

S. SHAW.  
Time-Lock.

No. 222,084.

Patented Nov. 25, 1879.

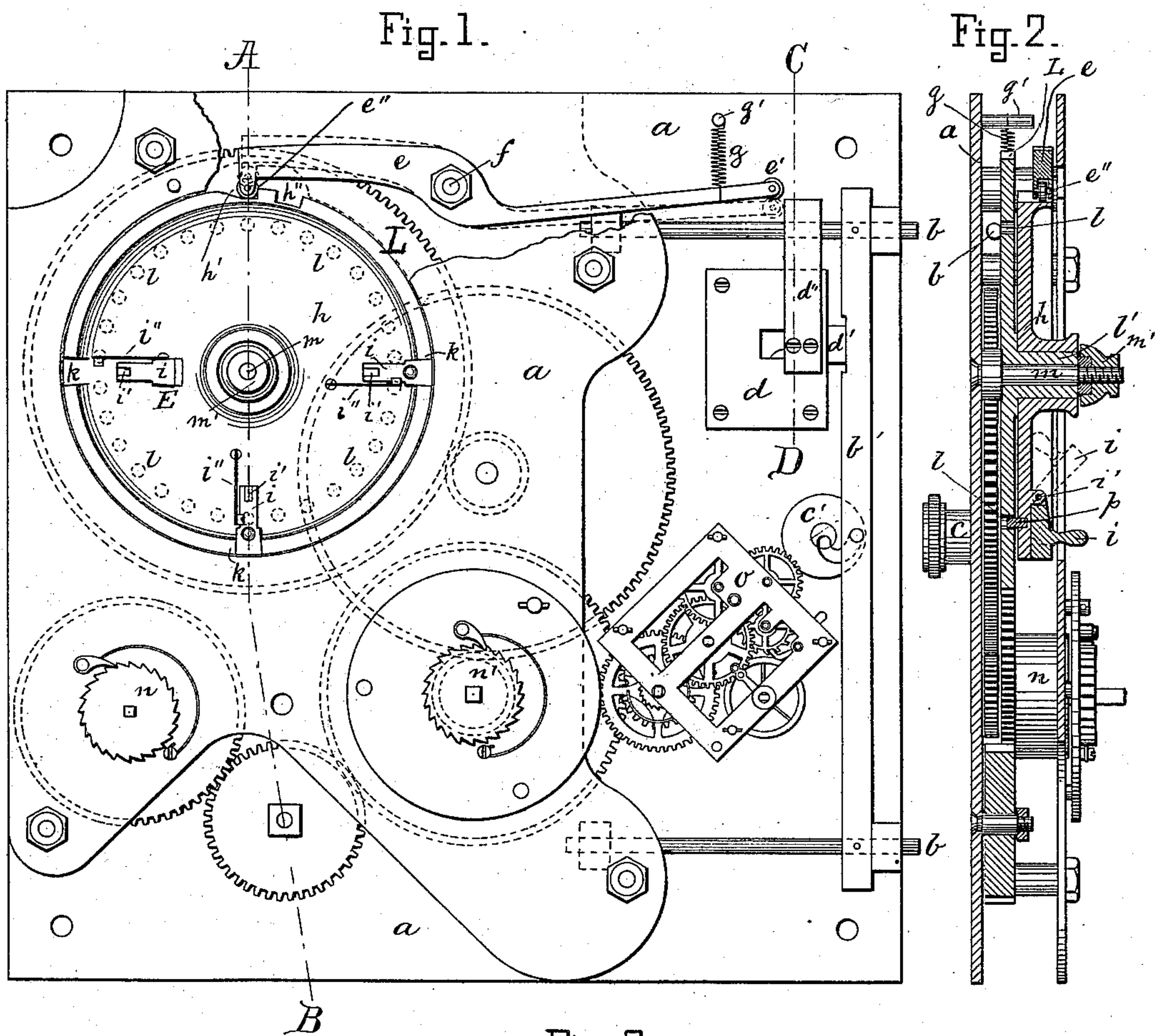
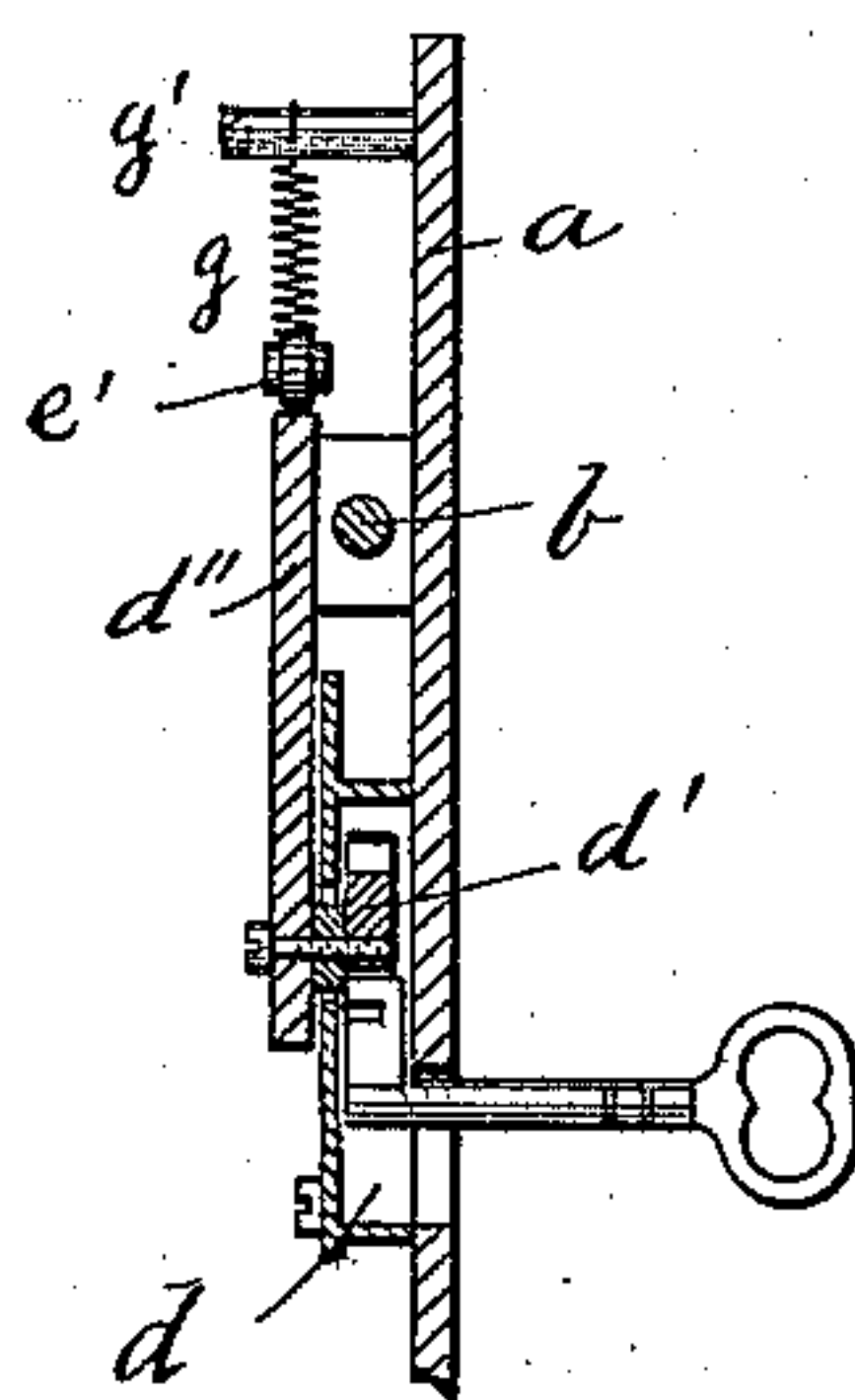


Fig. 3.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **222,084**, dated November 25, 1879; application filed September 8, 1879.

*To all whom it may concern:*

Be it known that I, SUMNER SHAW, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Time-Locks for Vaults, Safes, &c.; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in time-locks for safes, vaults, or other receptacles or boxes adapted to contain money or valuables; and it consists of the combination, with the bolt-work of a safe or vault and its combination or key lock, of a projection or bar on the movable bolt of the latter, a rocking lever movable on a fulcrum and automatically operated by means of a revolving disk having adjustable closing devices on its periphery, and so constructed and operated as to allow the bolt-work and combination or key lock to be opened or released whenever the inner end of the rocking lever is resting in any of the open notches on the said revolving disk, in which position of the lever its outer end is automatically raised by means of a suitable spring or its own gravity far enough to clear the projection on the combination or key lock; but when, by the rotation of the said revolving disk, the inner end of the rocking lever is raised so as to rest against the outer periphery thereof, its outer end is depressed behind the projection on the combination or key lock, so as to prevent the unlocking of the latter and the release of the bolt-work until the inner end of the rocking lever again reaches the notch on the wheel for which the time is set for allowing the safe to be opened.

In connection with the revolving disk I use one or two spring-drivers and one or two escapements, all connected by means of suitable gear-wheels to the said revolving disk, which spring-drivers and escapements constitute the clock mechanism usual on time-locks; and I prefer to use two spring-drivers and two escapements, all geared together, so that, if an accident should happen to one of them, the

other would still continue to work, and thus allow the safe or vault door to be opened without fail at the desired hour for which the clock mechanism is set.

To allow the safe or vault door to be opened it is first necessary that the inner end of the rocking lever shall have reached the desired notch on the rotary wheel, after which the combination or key lock may be freely operated so as to allow the bolt-work to be withdrawn, as usual, by means of a suitable knob or handle for that purpose; and it will thus be seen and understood that the combination or key lock is, as it were, interposed between the bolt-work and the time-lock mechanism, and that the time-lock and combination or key lock do not both act directly upon the bolt-work of the safe or vault door; but the time-lock acts upon the combination or key lock, and the latter acts upon or against the bolt-work to prevent the latter from being released until the desired hour for opening the safe or vault door, as described.

On the accompanying drawings, Figure 1 represents a front elevation of my invention. Fig. 2 represents a cross-section on the line A-B, shown in Fig. 1; and Fig. 3 represents a cross-section on the line C-D, also shown in Fig. 1.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

*a* is the plate or frame supporting the various parts of the mechanism, and *b b b'* constitute the bolt-work of a safe or vault door, as usual. *c* is the knob or handle with its cam *c'*, for the operation of the bolt-work, in the ordinary manner. *d* is the lock, with its bolt *d'* resting against the bolt-work bar *b'* when the door is locked. The lock-bolt *d'* is provided with a projection, *d''*, as shown. *e* is the rocking lever for the purpose set forth, it being, preferably, provided with an anti-friction roll, *e'*, in its outer end, and a similar anti-friction roll, *e''*, in its inner end, as shown in Fig. 1. *f* is the stationary fulcrum, on which the lever *e* rocks, as described. *g* is the spring attached to the outer end of the lever *e* and to a stationary pin, *g'*, on the plate *a*, as set forth, and for the purpose described. *h* is the rotary disk, having on its periphery a starting notch



or recess,  $h'$ , into which the inner end of the lever  $e$  is caused to rest by setting and adjusting the said rotary disk just previous to the closing of the safe or vault door.

$i i i$  represent the adjustable closing devices, preferably made to swing on a hinge or joint,  $i'$ , in their inner ends, and provided each with a spring,  $i''$ , by means of which each of said closing devices may be held in an open or closed position, as may be demanded, according to the desired hour for opening the safe or vault door. At E in Fig. 1, as well as in dotted lines in Fig. 2, one of the closing devices  $i$  is shown as held back in an open position, the other being shown as closed and resting within the notches  $k k k$  on the periphery of the rotary wheel  $h$ , as and for the purpose set forth.

The said adjustable closing devices  $i i i$ , one or more, may be adjustable by sliding, turning, or swinging them in any other suitable manner without departing from the spirit of my invention.

L is the index spur-gear, freely movable on the stationary pin  $m$ , and provided with a central hub or bearing,  $l'$ , as shown.

The index gear-wheel L receives its rotary motion by means of suitable intermediate gears, as usual, from a pair of spring-drivers,  $n n'$ , and escapements  $o o$ , (one of the latter only being shown in the drawings.)

$l l l$  are perforations or recesses (shown in dotted lines on Fig. 1) on the index-wheel L, which recesses serve, in connection with a projection or pin,  $p$ , on the under side of the disk  $h$  to adjust and connect the index-wheel L and disk  $h$  together, according to the duration of time desired for keeping the safe or vault closed.

The index-wheel L and disk  $h$  are arranged concentrically, the latter fitting loosely on the central hub,  $l'$ , of the former, as shown, or in a similar manner.

$m'$  is a nut on the upper end of the screw-threaded spindle  $m$ , for the purpose of securing the index-wheel and rotary disk together in their proper relative positions after being adjusted.

To adjust the disk  $h$  preparatory to closing the safe or vault door it is only necessary to unscrew the nut  $m'$  far enough to allow the said disk to be raised high enough above the index-wheel L so as to disengage the pin  $p$  from the recess  $l$ , in which it is for the time being resting, and to turn the disk around its axis to the position shown in Fig. 1, so that the inner end of the lever  $e$  shall lie in the

starting-notch  $h'$ , and to lock the index-wheel and rotary disk together in this position, and to screw down the nut  $m'$  accordingly. The lever  $e$  will then be in the position shown in full lines in Fig. 1, and the safe may then be locked, first by the bolt-work and further by the combination or key lock. In a few minutes the clock mechanisms will automatically have turned the index-wheel and rotary disk far enough around their axis so as to raise the inner end of the lever  $e$  and lower its outer end to the position shown in dotted lines in Fig. 1, thus preventing the lock and bolt work from being opened until the rotary disk  $h$  has traveled around its axis far enough to allow the inner end of the lever  $e$  to drop into the nearest notch that is being kept open, according to the desired time for opening the safe or vault, at the same time as the outer end of said lever is automatically raised, so as to allow free and unobstructed passage of the lock-bolt and its projection, as hereinabove described. The clock mechanism is automatically stopped as long as the inner end of the lever  $e$  is resting in any of the open notches, except the starting-notch opening  $h'$ .

$h''$  is an open notch in rear of the starting-notch  $h'$ , for the purpose of automatically stopping the disk  $h$  before it makes one complete revolution in case accidentally no other notch should have been left open, and thus permit the safe to be opened when said opening  $h''$  reaches the inner end of the lever  $e$ .

What I wish to secure by Letters Patent and claim is—

1. In combination with the bolt-work  $b b b'$  of the combination or key lock  $d$  of a safe or vault, the lock-bolt  $d'$ , its projection  $d''$ , the lever  $e$ , and the revolving disk  $h$ , having adjustable closing devices  $i i i$  and notches  $k k k$ , as described, and provided with suitable connecting mechanism to a pair of spring-drivers and escapements, as and for the purpose set forth.

2. In combination with the rotary disk  $h$  of a time-lock for safes or vaults and its notches  $k k k$ , the adjustable closing devices  $i i i$ , as and for the purpose set forth and described.

In testimony that I claim the foregoing as my own invention I have affixed my signature in presence of two witnesses.

SUMNER SHAW.

Witnesses:

ALBAN ANDRÉN,  
JOS. C. TORREY.