side, and its edge bevelled with the teeth z' thereon. This wheel z turns freely upon the part f of the arbor K.

o represents a cylindrical clutch, having an annular groove or channel, m , and upon one end the teeth r , and upon the other end the ratchet-teeth l . This clutch o has a circular hole, n , a portion of the way through it, of a size to fit loosely the part f of the arbor K, while the remainder of the perforation in the clutch o is rectangular or prismatic, to fit the prismatic portion g of the arbor K.

The bearing, t , is secured to the plate M in any suitable manner, for the part h of the arbor K to ride in, and a small portion of said plate M is cut away, at s' , to allow of the longitudinal movement of the clutch o , and upon the reverse side of the plate M is secured the wheel o' , which receives power from the teeth r on the clutch o , said wheel o' being also connected with the system of wheels, $v' m' n'$, which are common to many stem-winding and setting watches, for the purpose of setting the hands.

Into the segmental groove w is placed the segment x , which fits sufficiently loose in the groove as to move freely in the direction of the said groove w .

The small screw c' is inserted from the top through a hole in the bridge L, its lower end protruding sufficiently near the small neck c to prevent the arbor K from being withdrawn further than is necessary, as, when the arbor K is pulled out, the conical portion d of the arbor K comes in contact with the end of the small screw c' , and thus prevents the arbor K from being any further withdrawn.

Having thus described the construction of our apparatus, we will now proceed to describe the mode of its operation.

The arbor K is inserted in the perforation made in the bridge L for that purpose, and also into the perforations made in the wheel z and the clutch o , and the part h of the arbor K inserted in its bearing t , until the several parts are in their several proper positions, the wheel z rotating upon the part f of the arbor K, and the clutch o working upon the part g of the said arbor.

The segment x is then inserted into its groove w , and the bridge L is then attached to the plate M in a proper manner, and the small screw c' inserted in its place in the bridge L, immediately over the neck c of the arbor K, and the bearing t is also attached properly and securely to the plate M. The spring-lever q' is then attached to the plate M by means of its pivot u' , the end, q , of the said spring-lever q' being inserted in the annular channel or groove m of the clutch o , its other end bearing against the pin v .

The several parts being now properly in place, the action of the spring u , by bearing against the pin v , forces the end q of the lever q' always towards the wheel z , and the end q , being engaged with the clutch o by its groove m , the said clutch o is also forced against the wheel z , so that the ratchet-teeth l upon the clutch o engage with the ratchet-teeth k upon the wheel z , whenever the clutch o is rotated in one direction, and power is communicated from the clutch o to the wheel z , the square or prismatic portion g of the arbor K fitting into the rectangular perforation in the clutch o , and communicating power from the said arbor to the clutch o , while, if the clutch or arbor be rotated in the opposite direction, the inclined sides of the ratchet-teeth l upon the clutch o ride upon and over the inclined sides of the ratchet-teeth k , upon the wheel z , and no power is then communicated.

The relative positions of the clutch o and the wheel z are shown at F and I in figs. 5 and 6, fig. 1 showing the said wheel z and clutch o with their ratchet-teeth engaged. If, in this position, the arbor K be rotated in the proper direction, the watch will be wound, the wheel z , which rotates freely upon the part f of the arbor K, communicating power, which it receives from the clutch o , to the winding-apparatus, not necessary to be shown in the drawings.

If the arbor K be turned in the other direction, the ratchet-teeth of the clutch o will ride over the ratchet-teeth upon the wheel z , and no harm can be done by turning the winding-arbor K in the wrong direction. This particular feature, however, we do not claim, as it is common to other stem-winding watches.

If now the arbor K be slightly withdrawn, one end of the segment x will ride up the incline or truncated cone d , the other end, x' , of the segment x bearing against the lever q' , and as the said incline or truncated cone d moves further out, it forces the segment x further along in its groove w , towards and against the lever q' , thereby forcing that also in the same direction, or away from the wheel z . The end q of the lever q' being engaged with the clutch o , the said clutch o is also moved along the arbor K in the same direction, or away from the wheel z , until the ratchet-teeth l of the clutch o become disengaged from the ratchet k of the wheel z , and the teeth r , upon the opposite end of the clutch o , become engaged with the teeth upon the wheel o' . If now the arbor K be rotated in either direction, power will be communicated from the clutch o to the wheel o' , which, by means of the arrangement of wheels $m' l' n'$ will rotate the hands in either direction.

While the apparatus is in this position for turning the hands, the end of the segment x , which rides up over the incline or truncated cone d , rests in the annular groove e upon the arbor K, which holds the said arbor in the same position until the hands shall have been set, when the arbor K may be again pushed in, thereby disengaging the setting-gear.

We are aware that various devices have been used, wherein a reciprocating arbor was employed for the purpose of both winding and setting the watch, but never, to our knowledge, has a device in any particular similar to our invention been used.

Having therefore described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The reciprocating arbor K, having the incline d and annular groove e , in combination with the segment x and spring-lever q' , when constructed and operating substantially as herein described and set forth.

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