(No Model.)

J. ZELLY.

STEM WINDING AND SETTING MECHANISM FOR CLOCKS AND REGULATORS.

No. 342,415. Patented May 25, 1886.

Fig. 1.

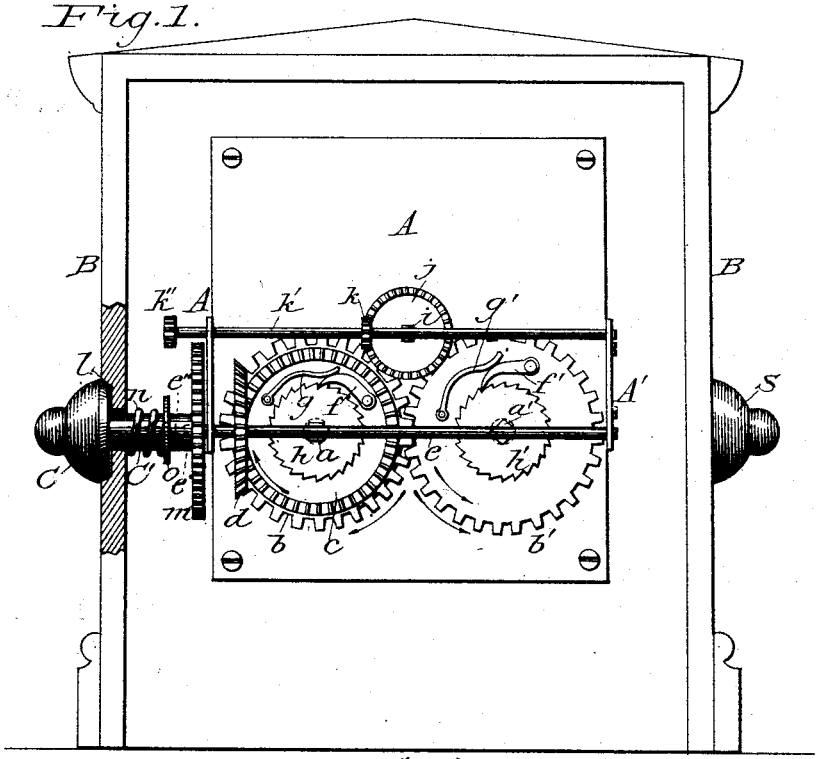


Fig. 2.

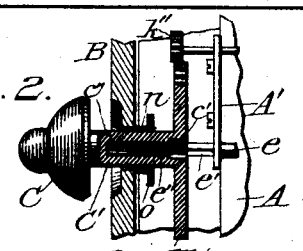
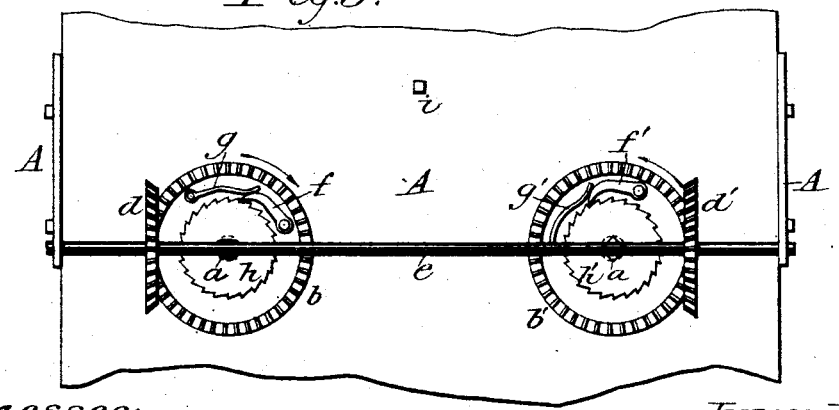


Fig. 3.



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STEM WINDING AND SETTING MECHANISM FOR CLOCKS AND REGULATORS.

SPECIFICATION forming part of Letters Patent No. 342,415, dated May 25, 1886.

Application filed November 17, 1885. Serial No. 183,129. (No model.)

To all whom it may concern:

Be it known that I, JOHN ZELLY, a subject of the Emperor of Germany, residing at Cincinnati, Hamilton county, State of Ohio, have invented a new and useful Separate Stem-Winding Clock, of which the following is a specification.

My invention relates to such clocks and regulators as are driven by one or more springs; and the object of it is to provide a simple, durable, and easy winding and setting mechanism, which winds either spring separately, and also sets the hands, dispenses with key-holes in the dial-plate, removal or turning or of the clock, and opening of the glass front, and makes it consequently more dust-proof. It also guards against any possible damages to the clock mechanism arising from turning the wrong way, as my device is operative, no matter which way the handle may be turned. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a rear view of a clock, partially in section, and the back of the clock-case being removed. Fig. 2 shows in a sectional view the other position of the winding handle or knob and its accessory parts. Fig. 3 shows in a similar view to Fig. 1 a modified form of my invention.

Each of the mainspring-arbors *a a'* carries on one of its ends loose gear-wheels *b b'*. Rigidly connected to one of them (in this case wheel *b*) is a bevel-wheel, *c*, which derives motion from another bevel-wheel, *d*, on shaft *e*. Shaft *e* rests and revolves in two bearings, A' A', extending from the clock-movement frame A. The square portion *e'* of shaft *e* fits into a corresponding recess, *c'*, in stem C' of sliding handle or knob C. Beyond the square portion *e'* the shaft becomes round again at *e''*. This round end *e''* slides in the continuation *c''* of recess *c'* in stem C'. Stem C' extends through the clock-case, and has connected to its external termination a suitable knob or handle, C. That portion of handle C which is nearest to the clock-case is tapering inwardly, and fits in a corresponding recess or socket, *l*, in the clock-case. By this arrangement a close and tight joint is secured.

The winding of the springs is done in the following manner: Turning knob C to the right, the square recess *c'* and the square portion *e'* of shaft *e* compel shaft *e* and wheel *d* to follow. Wheel *d* turns wheel *c* in the direction of the arrow. Wheel *b*, being rigidly connected or in one piece therewith, turns in the same direction. Wheel *b'*, being in gear with wheel *b*, and following it in the direction of the arrow, carries a pawl, *f'*, kept from displacement by spring *g'*, which engages with ratchet-wheel *h'*, compelling it to rotate. This ratchet-wheel sits on the square termination of the spring-arbor, *a'*, to which one end of the corresponding spring is connected, and as the arbor turns with the ratchet-wheel the winding of the respective spring is accomplished. While this is going on, pawl *f*, with spring *g*, sitting on wheel *b*, recedes from the ratchet-wheel *h*, which sits on the square termination of the other spring-arbor, *a*, leaving these parts undisturbed.

In turning knob C to the left all wheels revolve in opposite direction, as explained above and indicated by arrows. Pawl *f* engages with ratchet-wheel *h*, which turns spring-arbor *a* and winds the corresponding spring. Pawl *f'* recedes, now, from the ratchet-wheel *h'*, which remains stationary. Those ratchet-wheels commonly used in all clocks (not shown in the drawings) may be placed at the other ends of the spring-arbors or at the same ends between the clock-movement frame and the wheels *b b'*.

That portion of my invention appertaining to the setting of the hands is constructed and operated in the following manner: The center shaft or hand-arbor, *i*, extends far enough back and out of the clock-movement frame A, so that crown-wheel *j* may clear sufficiently any other parts of the winding device. This crown-wheel follows the motion imparted to it by pinion *k* on shaft *k'*, which revolves in the upper portion of bearings A' A'. That end of shaft *k'* next to the knob C extends beyond its bearing, and carries a pinion, *k''*. By pulling knob C out of its socket, wheel *m*, sitting on stem C', will engage with pinion *k''*, (see Fig. 2,) and by turning knob C to the right or left while in this position the hands may be turned in either direction. Wheel *m* turns pinion *k''*, and pinion *k*, sitting on same shaft with pinion *k''*, turns the crown-wheel *j*, which sits on the hand-arbor. As crown-wheel *j* and

pinions *k* and *k''*, are always following the motion of the hands, it is necessary that handle C should always be pushed in after the setting of the hands, so as to disengage wheel *m* from pinion *k''*.

To guard against forgetfulness of the operator, a spiral spring, *n*, bearing against flange *o* on stem C', may be inserted, which pulls handle C, with stem C' and wheel *m*, back into its socket as soon as the handle is released. That round end portion, *e''*, of shaft *e*, which in all positions of handle C remains in its recess *c''* in stem C', acts as a central guide against displacement, and insures a secure engagement of the square portion *e'* into its recess *c'*. For symmetrical and ornamental reasons another knob, S, may be placed on the other side, but is without any function.

Fig. 3 shows a clock with very large spring-barrels, as where the springs are some distance apart. In such a case the wheels *b b'* would have to be very large. To overcome this I substitute (without changing the spirit of my invention or adding another one) an additional wheel, *d'*, with like functions as wheel *d*. In turning the winding-handle to the right or left the same actions will take place, and one or the other spring will be wound in the same manner as already described, ratchet-wheels, handle, and setting device all remaining the same.

Many other modifications might be substituted without constituting a new invention.

Shaft *e* may be vertical or in any other suitable place to conform to the style of the clock-case. Neither do I confine myself to the kind of gear-wheels used — they may be tooth, crown, or bevel wheels — nor to any particular kind of ratchet device.

Having thus described my invention, what I claim, and want to secure by Letters Patent, is as follows:

1. In a stem-winding clock, the adjustable handle C, with stem C', recessed at *c' c''*, and shaft *e*, carrying wheel *d*, portions *e' e''* of shaft *e* fitting into said recesses *c' c''*, and portion *e''* acting as central guide to stem C' of knob C.

2. In a stem-winding clock, the winding device consisting in the combination of handle C, recessed stem C', and shaft *e*, carrying wheel *d*, with winding-wheels *c b b'*, sitting loose on their respective spring-arbors, having springs and pawls *g f g' f'*, and ratchet-wheels *h h'* being fast with their respective spring-arbors.

3. In a stem-winding clock, handle C, with stem C', being recessed and receiving the end portions of shaft *e*, as above described, and shaft *e*, carrying wheels *d d'*, which are in gear with winding-wheels *b b'*, sitting loosely on their respective spring-arbors, having springs and pawls *g f g' f'*, which, as handle C is turned either one or the other way, act alternately and separately on their corresponding ratchet-wheels, *h h'*, being fast with their respective spring-arbors.

4. In a stem-winding clock, the hand-setting device consisting of adjustable handle C, stem C', carrying wheel *m*, the whole sliding on and being guided by a portion, *e''*, of shaft *e*, and held in its normal position by spring *n*, bearing against flange *o*, and pinion *k''*, into which wheel *m* engages when handle C is pulled outwardly, and which sits on shaft *k'*, on which sits another pinion, *k*, which imparts motion to crown-wheel *j* on hand-arbor *i*.

5. In a stem-winding clock, the combination of handle C, recessed stem C', shaft *e*, with wheels *d*, winding-wheels *b c b'*, and ratchet-wheels *h h'*, with wheel *m*, pinions *k'' k* on shaft *k'*, journaled in bearings A' A', and crown-wheel *j*.

In testimony of which invention I hereunto set my hand.

JOHN ZELLY.

Witnesses:
AARON E. MOORE,
CARL SPENGEL.