

No. 775,523.

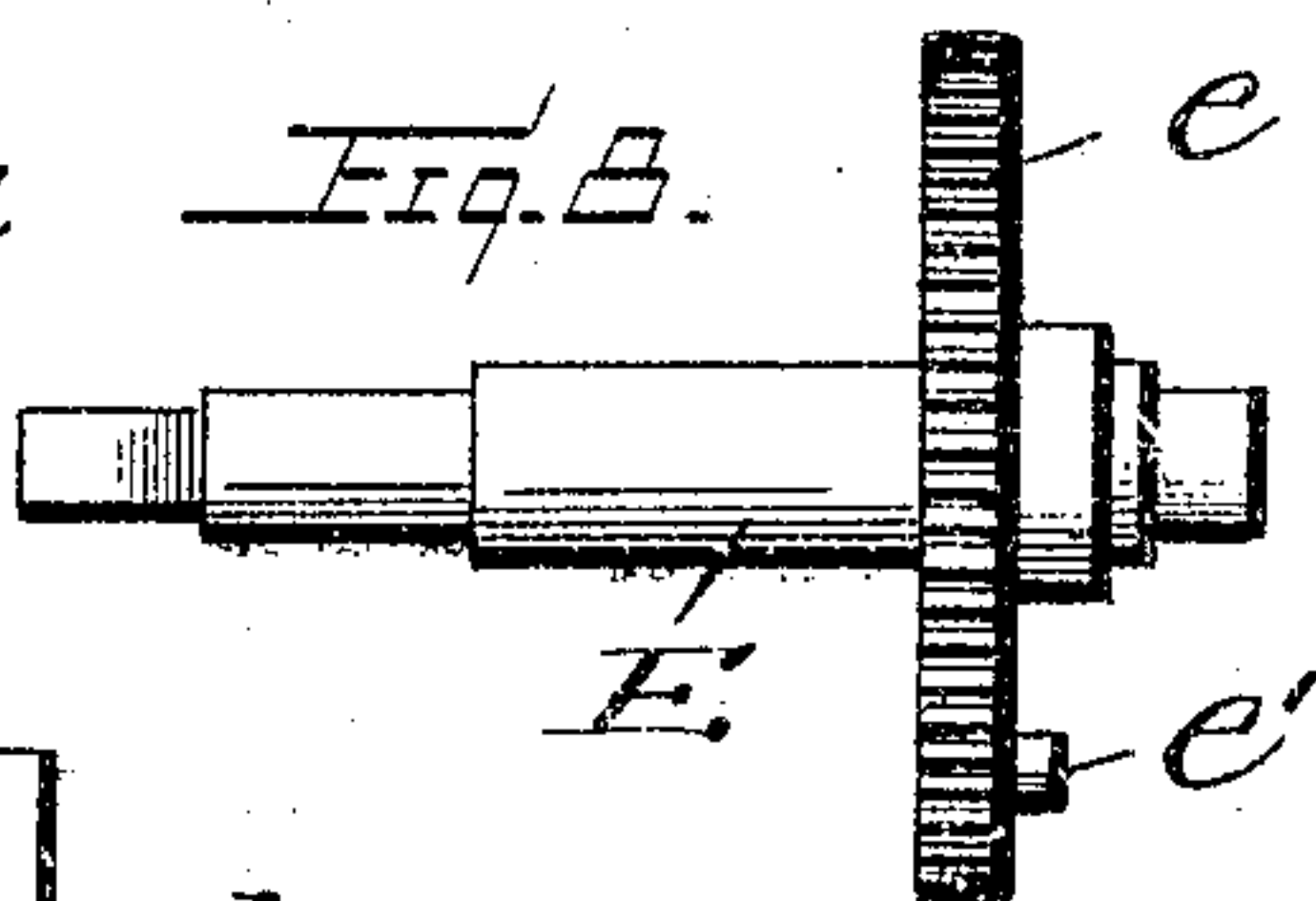
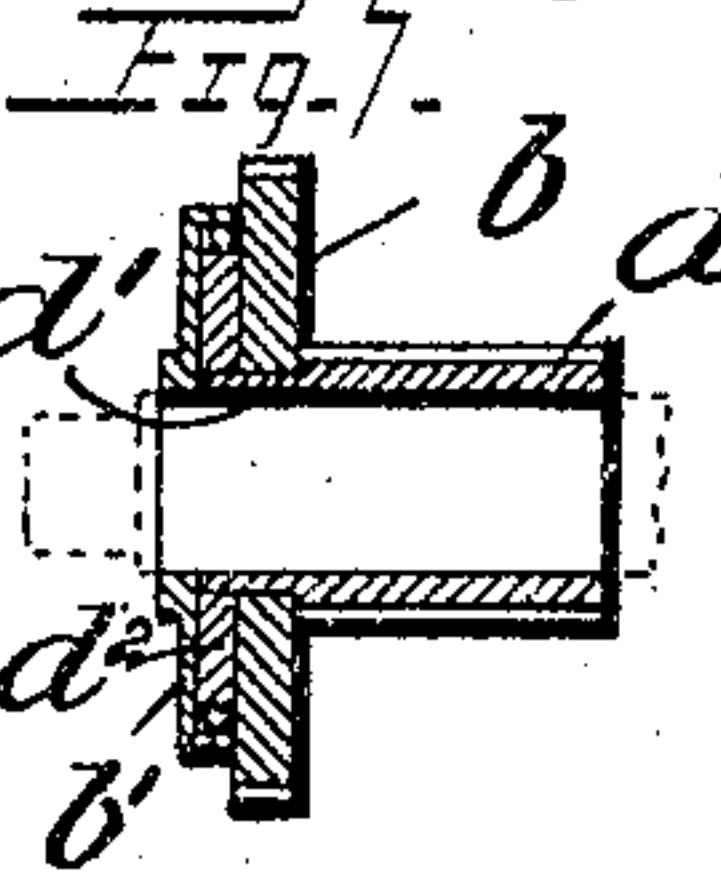
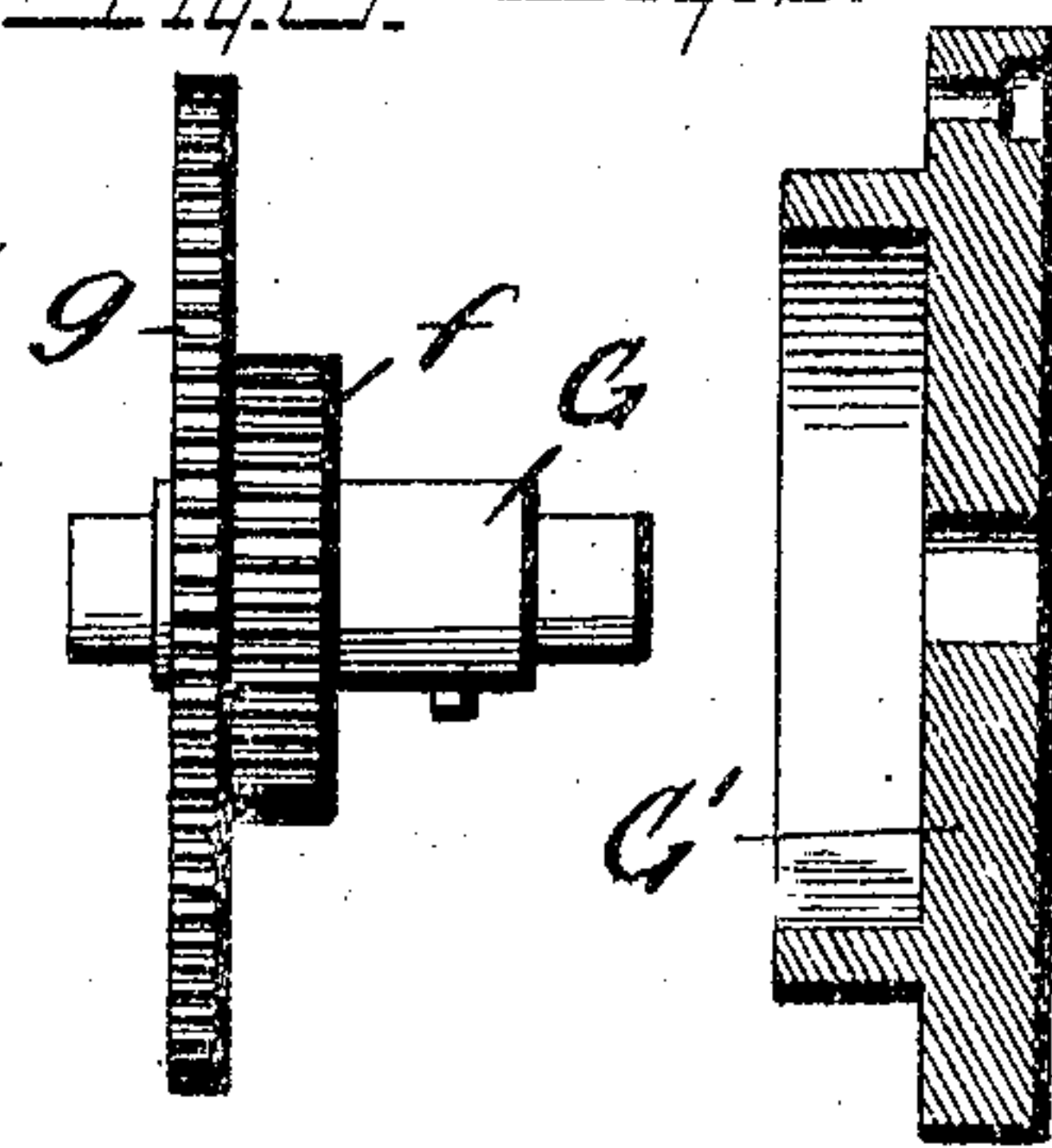
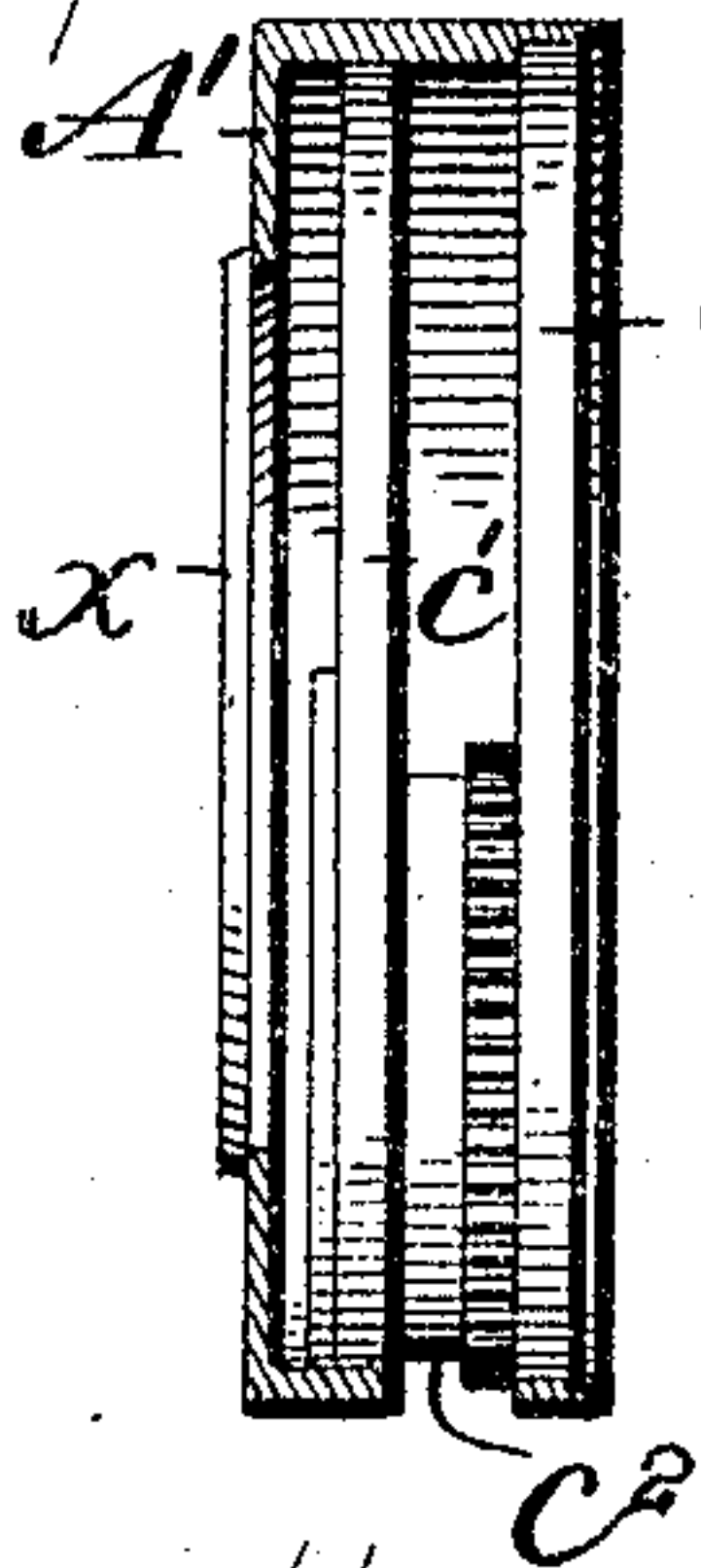
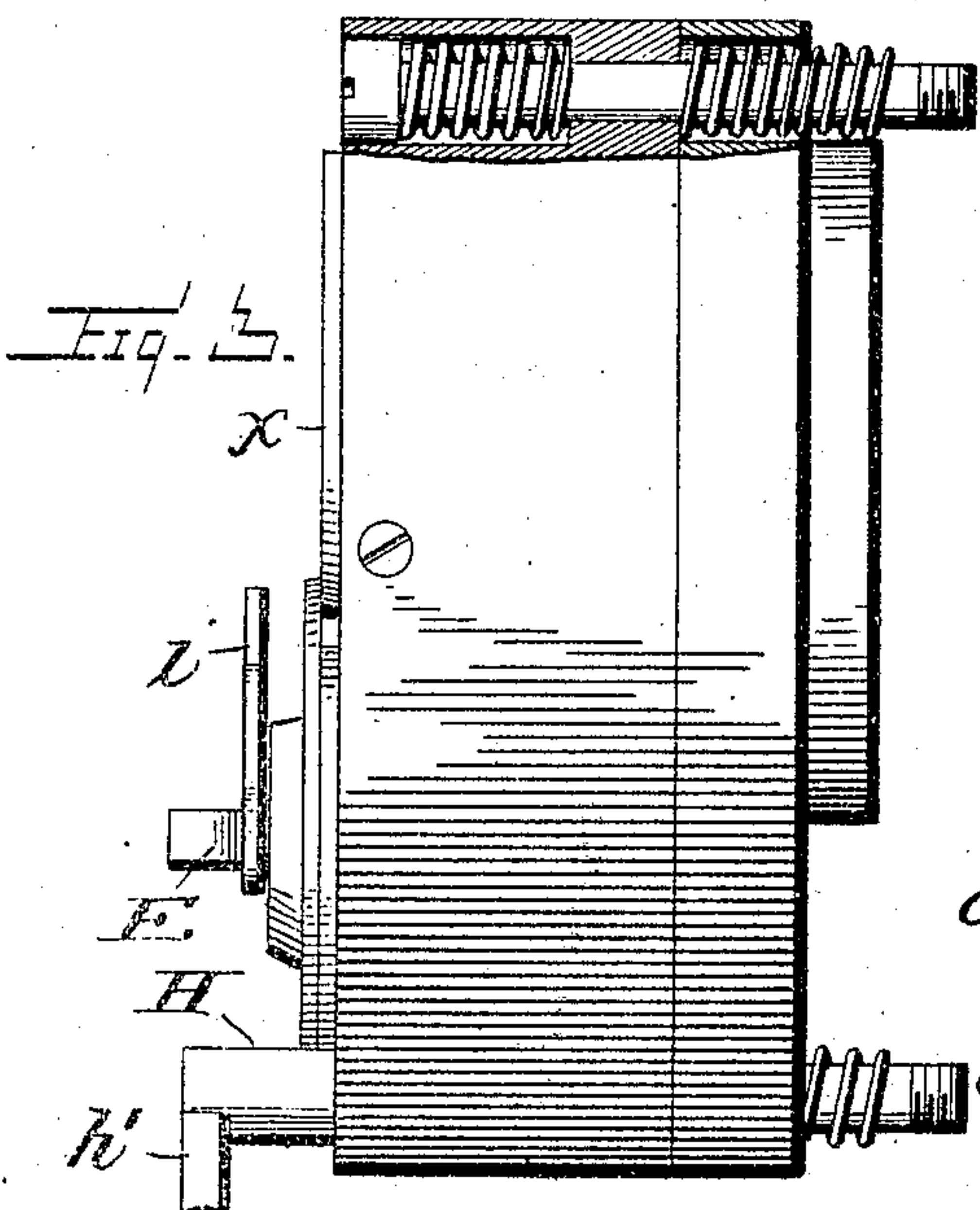
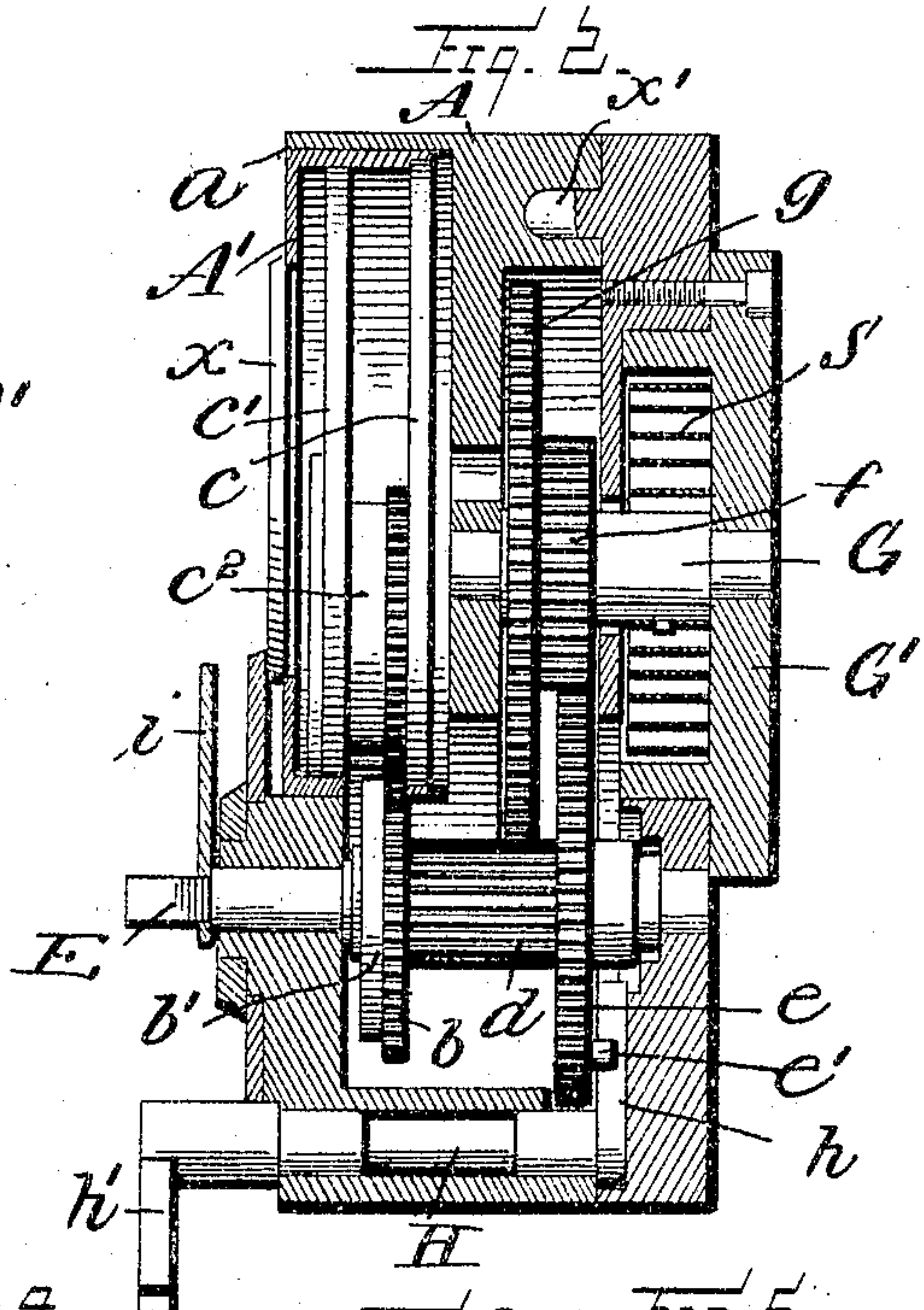
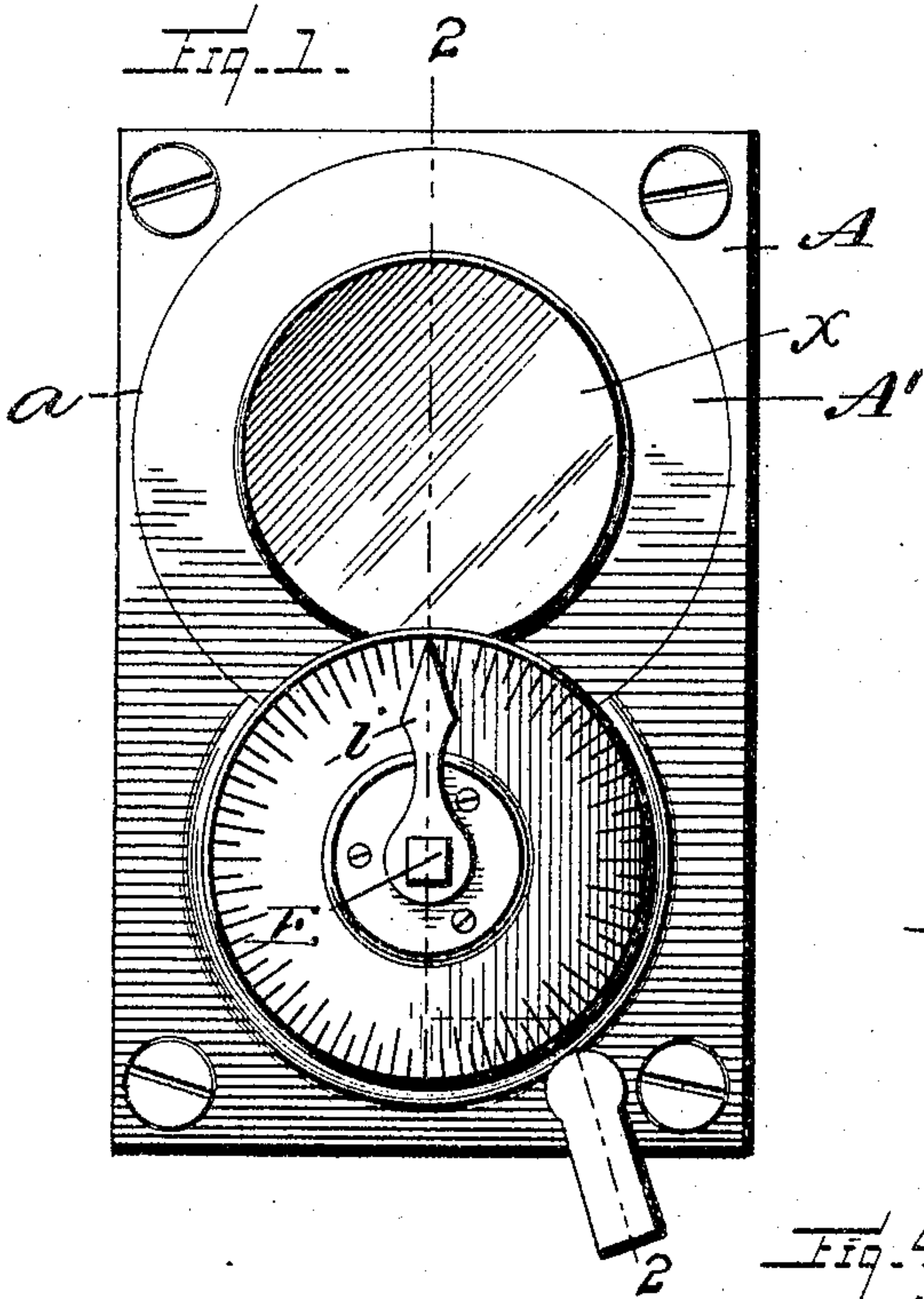
PATENTED NOV. 22, 1904.

H. M. DALTON.
TIME LOCK.

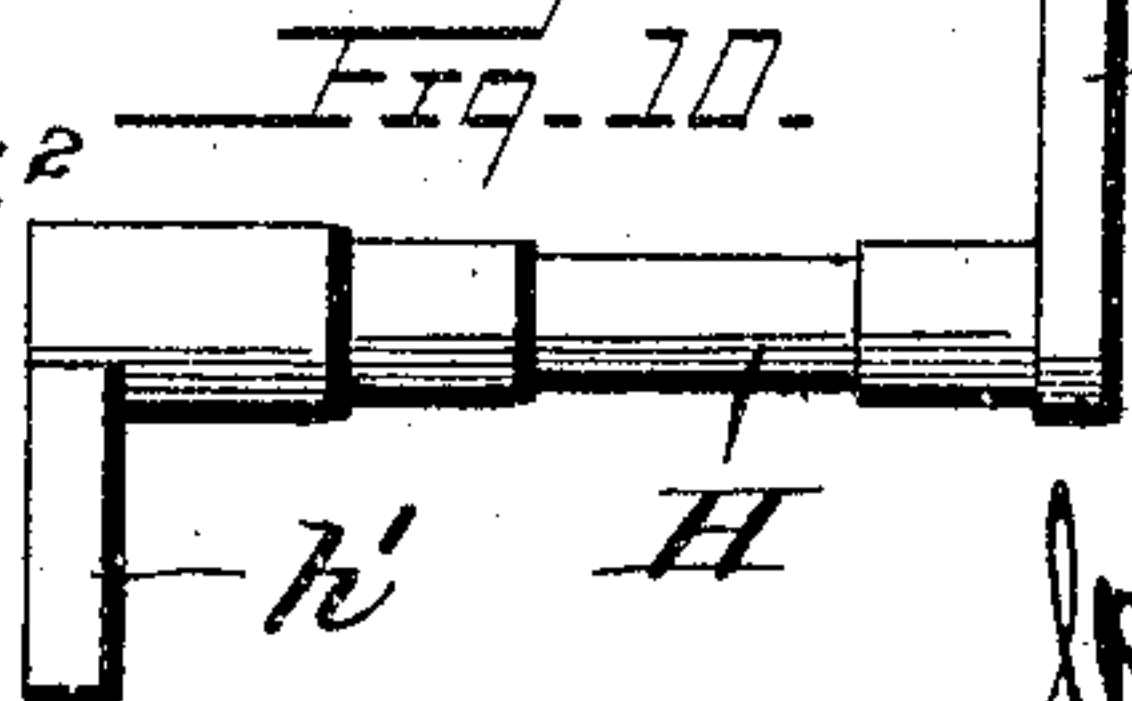
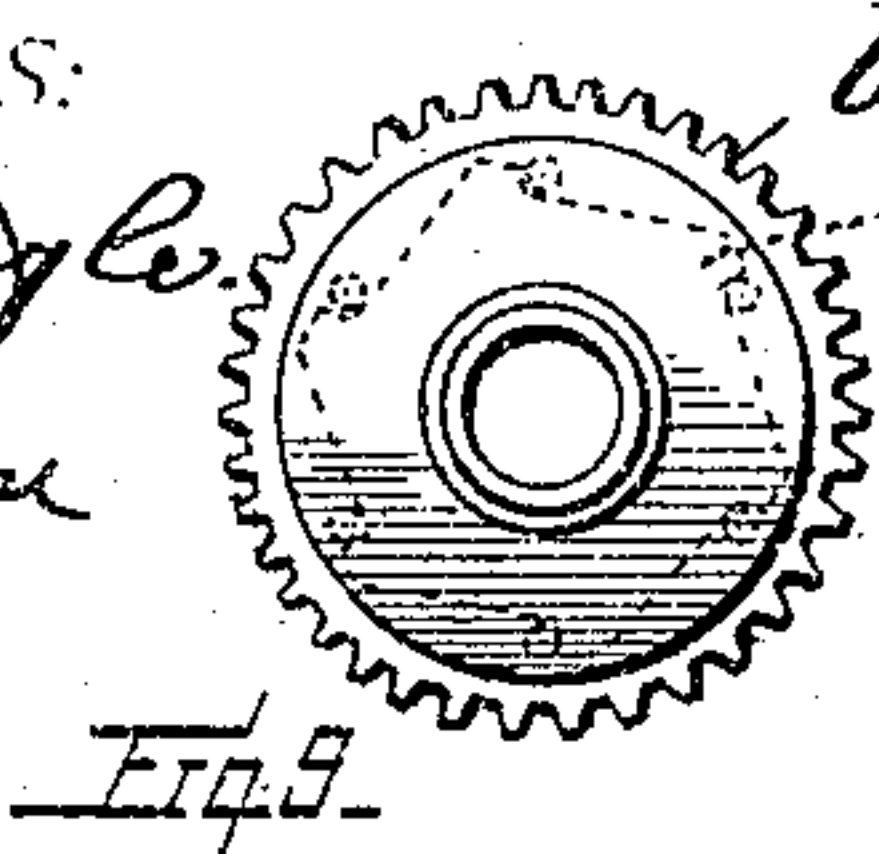
APPLICATION FILED JULY 5, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:
J. K. Moore



INVENTOR
Harry M. Dalton
BY
Whitaker & Trowell Attorneys

No. 775,523.

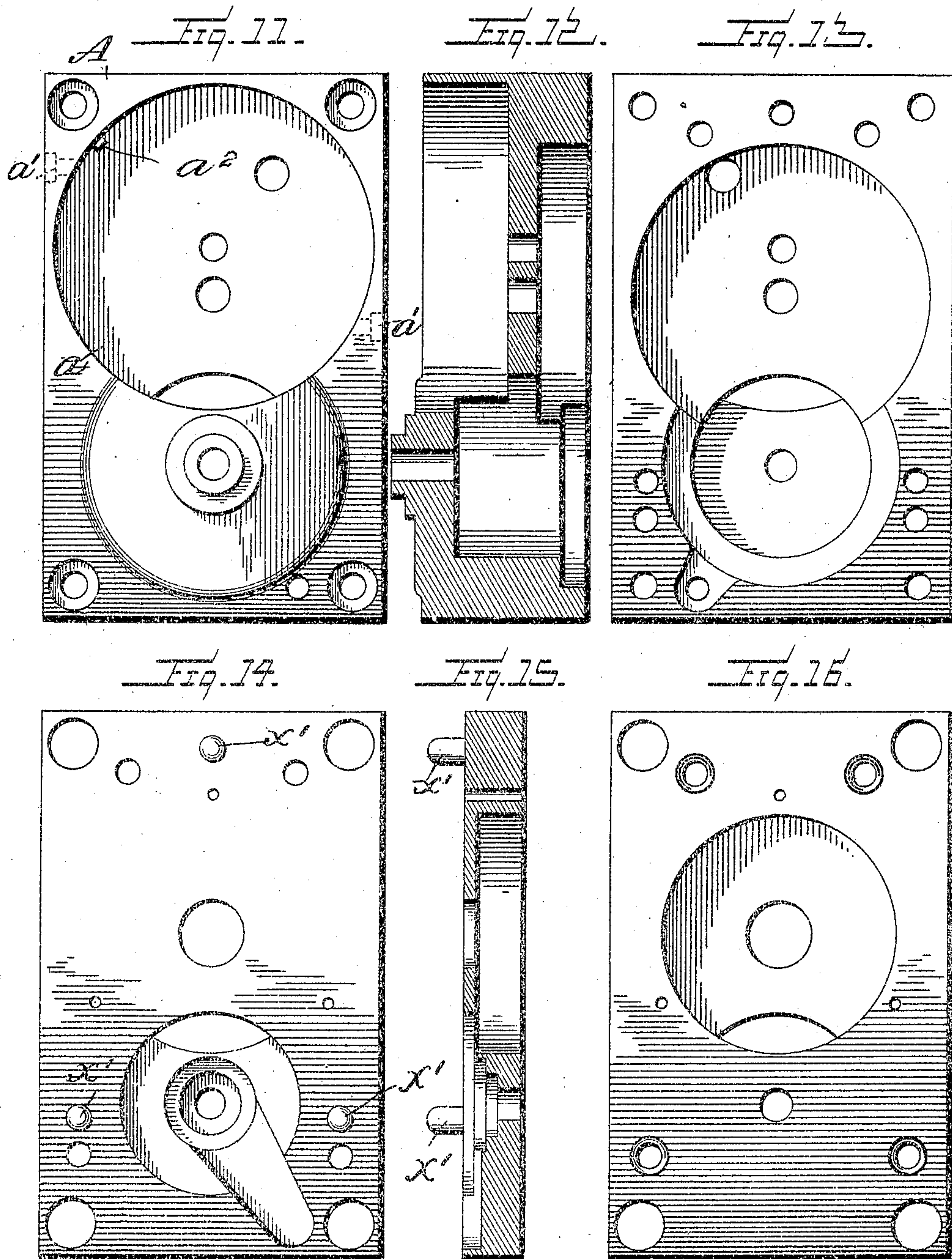
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NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRY M. DALTON, OF CINCINNATI, OHIO.

TIME-LOCK.

SPECIFICATION forming part of Letters Patent No. 775,523, dated November 22, 1904.

Application filed July 5, 1904. Serial No. 215,312. (No model.)

To all whom it may concern:

Be it known that I, HARRY M. DALTON, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Time-Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-
 10 pertains to make and use the same.

My present invention relates to the class of time-locks; and it consists in certain new constructions and combinations of parts whereby certain new and desirable results are accom-
 15 plished.

In the drawings I have illustrated the best form in which I have contemplated embodying my invention, and said invention is disclosed in the following description and claims.

Figure 1 is a front view of the casing. Fig. 2 is a vertical section on line 2 2, Fig. 1, the movable parts except the finer gearing of the watch-movement being shown in full lines. Fig. 3 is a side view of the casing, partially
 20 in section, to show one of the securing-screws and its cushioning-springs. Fig. 4 is a side view of the securing-ring and the watch-movement therein. Fig. 5 is a side view of the spring-arbor and attached gears. Fig. 6 is a
 30 view of the spring-casing. Fig. 7 is a detail showing clutch construction. Fig. 8 is a view of the winding-shaft and its gear. Fig. 9 is an end view of the devices shown in Fig. 7, parts being shown in dotted lines. Fig. 10 is a view
 35 of the shaft carrying the unlocking-arm. Fig. 11 is a front view of the front or main plate of the casing. Fig. 12 is a vertical transverse section of the same. Fig. 13 is a back view of the said front plate. Fig. 14 is a front view
 40 of the back plate of the casing. Fig. 15 is a vertical transverse section, and Fig. 16 is a rear view of the same.

In time-locks it is customary to employ a time mechanism specially constructed for the
 45 lock. I propose to construct a time-lock movement in which a common form of watch-movement can be used, thereby cheapening the construction and enabling me to utilize an escapement of finer construction than that em-
 50 ployed in time-lock mechanism. I may use

any form of watch-movement which may be found most desirable or best fitted for the work required of it, and I do not limit or confine myself to any particular watch-movement. For this reason the details of the watch-move-
 55 ment are not shown, the parts shown being only the front and back plates of the movement and the spring-barrel with the gear thereon.

A is the front plate of the casing, which is
 60 provided with the circular recess *a*.

A' is a ring the interior of which is made to receive the watch-movement selected and the exterior of which fits the recess *a* of the front plate. This ring when inserted in the
 65 recess *a* is secured by screws *a' a'*. (Shown in dotted lines, Fig. 11.) The recess *a* is provided with a pin *a²*, which engages a notch in the back plate *c* of the watch-movement. This ring A' and the watch-movement are shown
 70 in Fig. 4.

c is the back and *c'* the front plate of the watch-movement, and *c²* the spring-barrel of the same.

The front of the ring A' is closed by a glass
 75 *x*, through which the watch-movement can be seen.

The gear on the spring-barrel of the watch-movement gears with a gear-wheel *b*. This gear-wheel is movably mounted on a sleeved
 80 extension *d'* of the pinion *d*, and to said gear is secured the circular exterior part or casing *b'* of the clutch, while to the outer end of the sleeve *d'* is rigidly secured the ratchet *d²*, which forms the second or inner member of
 85 the clutch. The clutch is completed by placing small metal balls between the ratchet and the casing, forming a well-known form of friction-clutch.

The pinion *d* is loosely mounted upon the
 90 winding-arbor E. Upon this arbor is rigidly secured the gear-wheel *e*, having on its rear side the pin *e'*. The gear-wheel *e* meshes with the pinion *f* on the spring-arbor G. This pinion is rigidly secured to the arbor, and the gear-
 95 wheel *g*, which gears with the pinion *d*, is connected with the pinion *f*, so that both move together. The rear end of the arbor G is journaled in the spring-casing G', in which is the
 100 spring S.

The rock-shaft H, journaled in the lower part of the front part of the casing, has an arm *h*, which extends upwardly in the same vertical plane as that of the pin *e'* of gear-wheel *e*. The opposite end of this rock-shaft extends beyond the casing and is there provided with the downwardly-extending unlocking-arm *h'*.

The winding-arbor E extends outward beyond the front of the casing and has upon it the pointer or index-finger *i*, while its extreme outer end is squared to receive a key for winding.

As the time-lock mechanism is required to maintain its operation much longer than an ordinary watch-movement, a spring of such strength and length is provided as will secure the result desired. I propose to employ a spring which will keep the time mechanism in operation about seven days, and the relation of the gear-wheel *e* and pinion *f* is such that the turning of the gear-wheel *e* one entire revolution will enable the time mechanism to run the full length of time desired and at the end of the period will have force enough to turn the shaft H and cause the unlocking-arm to unlock the safe. The movement of the shaft H for this purpose is accomplished by the pin *e'* coming in contact with and moving the arm *h* of the shaft H. At the end of a full winding of the spring the pin *e'* will come into contact with the opposite side of the arm *h* and stop the further movement of the winding-arbor, thus preventing overwinding and injury to the parts thereby.

In the use of the device the winding-arbor E will be turned to bring the pointer *i* to the number on the dial equal to the number of hours that it is desired shall elapse before the safe is to be unlocked. In the drawings for clearness the pin *e'* is shown in the completely-wound position. In winding the arbor E is turned to the right. This causes the gear-wheel *e*, through pinion *f*, to turn the spring-arbor G and wind up the spring. While doing this the gear-wheel *g* turns the pinion *d* and its ratchet part of the clutch also to the right as the parts are shown in Fig. 8. The ratchet turns freely within the exterior part of the clutch without affecting the watch-movement. As soon as the winding of the spring is completed the spring exerts its force to turn the wheel *g* and pinion *d* in the opposite direction and through the clutch and wheel *b* supplies power for the running of the watch-movement. Pinion *d* is so much smaller than the wheel *g* that this pinion and the decreasing-gearing of the watch-movement enable the escapement of the latter to govern and maintain the proper rate of speed to effect the purpose desired.

In assembling the parts the watch-movement is first placed in the ring A and the ring is then placed in the recess *a* in the front plate. The wheel *b* and pinion *d* having been pre-

viously put together are then placed in position with the wheel *b* in engagement with the gear on the spring-barrel of the watch-movement. To enable these parts to operatively engage, a part of the ring is cut away, as shown in Figs. 2 and 4.

The back plate of the casing is recessed to receive the arm *h* of the rock-shaft H and is provided with dowels *x' x' x'*, which engage corresponding openings in the front plate to secure accurate alinement of the parts.

It will be seen that in case the watch-movement should get out of order the time-lock mechanism can be removed and the ring A' taken out, the watch-movement removed, and another inserted in its place with little loss of time. So in cases where the safe is at a place a considerable distance from the location of the factory a watch-movement can be secured and put in place of a defective working movement without the loss or time that would be required to obtain an entirely new time-lock mechanism from the home office or factory.

The time-lock mechanism is secured to the safe by the arrangement of springs shown in Fig. 3, so as to form a double-cushioning effect. These springs protect the watch-movement from injury.

It will be seen that the winding-arbor also serves as a journal for part of the gearing connecting the spring and watch-movement, thus simplifying the construction and enabling me to secure the necessary parts in a very small space.

While the construction shown is the one preferred by me, the details of the same may be greatly varied without departing from the principle of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. A time-lock mechanism, comprising among its members, a watch-movement having all the permanent parts of such movement, a spring for said time-lock mechanism outside of said watch-movement, and gearing connecting said spring with said watch-movement, substantially as described.

2. A time-lock mechanism, comprising among its members, a complete watch-movement having all the permanent parts of such movement, an actuating-spring for said time-lock movement outside of said watch-movement, and gearing permanently connected with said spring for engaging a permanent portion of the watch-movement, substantially as described.

3. A time-lock mechanism provided with an actuating-spring, of a watch-movement having all the permanent parts of such movement removably connected with said spring, substantially as described.

4. In a time-lock mechanism, the combination with a spring for actuating said mechanism, of a watch-movement, a casing for said time-lock mechanism and a separate remov-

able casing for holding the watch-movement in detachable connection with said time-lock mechanism, substantially as described.

5 5. In a time-lock mechanism, the combination with a spring for actuating the same, a winding-arbor for said spring, of a watch-movement connected with said spring by gearing including a clutch, permitting the winding of the spring without affecting the gearing of
10 the watch-movement, substantially as described.

15 6. In a time-lock mechanism, the combination with a spring, of a winding-arbor geared by increasing-gearing with the spring to wind the same, an escapement for controlling the unwinding of the spring connected with said

spring by decreasing-gearing, substantially as described.

7. In a time-lock mechanism, the combination with the actuating-spring, of an escapement therefor, and gearing intermediate the spring and escapement and a winding-arbor for said spring, said arbor serving as a journal for a part of said gearing, substantially as
20 described.

25 In testimony whereof I affix my signature in the presence of two witnesses.

HARRY M. DALTON.

Witnesses:

CLINTON NASH,
HERMAN ROGERMAN.