2 Sheets—Sheet 1.

P. F. KING.

Time-Lock.

No. 211,409. Patented Jan. 14, 1879.

Fig. 3

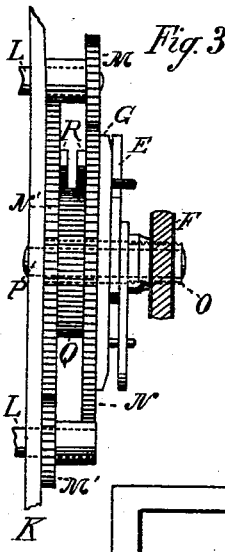


Fig. 4

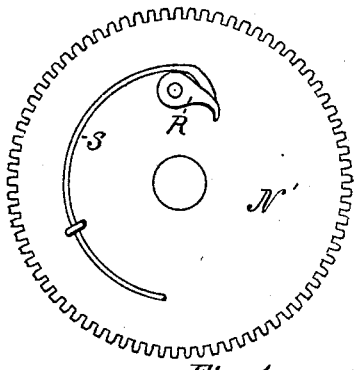


Fig. 5

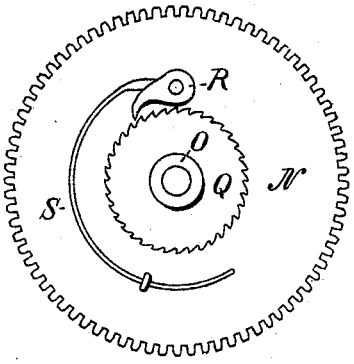


Fig. 1

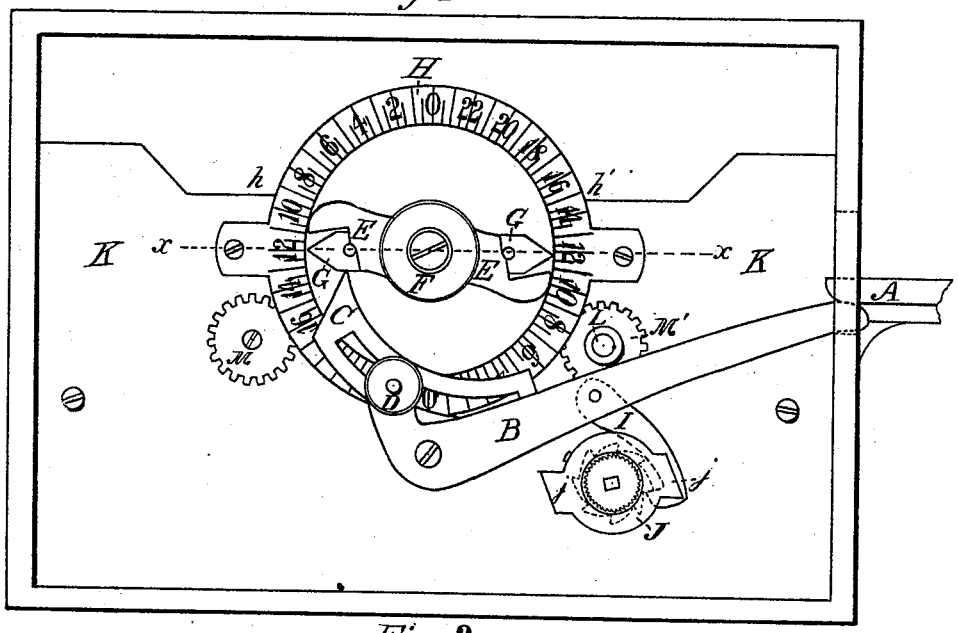
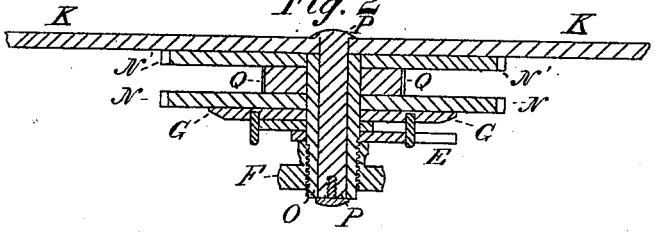


Fig. 2



Witnesses
Geo. H. Knight.
Walter Allen.

Inventor
Phineas F. King
By Knight Bros.
Attys.

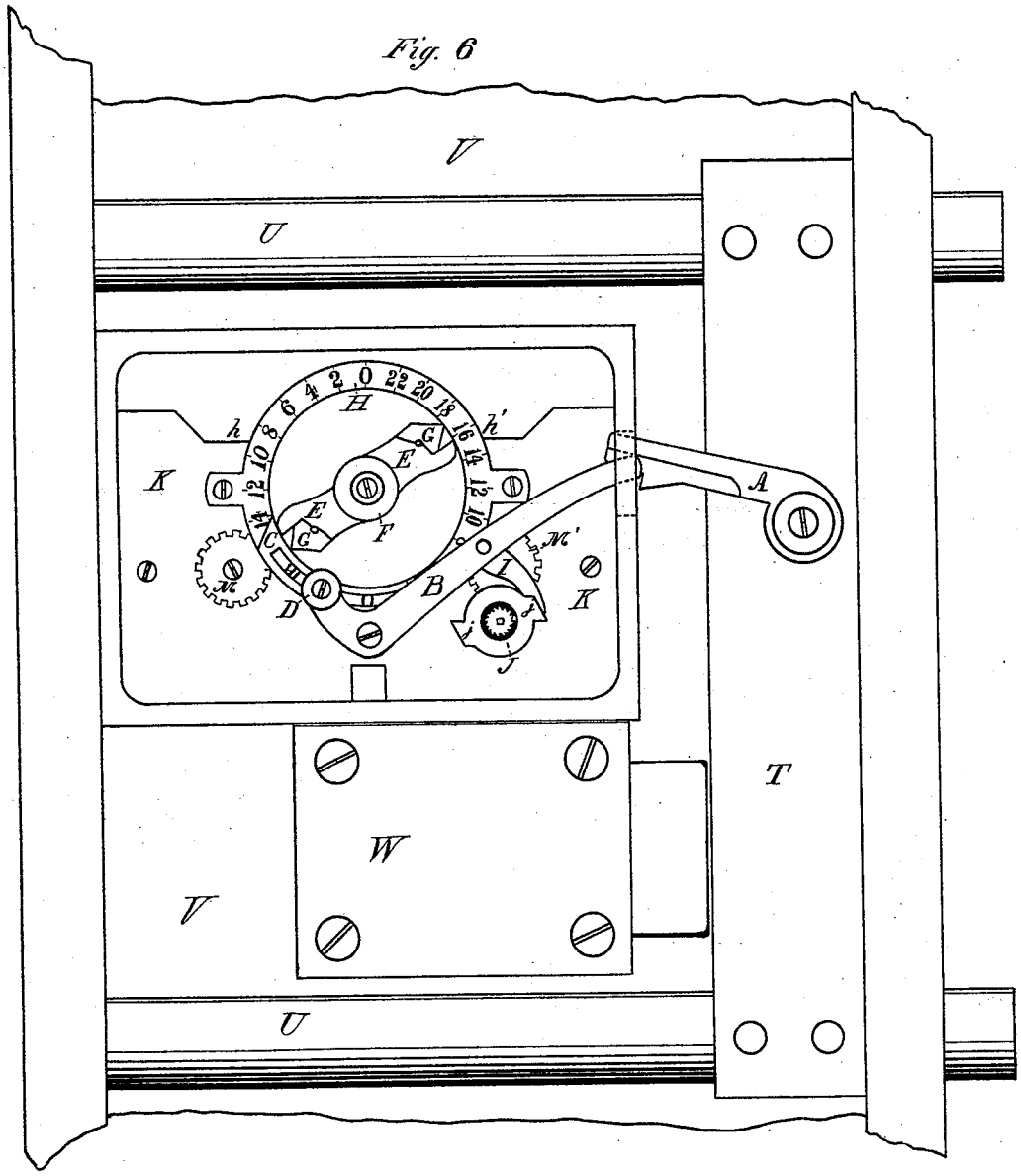
2 Sheets—Sheet 2.

P. F. KING.

Time-Lock.

No. 211,409. Patented Jan. 14, 1879.

Fig. 6



ATTEST,
Geo. H. Knight.
Walter Allen

INVENTOR.
Phineas F. King
By Knight Bros.
Attys.

UNITED STATES PATENT OFFICE.

PHINEAS F. KING, OF ST. LOUIS, MISSOURI, ASSIGNOR TO GEORGE N. BEARD AND ELEAZER J. BEARD, OF SAME PLACE.

IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **211,409**, dated January 14, 1879; application filed April 20, 1878.

To all whom it may concern:

Be it known that I, PHINEAS F. KING, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Time-Locks for Safe or Vault Doors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

According to the first part of this invention two pinions or small gear-wheels are made fast to two clock-shafts, and rotate once in twelve hours. Each of these pinions engages with its separate master-wheel, revolving once every forty-eight hours, and fitted loosely on a single sleeve-spindle rotating on a fixed center arbor or stud as a sleeve. These forty-eight-hour wheels each have a spring-pawl to engage with a single central ratchet-wheel fixed to said spindle for operating the pointers.

The invention consists, secondly, in the combination, with the unlocking mechanism of a time-lock, of two clock-works, a single connecting-sleeve spindle provided with a single ratchet-wheel, and two forty-eight-hour wheels, mounted on said spindle and provided with pawls engaging said ratchet-wheel, placed between said forty-eight-hour wheels.

Figure 1 is a side elevation, as seen when looking toward the inside of a safe or vault door. Fig. 2 is a section at *x x*, Fig. 1. Fig. 3 is an under view of the works. Fig. 4 is a side view of one of the forty-eight-hour wheels removed, and Fig. 5 is a view of the other forty-eight-hour wheel and the ratchet-wheel upon the spindle. Fig. 6 is a detail elevation, showing the time-lock and the other lock upon the inside of a safe or vault door.

I will first mention certain parts which are set forth in Letters Patent to me, No. 201,535, dated 19th March, 1878.

A is the drop latch or catch, pivoted to the bolt-work of the safe or vault, as described in the patent aforesaid. B is the lifting-lever, by which catch A is lifted, to allow the safe to be unlocked. C is the adjustable segment-plate on the lever B, and D the set-screw of plate C. E E are the wipers or hands, which, in their revolution, act on the plate C to lift the lever B. These hands are arranged to be set together, as in the aforesaid patent, and for the same purpose, and are secured to their shaft or spindle by a set-screw, F. G G are pointers, attached to the same spindle as the hands E. The pointers point to figures, *h* and *h'*, on the fixed indicator-plate H. The figures, *h* and *h'*, run in each series from 0 to 24, each series extending half-way around the annular indicator, series *h'* extending from bottom to top, and the series *h* extending from top to bottom, in the same direction around the ring. I is the pawl upon the lifting-lever B that works the safety-wheel J by means of the ratchet upon it. (Shown in dotted lines, Fig. 1.) *j j* are the lugs which, at each fourth day, come beneath the lifting-lever, and hold it up in the unlocking position until turned from beneath it by the key in winding the clock-work, so that in the event of neglect to wind the clock-works the time-lock will remain unlocked. The retrograde motion of the safety-wheel is prevented by a pawl and ratchet, as described in Patent No. 207,535.

All the above parts described by letter are substantially the same as in the patent aforesaid, No. 207,535, and I refer to the specification of said patent for a detailed description. The only exception is that the indicator-plate is numbered differently, and the purpose of this will be set forth hereinafter.

K is the division-plate between the chamber containing the clock-movements and that containing mechanism interposed between the clock-movements and the bolt-work of the safe or vault door, and to which mechanism my improvement is confined.

L L are shafts which are rotated by clock-movements once in twelve hours. Each of these shafts carries a spur-pinion, which is fast to the shaft. The pinion M engages a cog-wheel, N, having just four times the diameter of the pinion, so that as the pinion rotates once in twelve hours the cog-wheel N will rotate once in forty-eight hours. In like manner the pinion M' engages the other forty-eight-hour cog-wheel, N'.

Both the cog-wheels N N' turn freely upon

a spindle or tubular shaft, O, which in turn rotates upon a fixed arbor, P, projecting from the plate K. Fast upon the spindle O, between the two forty-eight-hour wheels, is a ratchet-wheel, Q, which is engaged by the spring-pawls R on the sides of the cog-wheels N N′. The pawls are kept in contact with the ratchet-wheel Q by springs S. T (see Fig. 6) shows the train-bar, to which the drop latch or catch A is pivoted. The train-bar is attached to the door-bolts U, which work in bearings in the door V. W is the other lock, which is distinct from the time-lock, and which may be used at all times either day or night, but is chiefly intended for use in day-time, or business-hours, when the time-lock is in open position.

The lock W may be of any kind, and no novelty is claimed in this *per se*.

I claim as my invention—

1. In combination with the time-movements and unlocking mechanism of a time-lock, the pinions M M′, made fast to the clock-shafts L L, and the forty-eight-hour wheels N N′, fitted loosely on a single sleeve-spindle, O, and provided with spring-pawls R S, both engaging with a single central ratchet-wheel, Q, fixed to said spindle, for operating the pointers and hands for unlocking, as described.

2. In combination with the unlocking mechanism of a time-lock, two clock-works, a single connecting-sleeve spindle provided with a single ratchet-wheel, and two forty-eight-hour wheels, mounted on said spindle and provided with pawls engaging said ratchet-wheel, placed between said forty-eight-hour wheels, substantially as and for the purpose set forth.

PHINEAS F. KING.

Witnesses:

SAML. KNIGHT,

GEO. H. KNIGHT.