

(Model.)

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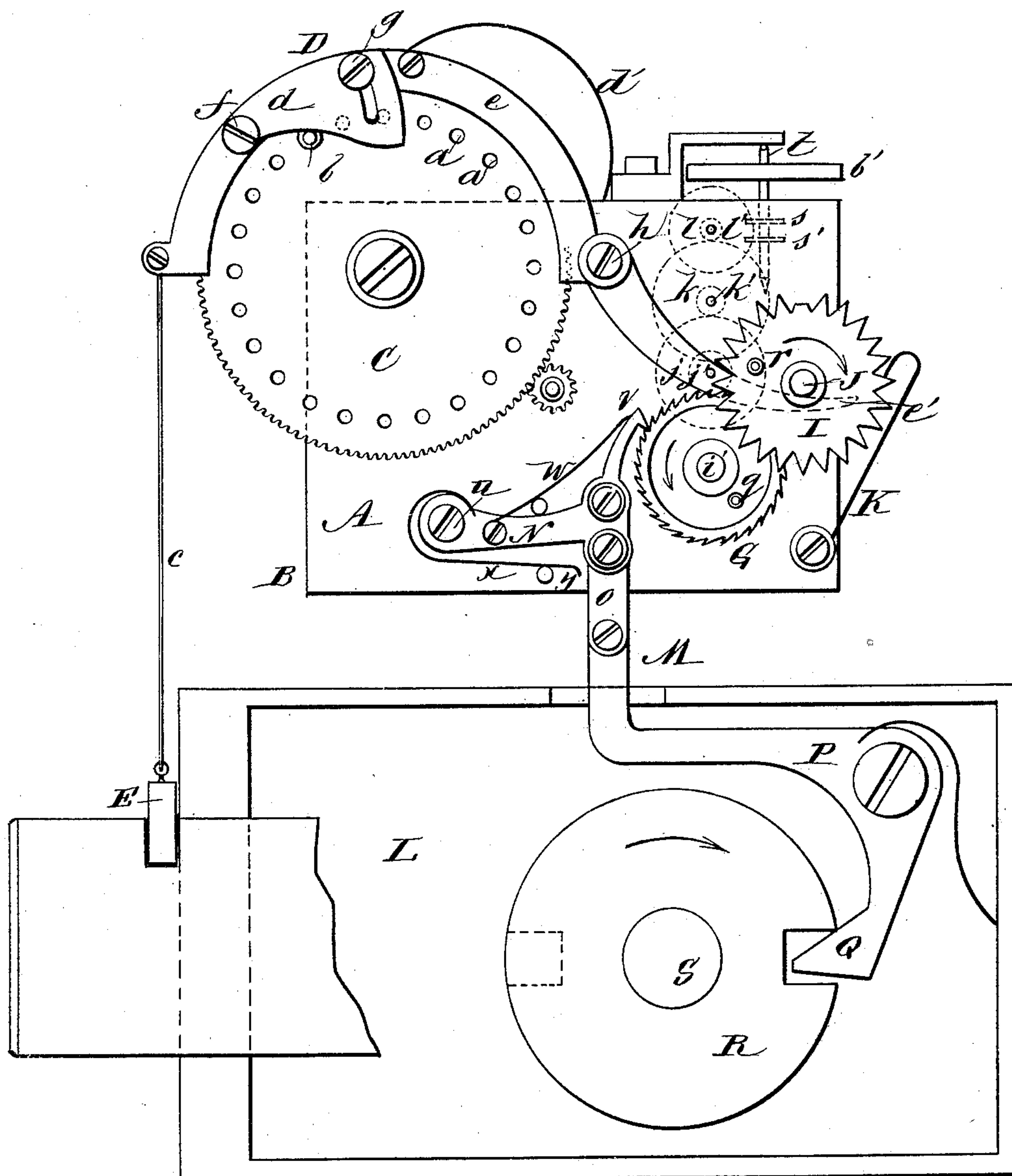
M. C. HAWKINS.

TIME LOCK.

No. 314,838.

Patented Mar. 31, 1885.

Fig. 1



WITNESSES:

C. Neveu
C. Bedgwick

INVENTOR:

M. C. Hawkins

BY

Munn & Co

ATTORNEYS.

(Model.)

2 Sheets—Sheet 2

M. C. HAWKINS.

TIME LOCK.

No. 314,838.

Patented Mar. 31, 1885.

Fig. 5

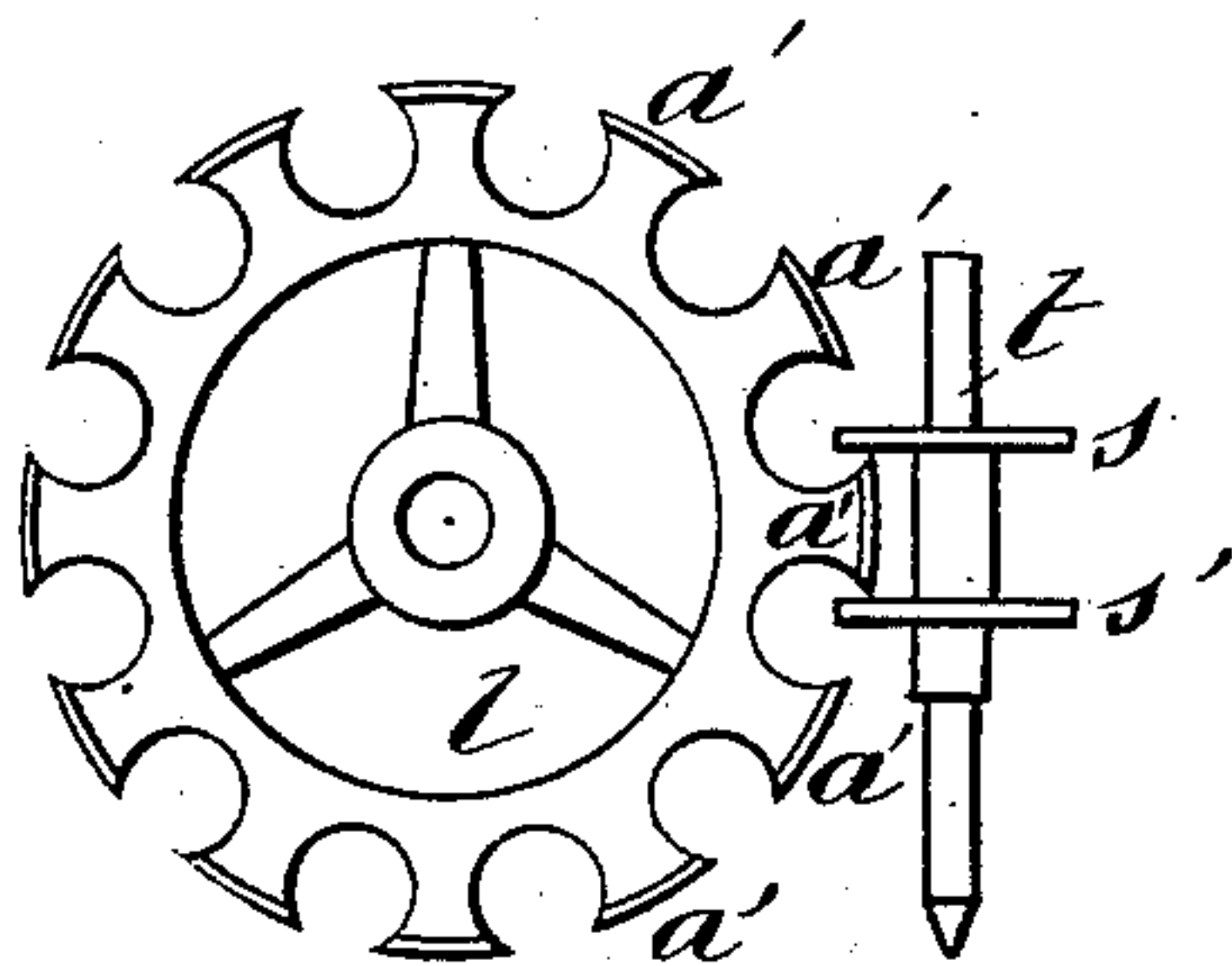


Fig. 6

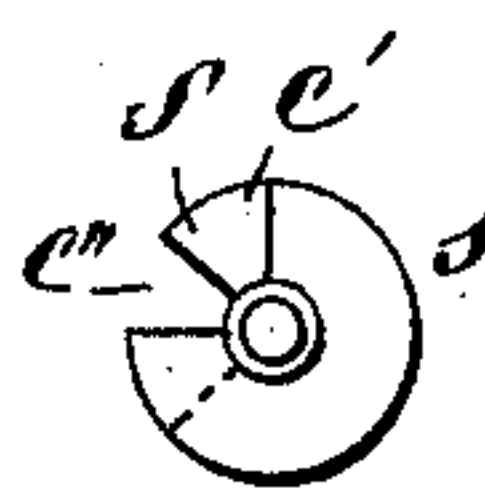


Fig. 7

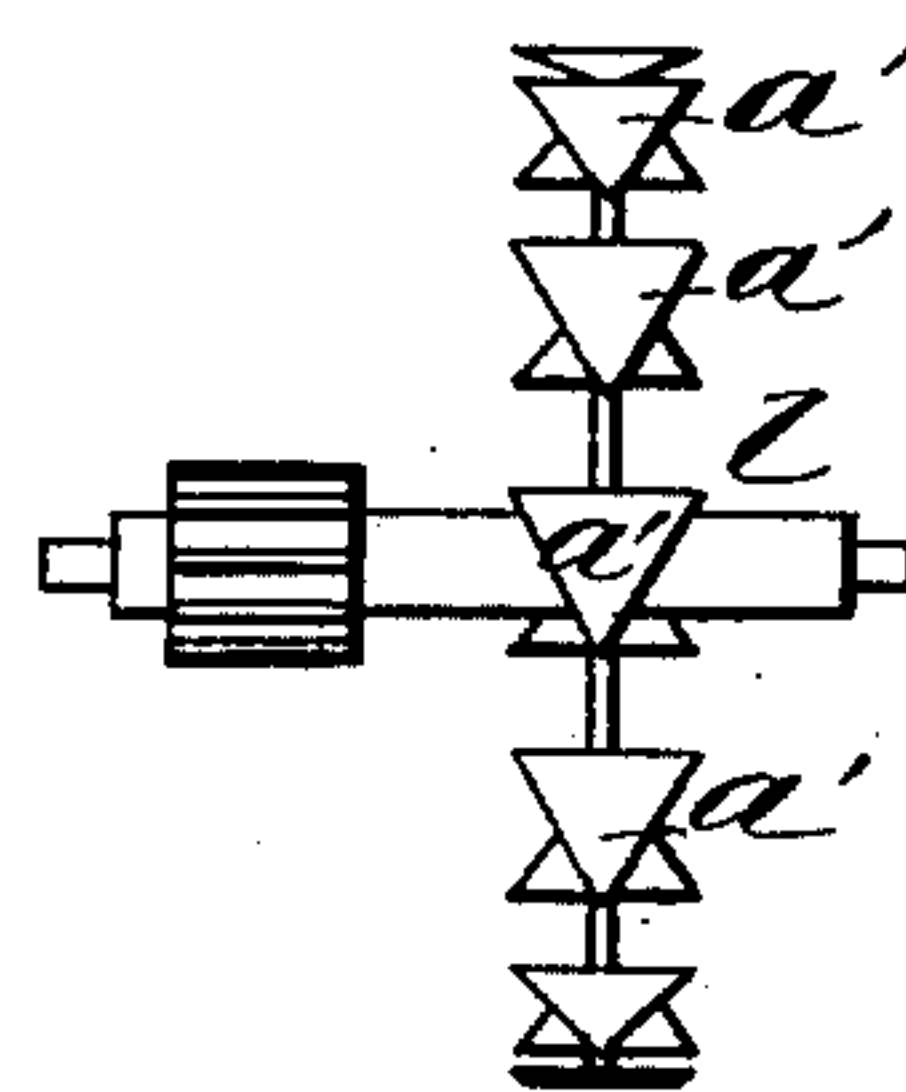


Fig. 4

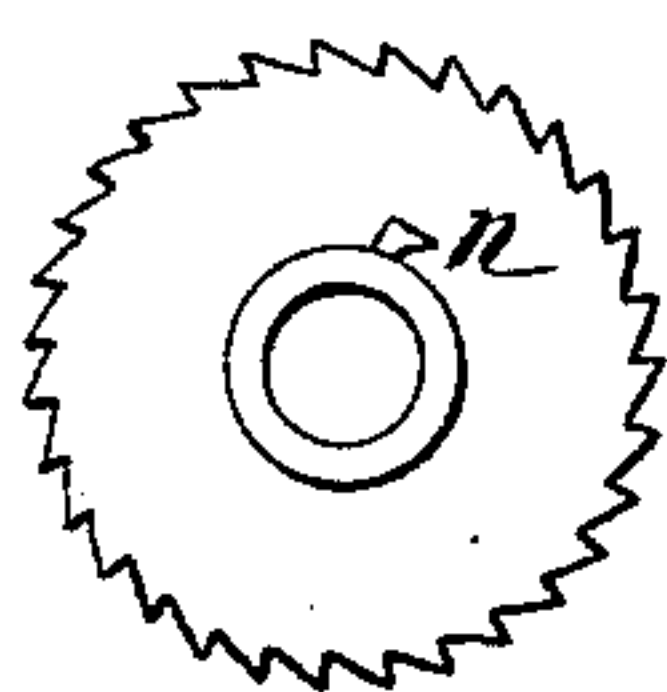


Fig. 3

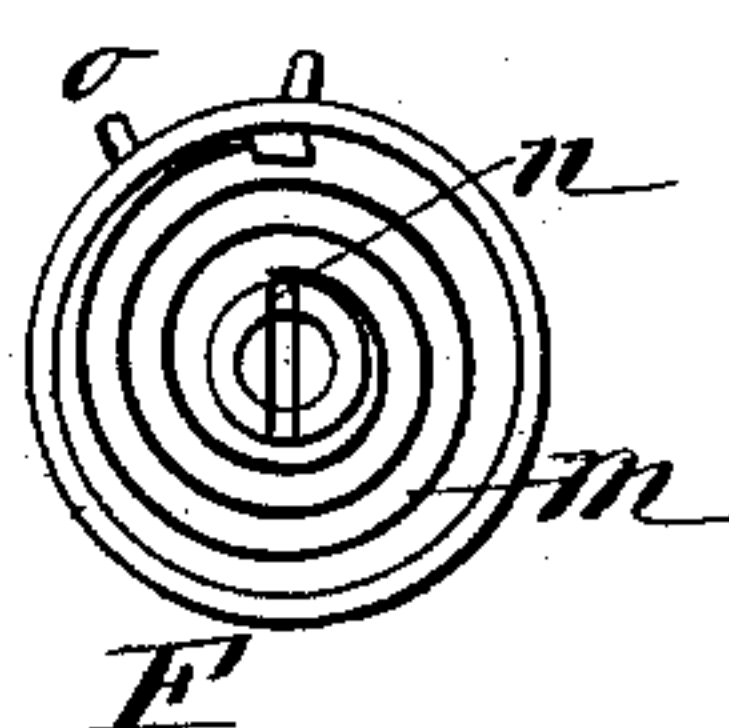
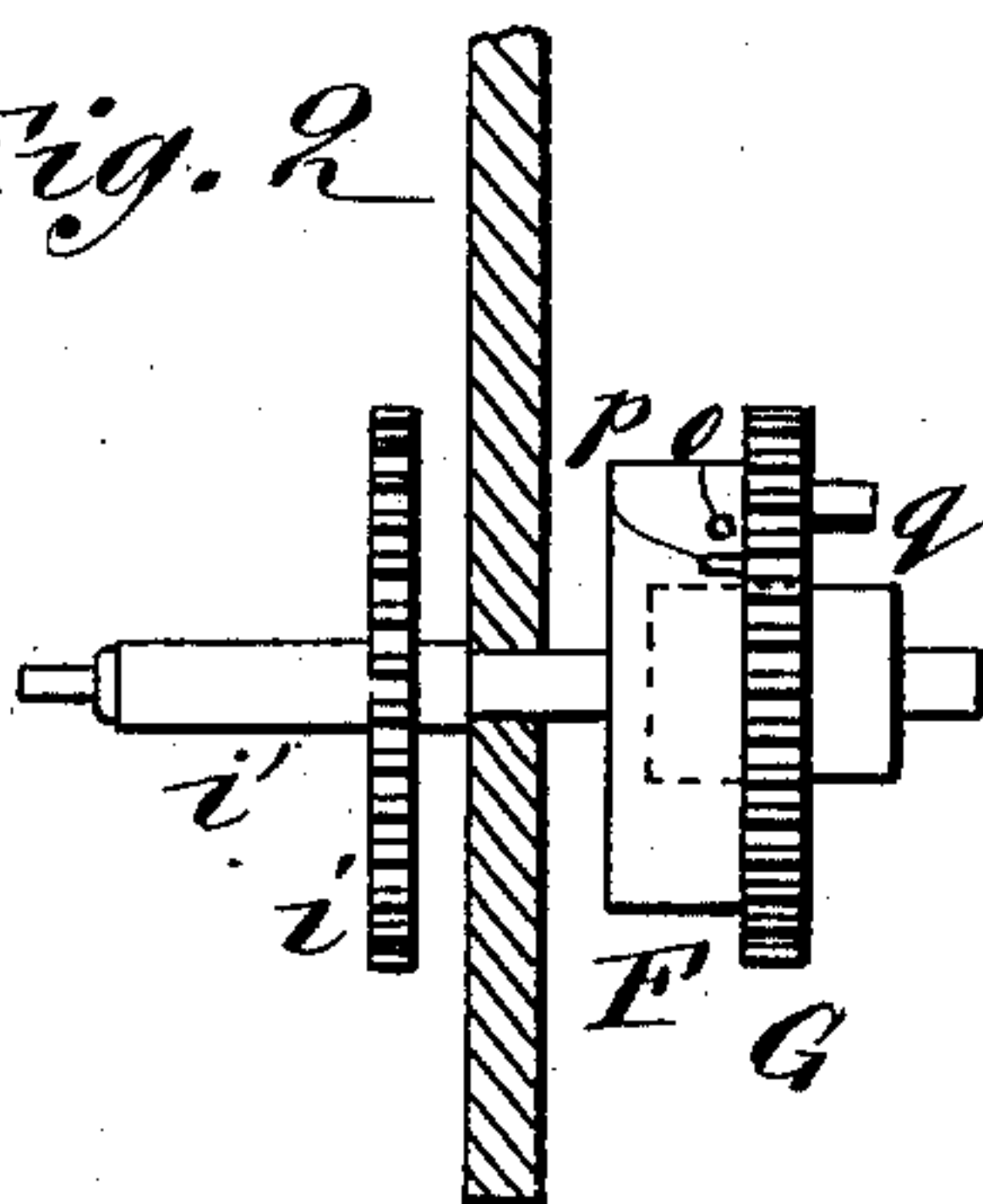


Fig. 2



WITNESSES:

C. Neveu
C. Pedgley

INVENTOR:

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UNITED STATES PATENT OFFICE.

MOSES CHAMPIN HAWKINS, OF EDINBOROUGH, PENNSYLVANIA.

TIME-LOCK.

SPECIFICATION forming part of Letters Patent No. 314,838, dated March 31, 1885.

Application filed June 3, 1884. (Model.)

To all whom it may concern:

Be it known that I, MOSES CHAMPIN HAWKINS, of Edinborough, in the county of Erie and State of Pennsylvania, have invented a new and Improved Time-Lock, of which the following is a full, clear, and exact description.

My invention relates to the class of time-locks employed in safes to prevent the opening of doors except at the prescribed time.

My improvement consists in an auxiliary train and bolt releasing device operated by the lock-spindle, and arranged to open the lock in case of accident to the ordinary time-lock.

My invention is applicable to time-locks of all descriptions; but it is more particularly designed to be used in connection with the time-lock for which Letters Patent of the United States were granted to me on April 8, 1884.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a time-lock having my auxiliary train applied. Fig. 2 is a detailed view of the mainspring-barrel and winding apparatus. Fig. 3 is a mainspring-barrel; Fig. 4, the winding-ratchet; and Figs. 5, 6, and 7 show my improved escapement for time-locks.

The rear plate, A, of the ordinary time-lock, B, supports the wheel C, arranged to revolve once in twenty-four hours, and the said wheel C is provided with twenty-four equidistant holes, *a*, into either of which a pin, *b*, may be inserted for the purpose of raising the releasing-lever D and the locking-latch E, connected therewith by means of the rod *c*. The lever D is composed of two pieces, *d* *e*, which are connected together by the screw *f*, and are adjustable one upon the other, the part *d* turning on the screw *f*, and being capable of being secured in any desired position by the clamping-screw *g*. The part *e* of the lever D is pivoted on the screw *h*, projecting from plate A, and the said part *e* is prolonged beyond the screw *h*, and is provided with an arm, *e'*, extending across the wheel I, journaled on a stud projecting from the plate A.

The frame of the movement contains the wheels *i j k l* upon the arbors *i' j' k' l'*, each arbor being provided with a suitable pinion for

receiving motion from its drive-wheel. To the arbor *i'* is secured a barrel, F, containing the spring *m*, which is attached at its outer end by a hook to the inner surface of the barrel, and the boss of a ratchet-wheel, G, placed loosely on the arbor *i'*, extends over the boss of the barrel F, and is provided with a hook, *n*, for engaging the inner end of the spring *m*. The pin *o* projects radially from the barrel F, and the pin *p* projects from the inner face of the ratchet-wheel G, in position to engage the pin *o*. The ratchet-wheel G carries a pin, *q*, which is capable of engaging the teeth of a wheel, I, mounted loosely on the stud J, projecting from plate A. The wheel I has twenty-four teeth corresponding with the twenty-four hours of the day, and the said teeth are prevented from moving more than one tooth at a time by the detent-spring K, secured to the plate A and engaging the teeth. The arm *e'* of the lever D extends across the face of the wheel I, in position to be engaged by a pin, *r*, projecting from the inner face of the said wheel I.

The train, consisting of wheels *i j k* and their pinions, drives scape-wheel *l*, which engages the pallets *s s'* of a vertical balance-staff, *t*, as will be hereinafter more fully described.

The time-movement B is located in the safe above the lock L, in a convenient position to be operated by a system of levers, M, which are capable of winding the spring *m* in the barrel F.

The lever N, turning on a screw, *u*, projecting from the plate A, carries a hook-pawl, *v*, which is pressed forward into engagement with the ratchet-wheel G by means of spring *w*, attached to the lever N. The spring *x*, secured to the lever N and wrapped around its pivotal end, rests upon pin *y*, projecting from plate A, and tends to raise lever N after it has been depressed in the operation of turning the wheel G. The lever N is connected by a link, O, with an angled lever, P, pivoted in the casing of the lock L, and provided with a beveled arm, Q, which is engaged by the tumblers R of the lock.

When the said tumblers are arranged with their notches in line opposite the beveled arm Q, the said beveled arm drops into the notches of the tumblers, and the rotation of the lock-spindle and tumblers in the direction of the arrow forces the arm Q out of the notches, moving

the lever P and drawing down the lever N, moving forward the wheel G.

My auxiliary train, and mechanism connected therewith, is intended to be operated only when the ordinary time-lock fails to perform its functions; and when it does so fail the spindle of the combination-lock L affords the only means of operating the latch E, and this releasing the bolt of the lock and winding of the spring that connects the auxiliary train is effected in the manner already described by repeated operations of the lever P by means of the notches of the tumbler R.

The scape-wheel *l* of the auxiliary train is provided on its periphery with a series of triangular teeth, *a'*, with the apex of one angle of each tooth facing in the direction of the rotation of the scape-wheel.

The balance-staff *t* carries a suitable balance-wheel, *b'*, and the two pallets *s s'* are provided with notches *c'* and *c''*, of sufficient width to allow the teeth *a'* of the wheel *l* to pass through; but the pallets *s s'* are separated upon the balance-staff *t* by a distance greater than the length of one of the teeth *a'*, and the notches *c' c''* are arranged one in advance of the other, so that when a tooth *a'* strikes the pallet *s* at one side of the notch *c'* it will operate the balance-wheel *b'* in one direction, and when it strikes the pallet *s'* upon the opposite side of the notch *c''* it will turn the balance in the opposite direction. It will thus be seen that the opposite edges of the triangular teeth are alternately brought into engagement with the pallets *s s'* as the said teeth are driven forward by the spring *m* through the intermediate train of gearing.

My improved escapement is always in readiness for operation, and will start automatically whenever the spring connected with its train of gearing is wound.

Supposing the bolt of the lock L to be locked in a projected position by the latch E and the ordinary time-lock having failed to perform its functions, the spindle S of the lock L is employed to wind the spring *m* through the agency of the levers P and N, pawl *v*, and ratchet-wheel G. One operation of the spindle winds the spring *m* up a little, so that it is necessary to frequently repeat the operation of winding. The spring carries forward the train of gearing and operates the scape-wheel *l* and pallets *s s'* in the manner already described, and when the ratchet-wheel G has been carried forward through one revolution by the operation of the spindle S, the pin *p* in the said wheel strikes the pin *o*, projecting from the barrel F, and prevents further winding. The escapement will run until the power of the spring is exhausted, when it will be necessary to again wind the spring, and this operation is repeated until the wheel G has completed a sufficient num-

ber of revolutions to move the wheel I and bring the pin *r* into engagement with the arm *e'* of the lever D and raise the latch E through the medium of said arm and permit the lock L to be opened in the usual way. 65

The spring, the train of gearing, and the escapement are proportioned so that with the winding of the spring and running down of the train, required to produce the forward movement of the wheel I, it would be impossible to bring the pin *r* into engagement with the arm *e'* of the lever D before the prescribed time. 70 75

The wheel I may be placed in any desired position on its pivot, so that it will require more or less time to bring the pin *r* into engagement with the arm *e'* of the lever D. One tooth of the wheel I is cut away, so as to limit the movement of the wheel to one revolution, and thus prevent the injury or straining of any of the parts. 80

The lever D is prevented from getting out of place, in case of the overturning of the safe, by means of a spring, *d'*, secured to the plate A and bearing on the said lever. 85

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is— 90

1. The combination, with a time-lock, its releasing mechanism, and the spindle of a combination-lock, of an escapement, an auxiliary spring-acted train of gearing operating the same, and connected with said spindle to be operated thereby, and a connection between the said auxiliary train of gearing and the releasing mechanism of the time-lock, whereby if the time-lock should fail to operate, its releasing mechanism may be operated from the spindle of the combination-lock, substantially as set forth. 95 100

2. The combination, with a combination-lock and a time-lock having a releasing mechanism therefor, of an auxiliary spring-acted movement, as at F G, constructed to engage the said releasing mechanism, and provided with a self-starting escapement, and a spindle connected with and adapted to operate the said auxiliary spring-acted movement, and constructed to be operated from the outside of a safe, substantially as set forth. 105 110

3. The combination, with the bolt-latch E, of the lever D, toothed wheel I, provided with the lever-operating pin *r*, the ratchet-wheel G, provided with the pin *q*, pawl *v*, spring-acted train of gearing, the lever N, lever P connected therewith, the notched tumblers, and spindle of the combination-lock, as specified. 115 120

MOSES CHAMPIN HAWKINS.

Witnesses:

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JOHN PROUDFIT.