

(No Model.)

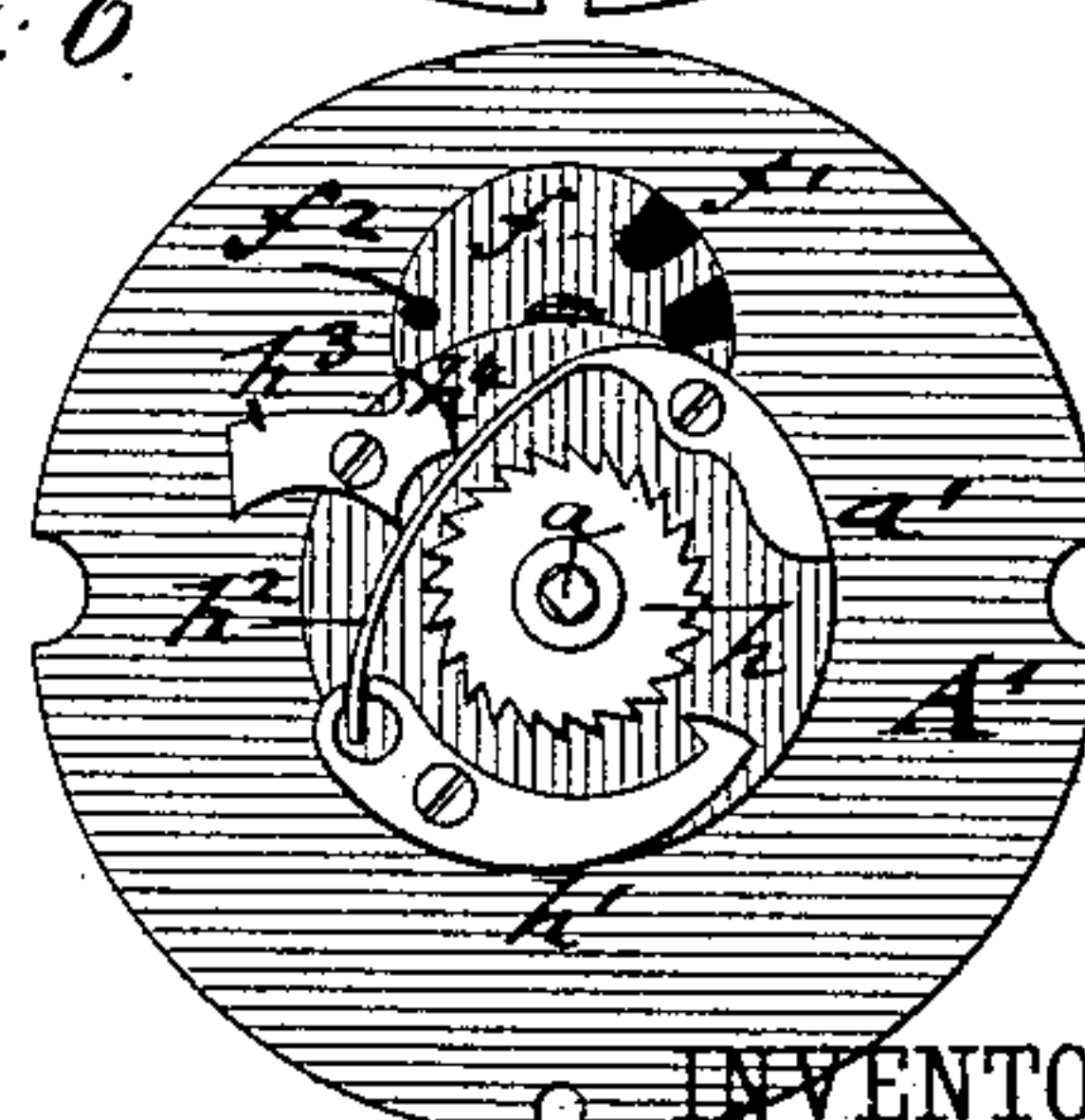
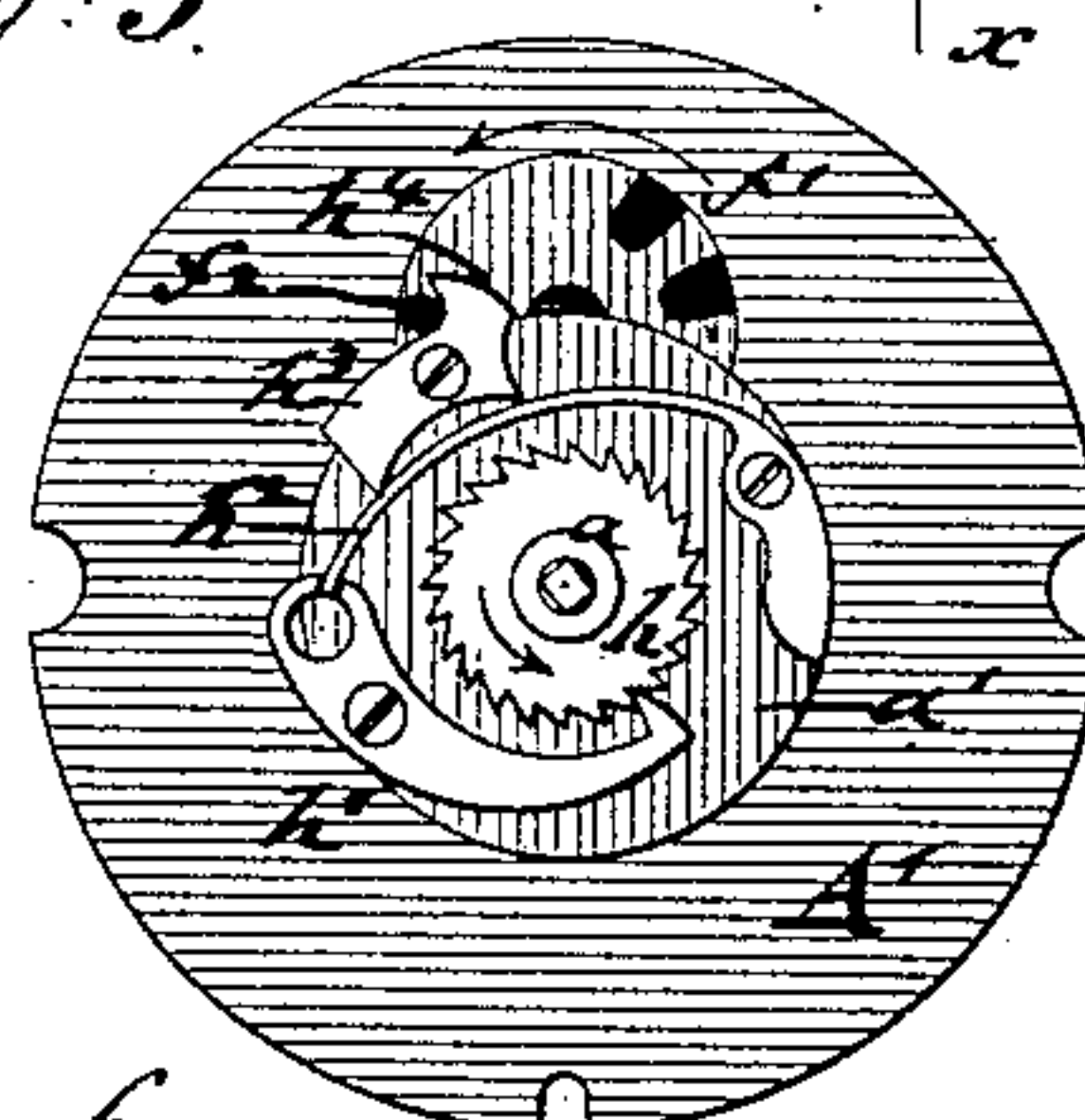
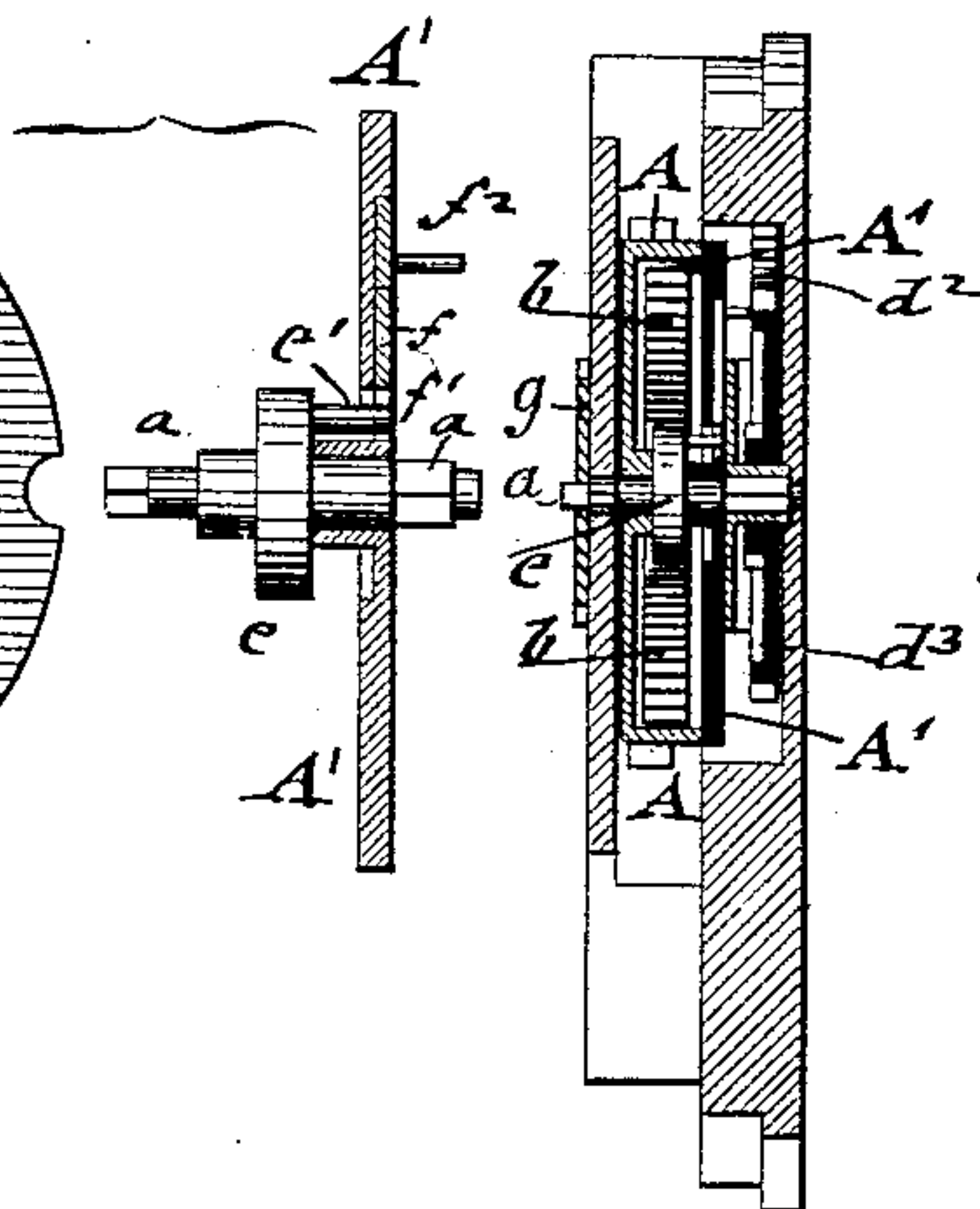
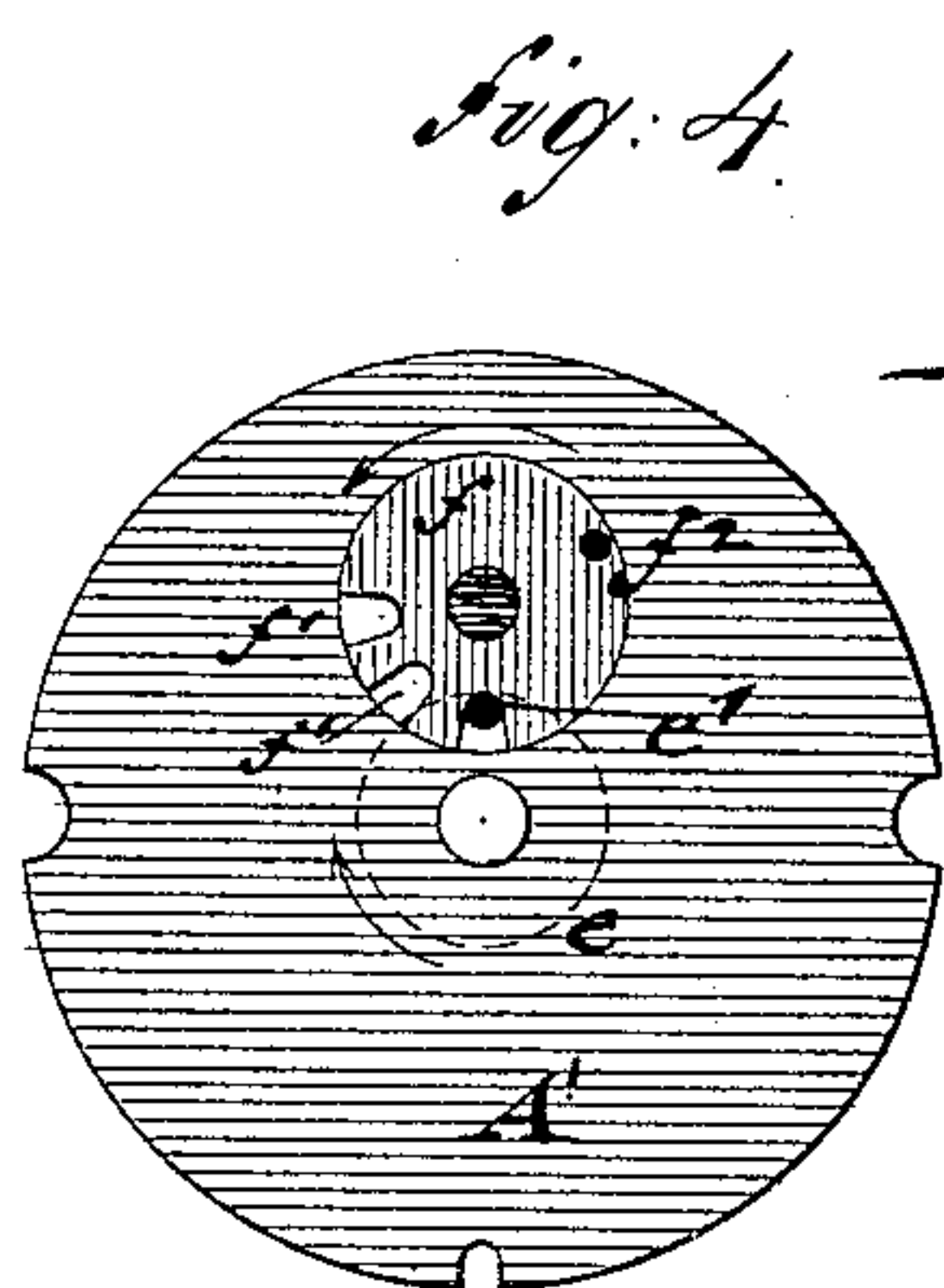
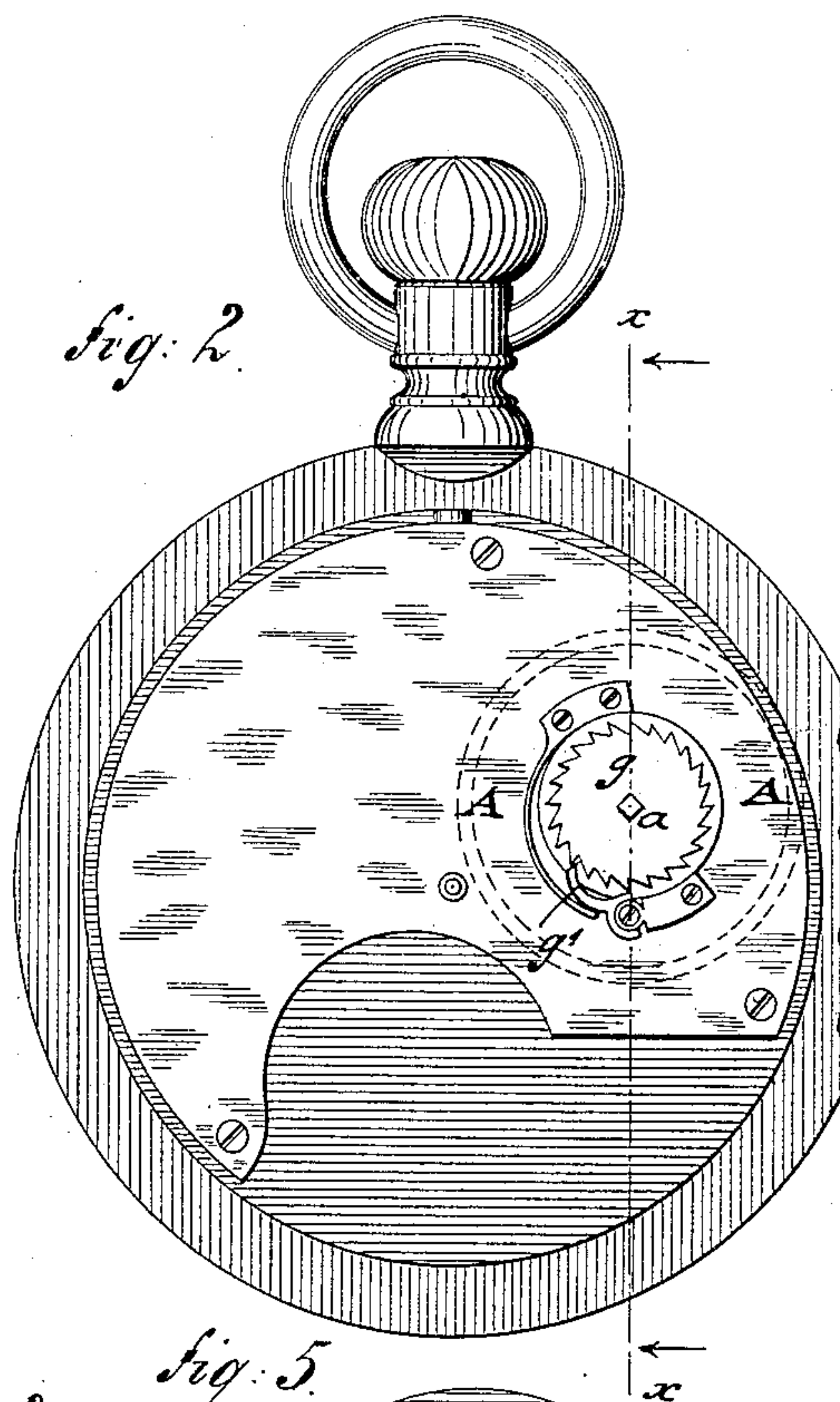
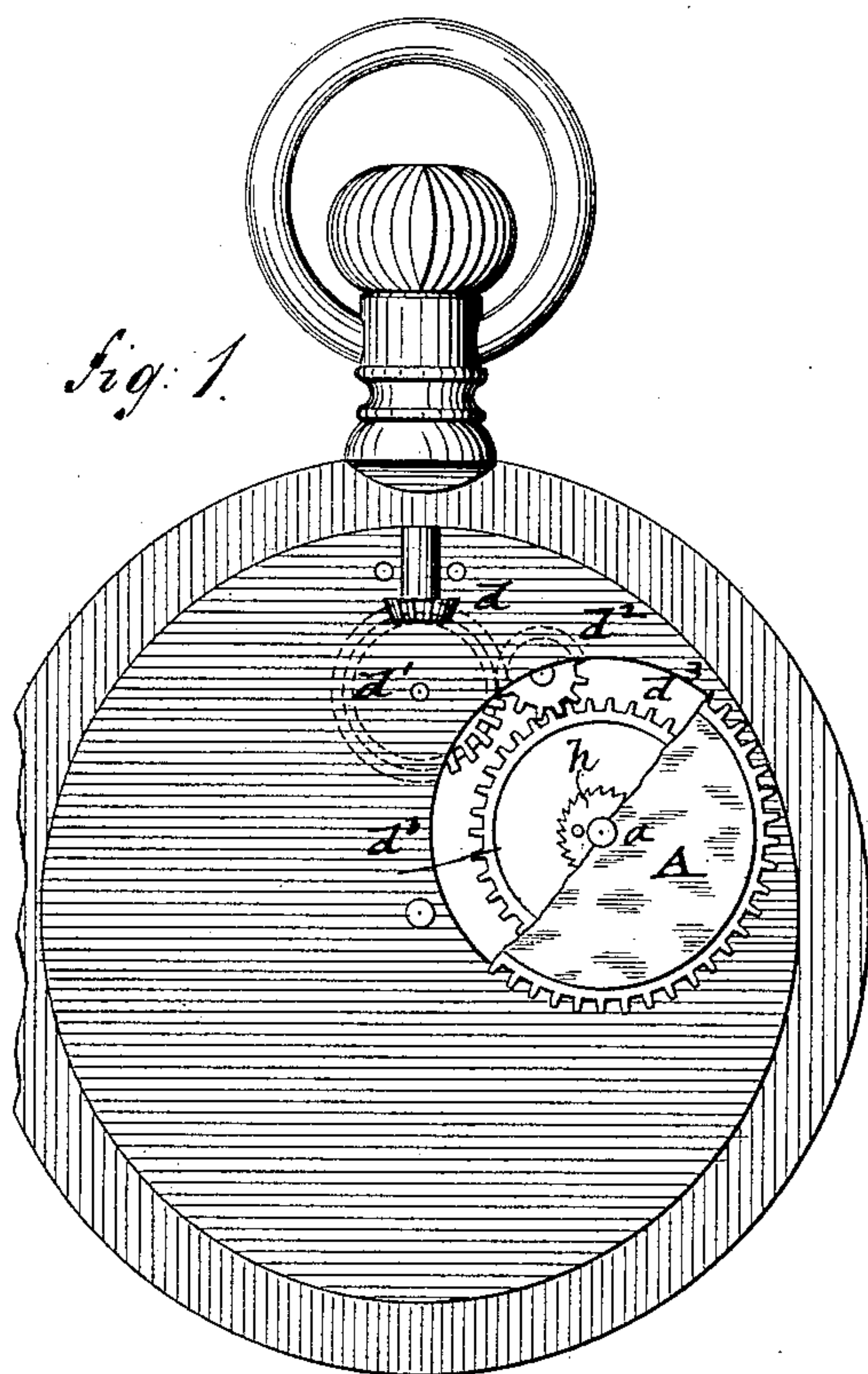
2 Sheets—Sheet 1.

C. MORLET.

WATCH WINDING MECHANISM.

No. 335,471.

Patented Feb. 2, 1886.



WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

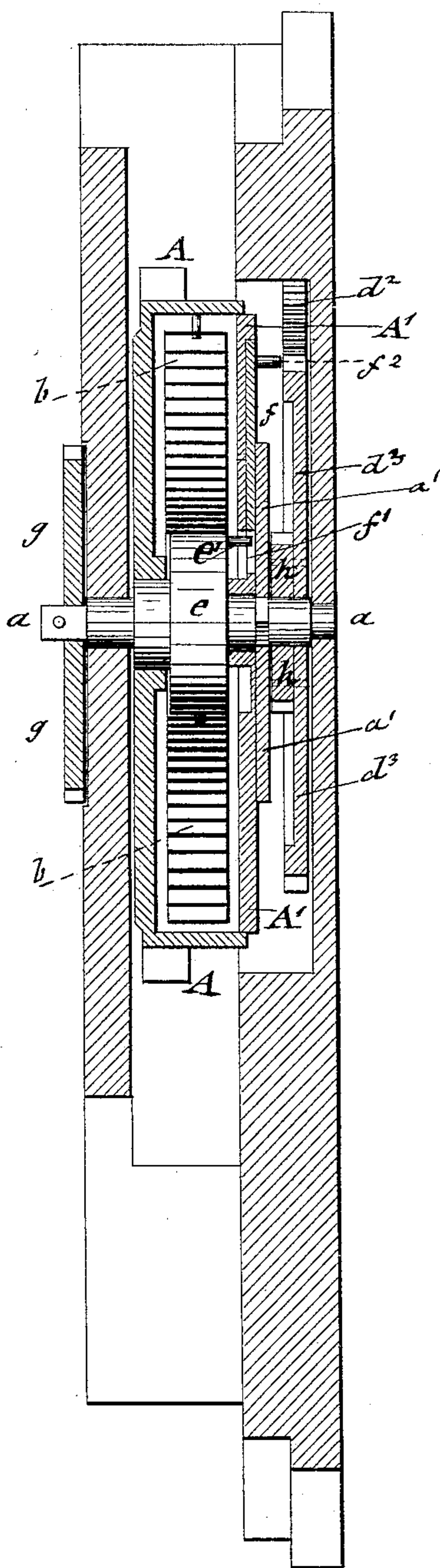
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Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES MORLET, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND PROSPER NORDMANN, OF SAME PLACE.

WATCH-WINDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 335,471, dated February 2, 1886.

Application filed June 7, 1884. Serial No. 134,161. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MORLET, of the city, county, and State of New York, have invented certain new and useful Improvements in Stem-Winding Attachments to Watches, of which the following is a specification.

This invention relates to an improved safety attachment for stem-winding watches, whereby the straining of the mainspring and the breaking of the same by careless turning of the winding mechanism are prevented, and thereby the danger of injury to the spring-barrel and the transmitting gear-wheels of the movement diminished.

The invention consists of the combination, with the stem-winding mechanism and the spring-barrel, of an intermediate safety mechanism or stop-motion by which the winding up of the mainspring is interrupted before overstraining can take place.

The invention consists more especially of the combination, with the arbor of the spring-barrel, of a ratchet-wheel placed thereon, a spring-pawl engaging said ratchet, a cam or dog for releasing said pawl from the ratchet, and a disk engaging the cam by a projecting pin, said disk being provided with teeth which are engaged by a pin secured to a collar of the arbor of the spring-barrel, as will more fully be described hereinafter, and finally be pointed out in the claim.

In the accompanying drawings, Figures 1 and 2 represent side elevations of two different stem-winding watches with my improved safety attachment applied thereto, said elevations being taken from opposite sides. Fig. 3 is a vertical transverse section on line $x x$, Fig. 2. Fig. 4 is a detail side view and a vertical transverse section of the covering-plate of the spring-barrel enlarged; and Figs. 5 and 6 are details of the safety attachment arranged on the cover of the spring-barrel, also enlarged. Fig. 7 is a view similar to Fig. 3 on a greatly enlarged scale.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the spring-barrel of a watch-movement, and a the arbor of the same. The mainspring b is wound

up in the usual manner in stem-winding watches by a pinion, d , keyed to the stem of the watch, a wheel, d' , intermediate pinion, d'' , and a gear-wheel, d''' , keyed to the arbor a of the spring-barrel, as shown in Figs. 1 and 3. The mainspring b is attached in the usual manner at its inner end to a collar, e , of the arbor a , and at its outer end to the spring-barrel A. To the collar e is applied a pin, e' , which engages recesses f' in the circumference of a disk, f , that is guided in a circular depression of the cover A' of the spring-barrel A, as shown in Fig. 4, the disk f having as many recesses f' as rotations are desired to be imparted to the arbor a . In the drawings three recesses are shown, so that the arbor makes three full rotations for winding up the mainspring. The outer end of the arbor a is further provided with the usual ratchet-wheel, g , and a spring-actuated check-pawl, g' , as shown in Fig. 2, by which the mainspring is retained in wound-up position during the intervals of time when the arbor is not turned.

The mechanisms so far described have been used heretofore in stem-winding watches, and I do not lay any claim to the same. The safety attachment by which undue strain on the mainspring is prevented consists of a ratchet-wheel, h , that is attached to the gear-wheel d''' at that side facing the cover A' , said ratchet and gear-wheels being placed loosely on the arbor a , as shown in Fig. 7. A pawl, h' , is fulcrumed to the disk a' and thrown into engagement with the teeth of the ratchet-wheel h by a spring, h^2 . A cam or dog, h^3 , is fulcrumed to the disk a' near the spring h^2 , so as to press upon the same when the projecting heel h^4 of the dog h^3 is engaged by a pin, f^2 , of the disk f , as shown in Fig. 5. This takes place when the mainspring has been wound up nearly to its full extent, as thereby the pin e' has turned the disk f and moved its pin f^2 into the path of the dog h^3 . When the winding of the stem is continued, the dog h^3 is turned on its fulcrum by the pin f^2 , so that its end presses upon the spring h^2 , which throws thereby the pawl h' out of engagement with the ratchet-wheel h , as shown in Fig. 6. As the disengagement of the ratchet-wheel h by the pawl h' takes place be-

fore the mainspring *b* is entirely wound up, it is obvious that the overstraining of the same is avoided by the automatic action of the safety attachment. The turning of the winding mechanism may therefore be continued without affecting the mainspring, as the transmitting-wheel *d*³ and the ratchet-wheel *h*, attached thereto, turn loosely on the sleeve of the disk *a'* without transmitting motion to the arbor *a*.
10 By the unwinding of the mainspring permitted by the running of the watch, the spring-barrel *A* and its cover *A'* turn on the arbor *a* in the same direction in which said arbor turned in the spring-barrel in winding, by
15 which these parts move relatively in opposite direction and the dog *h*³ returned into its normal position (shown in Fig. 5) by the pressure of the pin *f*² on the longer projecting end of the dog *h*³, whereby the latter is in position to
20 actuate the safety attachment at the next winding up of the mainspring. By the gradual unwinding of the mainspring the disk *f* is returned into the position shown in Fig. 4. By the winding-up mechanism the safety attachment
25 is thrown out of gear at the proper moment, so that the overstraining and breaking of the mainspring by careless winding is pre-

vented, and, consequently, any danger of injury to the train of the watch-movement and the winding mechanism in consequence of the breaking of the spring is obviated. 30

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a stem-winding watch, the combination of the spring-barrel, mainspring, winding-arbor, and winding-up mechanism of a safety attachment consisting of a ratchet-wheel on the transmitting-gear, of the winding-up mechanism, a disk keyed to the winding-arbor, a spring-pawl fulcrumed to said disk, a dog, also fulcrumed to said disk, and a recessed disk turned by the winding-arbor and provided with a pin for engaging the dog, so as to throw the spring-pawl out of or into engagement with the ratchet-wheel of the winding-gear, substantially as set forth. 35 40 45

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CHARLES MORLET.

Witnesses:

PAUL GOEPEL,
SIDNEY MANN.