

G. P. REED.

Stem-Winding and Setting Watches.

No. 139,735.

Patented June 10, 1873.

Fig. 1.

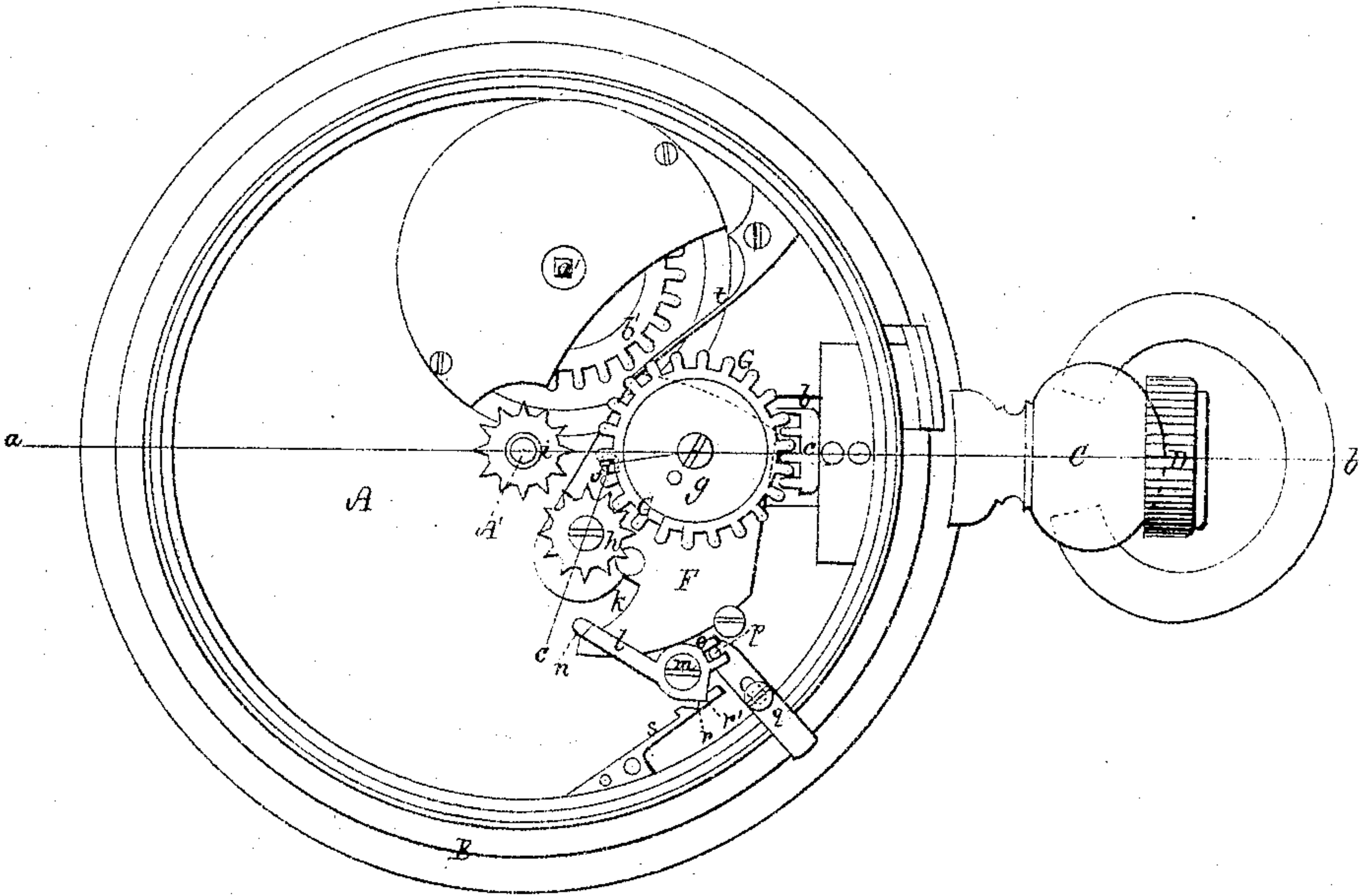


Fig. 2.

on line a.b. of Fig. 1.

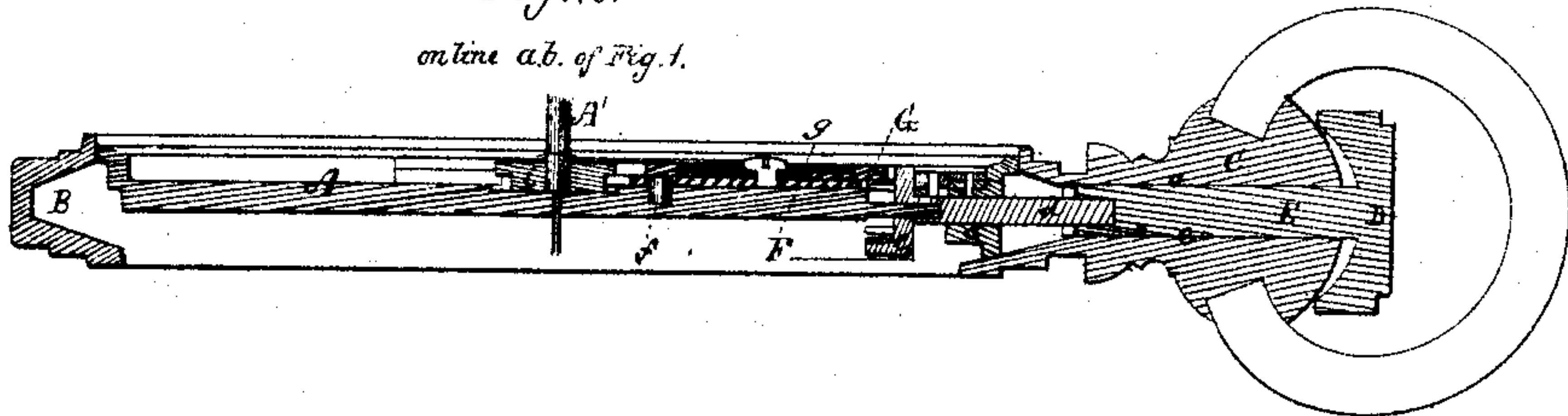
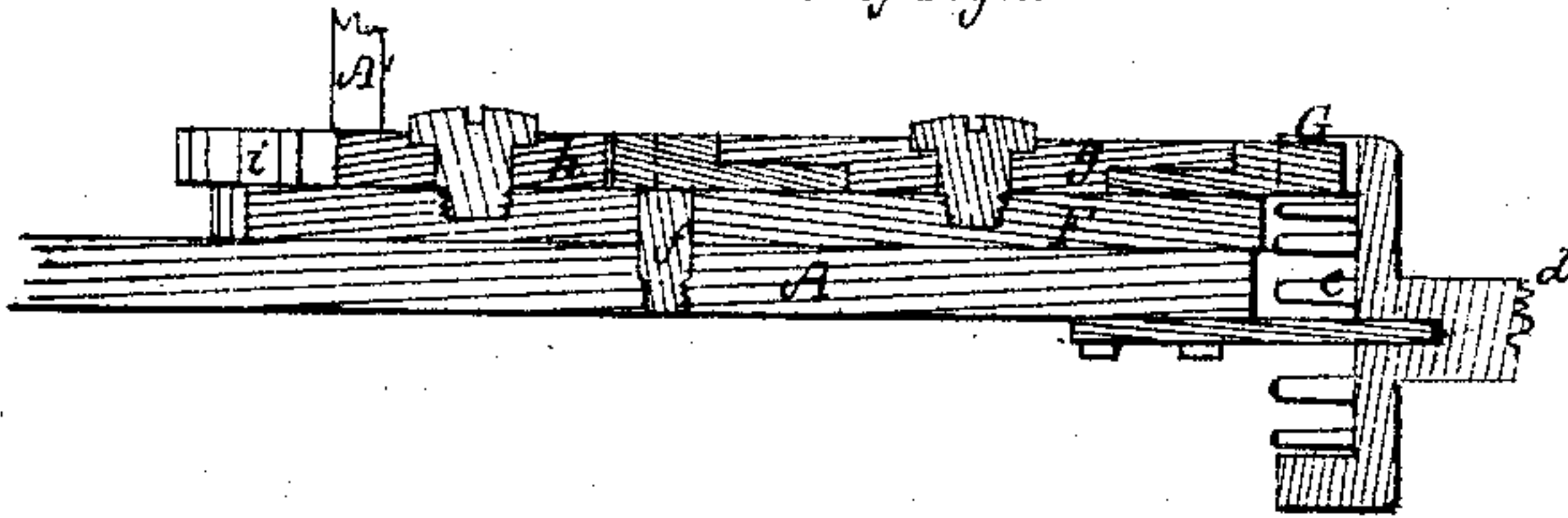


Fig. 3.

on line c.b. of Fig. 1.



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GEORGE P. REED, OF MALDEN, MASSACHUSETTS.

IMPROVEMENT IN STEM WINDING AND SETTING WATCHES.

Specification forming part of Letters Patent No. **139,735**, dated June 10, 1873; application filed March 14, 1873.

To all whom it may concern:

Be it known that I, GEORGE P. REED, of Malden, Middlesex county, Massachusetts, have invented a Stem-Winding and Hand-Setting Watch, of which the following is a specification:

My stem-winding and hand-setting mechanism is located below the dial of the watch. It is characterized by the employment of a swinging plate carrying two gears or toothed wheels, meshing permanently into each other and pivoted to it, one at times meshing into a toothed wheel on the winding-arbor to wind up the mainspring, and the other at times engaging a toothed wheel on the "hands"-arbor to set the hands; the plate being swung toward the winding-arbor, to engage the toothed wheel thereon, by the rotation of a crown-pinion or its equivalent, pivoted to the main plate of the watch and rotated by the "pendant"-knob, as hereinafter explained. With the swinging plate thus arranged I also combine a spring for pressing it away from the winding-arbor; and I further combine with these instrumentalities a latch and shipping arrangement, so arranged as to either permit the spring above named to force the plate and its gears over to the hands-arbor, or to hold said plate out of engagement with the hands-arbor, and in such position that the proper rotation of the crown-pinion may carry it over to engage the winding-wheel.

I shall now proceed to describe my invention in detail.

The drawings accompanying this specification represent, in Figure 1, a rear-face view of the main plate of a watch with my improvements applied thereto, Figs. 2 and 3 being sections of the same.

In these drawings, A denotes the main or pillar plate of a watch, A' the hands-arbor, and B the inclosing ring or "center" of the case of the same, the pendant of such case being shown at C and the winding-knob of such pendant at D; such knob having a hollow or socketed spindle or shank, E, which passes through, or nearly through, a passage, a, made in it and the center B. a' denotes the winding or barrel arbor, and b' a toothed wheel fixed upon the same. In that side of

center I produce an opening, b, and within this opening I dispose a crown-pinion, c, such pinion possessing a square stem or tenon, d, which finds a bearing in the circumference of the plate, and protrudes beyond the outer face of such plate. The spindle of the pendant-knob is formed with a square socket, e, into which the tenon of the crown-pinion enters when the plate A is inserted in place within the center, thus permitting the knob to turn the pinion in one or the other direction. F in the drawings represents a sectoral carrier-plate disposed upon the main plate, and pivoted at its apex or smaller end to such pillar-plate by a stud, f, as shown in Fig. 2 of the drawings, this pivot of the carrier-plate being about opposite the axis of the crown-pinion c before named. To the outer face of the carrier-plate, and near its apex, I pivot a spur-gear wheel, G, upon a circular disk, g, this pivotal disk g being substantially upon a line with the pivot f and the axis of the crown-pinion, in order that a slight swaying of the carrier-plate upon its pivot shall not throw the wheel G out of engagement with the wheel on the winding-arbor, into which it meshes permanently. At one corner of the carrier-plate F, or that nearest the hands-arbor, I pivot a star-toothed wheel, h, this wheel being disposed upon a concentric line struck from the pivot of the carrier-plate and intercepting the axis of the hands-arbor, and situated immediately adjacent to a second star-toothed wheel, i, of substantially like size and form, attached to the hands-arbor; my object in adopting this form of tooth for the wheels h and i being to enable the teeth of one to part from those of the other without disturbing the position of the hands, as would be the case were the ordinary form of teeth employed. In the circumferential end of the carrier-plate, and about centrally thereof, I create a tapering notch or aperture, k, widening outward, as shown in Fig. 1 of the drawings; while operating in connection with this notch I employ a latch or shipper, composed of a bar, l, pivoted, by a screw or stud, m, to the pillar-plate A, the free or vibratory end of this bar extending over the adjacent corner of the carrier-plate, and formed upon its inner extremity with a hook or catch, n, to enter

the notch k of said plate. The shipper or bar l is a bent lever, the outer and shorter arm o of which is bifurcated, and receives a stud, p , erected upon the inner end of a slide or plate, q , pivoted to the pillar-plate A , and to one side of and about parallel to the said shipper l . The base of the lever or shipper l is V-shaped, and takes into one of two similarly-formed notches, r or r' , formed in the free end of a spring-latch, s , which is affixed to the plate A , and below or outside of the shipper, as shown in Fig. 1 of the drawings, this spring latch, with its two notches, serving to retain the shipper in one or the other of its extreme positions. A spring, t , is affixed to the plate A alongside of the wheel b' of the winding or mainspring arbor, and in such position with respect to the carrier-plate F as to rest upon the apex of the same, the stress of the spring thereupon tending to force the wheel g away from and out of engagement with the said wheel b' .

The above description embraces the mechanical construction of the mechanism comprising the subject of my present improvements, the action of such mechanism being as follows: The sectoral-plate being in one of its extreme positions, as shown in Fig. 1 of the drawings—that is to say, with the wheel h out of engagement with the wheel i , and the hook of the shipper l situated at the mouth of the flaring notch k but bearing upon the lower side of the latter, the carrier-plate is free to swing or play upon its axis in one direction at the instance of the crown-pinion c , but is locked against play in the opposite direction by the hook of the shipper l .

If winding of the watch is the object sought, the pendant-knob is turned to the right in the usual manner, or in the direction shown by the arrow in Fig. 1, which puts the crown-pinion in partial rotation in the same direction; such partial rotation of said pinion, acting upon the wheel g , throws or swings the carrier-plate toward the wheel b' and engages the said wheel g with the wheel b' , the ensuing rotations of the crown-pinion and wheel g effecting corresponding rotations of the winding-arbor, and the “winding up” of the mainspring. Upon releasing the pressure upon the knob D the spring t turns the sectoral plate upon its pivot and throws the wheel g out of engagement with the wheel upon the winding-arbor, thus permitting the entire winding mechanism to remain idle except at such times as the mainspring is being wound up.

When it is desired to set the hands the slider q is pulled outward to its fullest extent, which act throws the free end of the shipper l toward the pivot of the wheel g , and drives the wiper-stud n of such shipper into the notch k of the carrier-plate F , by this means allowing the spring t to swing the said plate upon its pivot toward the hands-arbor, and compelling the wheel h to take into the wheel i upon such hands-arbor. Under this condition of parts the shipper l is locked in posi-

tion against accidental misplacement by the notch r of the spring-latch s , the carrier-plate F is estopped from movement in any direction, and the wheel g not allowed access to the wheel b' upon turning of the knob and crown-pinion. The hands may now be set in any position, as a turn of the knob in either direction effects a counter-movement of the hands-arbor and hands through the agency of the crown-pinion c and wheels g , h , and i .

The “setting” of the hands having been accomplished, the slider q is pushed inward, which throws the shipper l out of the notch k and leaves the plate F free to be forced toward the wheel b' , the outward thrust of the shipper effecting, by the action of its stud n upon one side of the notch k , the swinging of the carrier-plate F away from the hands-arbor and wheel i , and into the position assumed at our starting-point. If the operator fails to push in the slider q after setting the hands, the case, in closing, wipes against the slider and effects the object.

The winding mechanism is at rest except at the moment of winding up the mainspring, consequently little wear results to it. The reverse rotation of the knob has no effect upon the winding-arbor or its wheel, as the spring t throws the plate F instantly away from the wheel of the winding-arbor the moment the forward pressure upon the knob ceases.

I am enabled, should it become necessary or desirable at any time, to wind the watch or set the hands by the use of a key, as the winding mechanism, as before stated, is isolated from the winding-arbor or the hands-arbor except at the time of winding up the mainspring. In this manner, if the stem-winding mechanism gives out, a key becomes available.

Sufficient friction exists between the wheel G and its disk-pivot g to overcome the power of the spring t when the plate F is turned by the crown-pinion c toward the wheel b' on the winding-arbor, while at the same time this friction is so light that the reverse turn of the crown-pinion and knob is hardly perceptible.

By my method of arranging the carrier-plate F and wheels G and h in relation to the winding and hands arbors and their actuating wheels, I am enabled to dispense with a pawl and ratchet-wheel in connection with the winding-knob, and thus do away with the disagreeable sound consequent upon such pawl and wheel.

When in the position shown in Fig. 1 of the drawings the shipper l locks the carrier-plate F in such a condition that the reverse or rearward turn of the knob and crown-wheel cannot throw the carrier-plate and its wheel h toward or into contact with the wheel upon the hands-arbor.

I claim—

1. In stem-winding and hand-setting mechanism for watches, a swinging plate carrying two gears or toothed wheels, meshing permanently into each other and pivoted to it,

one at times meshing into and driving a toothed wheel fixed upon the winding-arbor, to wind up the mainspring, and the other at times taking into a toothed wheel fixed upon the hands-arbor, to set the hands, the plate being swung toward the winding-arbor and the latter wheels engaged by the rotation of a crown-pinion pivoted to the main plate of the watch and rotated by the pendant-knob, substantially as and for purposes stated.

2. In combination with the swinging carrier-plate and its two wheels, arranged with relation to the hands-arbor and the winding-arbor, and operated to move toward the latter by the crown-pinion *c*, as described, the

spring *t*, arranged and operating substantially as shown and set forth.

3. In combination with the swinging carrier-plate and its two wheels, arranged relatively to the hands-arbor and the winding-arbor, and operated to move toward the latter by the crown-pinion *c*, as described, the spring *t*, shipper *l*, slider *q*, and spring-latch *s*, said parts being arranged together for joint operation as shown and set forth.

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