2 Sheets--Sheet 1.

E. STOCKWELL.

Time-Lock.

No. 168,062. Patented Sept. 21, 1875.

FIG. 1.

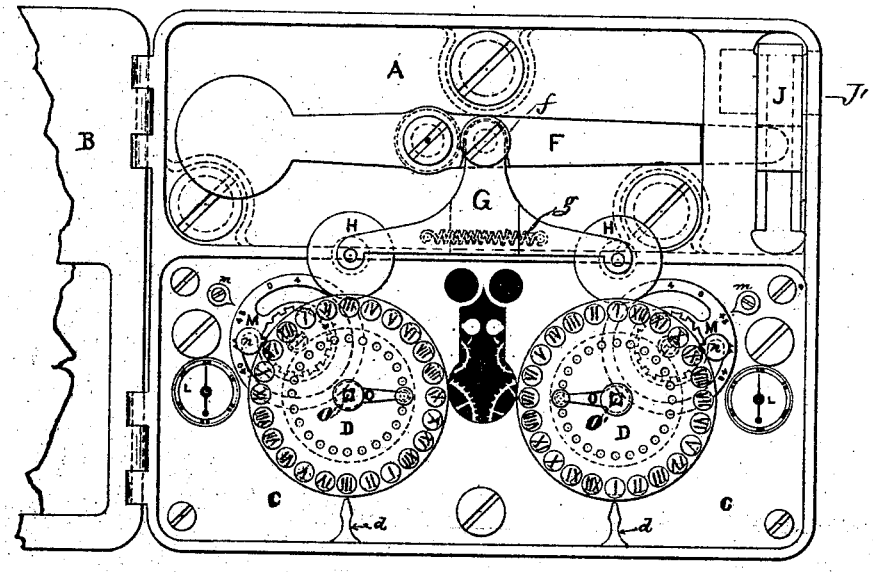


FIG. 2.

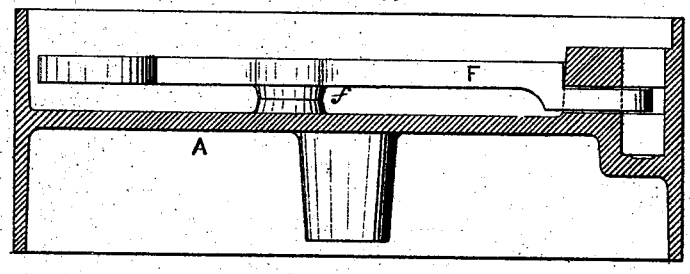
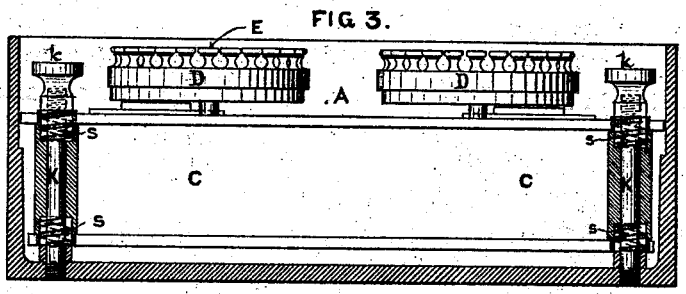


FIG. 3.



WITNESSES.

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2 Sheets--Sheet 2

E. STOCKWELL.

Time-Lock.

No. 168,062. Patented Sept. 21, 1875.

FIG. 4.

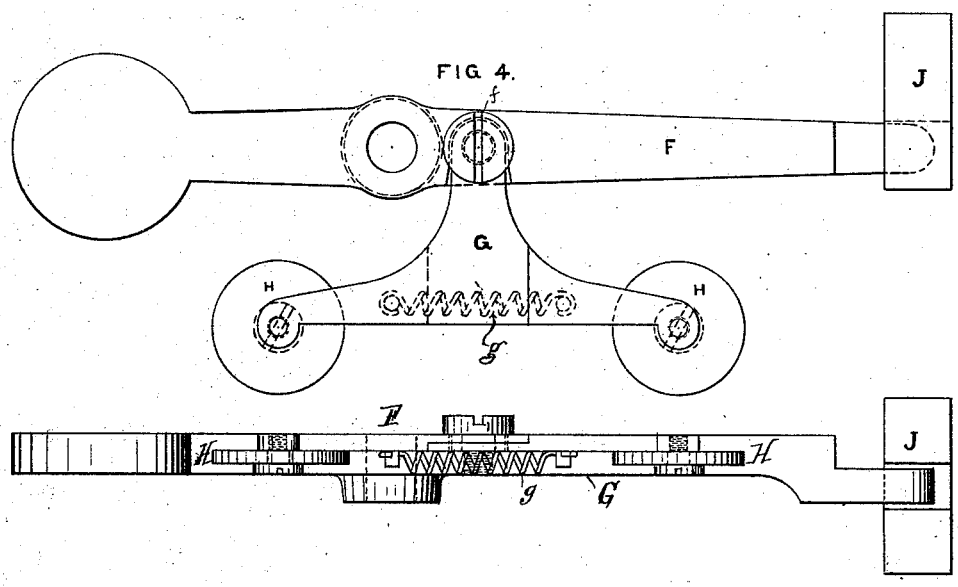
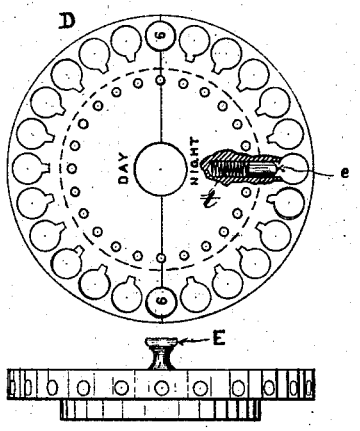


FIG. 5.



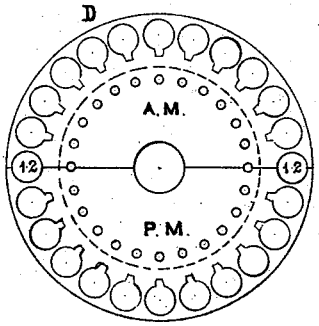


FIG. 6.

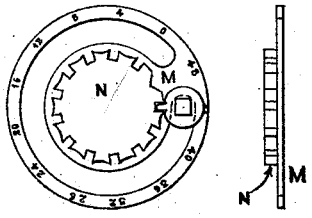


FIG. 7.

WITNESSES.

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UNITED STATES PATENT OFFICE.

EMORY STOCKWELL, OF STAMFORD, CONNECTICUT.

IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **168,062**, dated September 21, 1875; application filed March 15, 1875.

To all whom it may concern:

Be it known that I, EMORY STOCKWELL, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Locking Mechanism; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improved locking mechanism for doors.

In the drawings, Figure 1 represents a front elevation of my time or chronometer lock, with its door or lid swung oven. Fig. 2 represents a section and plan view of a portion of the same, showing the counterbalance-lever operating the dog-block. Fig. 3 is a view, part in section and part in plan, showing the springs or buffers and studs for the attachment of the clock-movements and the hour-dials. Fig. 4 is a front elevation and plan view of the counterbalance-lever, dog-block, yoke, and friction-rollers. Fig. 5 is a view, part in front elevation, part in side elevation, and part in section, of the hour-dials, showing the different manner in which the hours upon the same may be divided from meridian to meridian, or from 6 a. m. to 6 p. m. Fig. 6 is a view in front and side elevation of the winding-indicators and winding-stops, figured in such a manner as to indicate at any given time the number of hours which the clock-movement has run; also, the number of hours remaining before the same shall have run down. Fig. 7 is a view in plan and side elevation of one of the adjustable hour-pins.

This invention comprises certain improvements in chronometric or time locks; and the invention consists in cushioning the clock-work of such lock between buffers or springs, thereby preventing its derangement or stoppage by concussion of the door; also, in such a lock provided with a pair of revolving dials having a series of adjustable pins, whereby the locking and unlocking of the lock may be fixed at any desired hour or period of time; also, in combining with such adjustable pins friction-stops for securing the pins in the desired positions; also, in combining two separate and independent clock-movements, each having a revolving dial provided with a series of adjustable pins, over which the yoke rides, with bolting or dogging mechanism common to both, and operated by either one or both of said dials.

The invention further consists in a yoke resting upon moving supports, which are actuated by independent clock-movements, the motion of any one of which supports will, through the yoke, effect the locking and unlocking of the lock; also, in a chronometric lock constructed to lock and unlock automatically, a yielding device operated and released by the clock mechanism, and interposed between the clock mechanism and the bolting mechanism, to prevent the stopping of the clock-movement by the blocking of the bolt mechanism of the lock; also, in a chronometric lock, two dials having a series of adjustable pins, and adapted to be revolved independently of their axes when desired; also, the combination of the yoke pivoted to a lever with one or more revolving dials and rollers bearing thereon. Further, in the combination of the yoke, having an adjusting device, with the levers and gate or dog; and also, in a time-lock, the combination of the pivoted yoke and oscillating lever, the yoke, lever, and sliding dog or block, and the lever, counter-weight, and yoke, severally, as hereinafter more fully specified.

A is any suitable frame or case for holding and containing the chronometer-lock mechanism. B is its cover or lid, which may be swung upon hinges, and provided with a lock. This lid or cover may or may not be constructed partly of glass or other transparent material. C C are plates, carrying and containing any suitable clock mechanism, whose operation and function will hereafter more fully and at large appear. D D are hour-dials, by means of which the times of locking and unlocking may be regulated at will, and which are made to revolve by the clock-movement in such a regular and exact manner as that the correct time at any period during the twenty-four hours of the day may be ascertained. *d d* are stationary pointers for indicating time upon the hour-dials D. E E are adjustable pins,

which may be twelve or twenty-four in number, and upon whose heads are indicated, in suitable characters, the different hours of the day. *e e* are friction or stop pins for the same, which are operated by springs *t*, or any suitable equivalent, whereby the stop-pin *e* shall operate as a friction or stop to the hour-pin E.

F is a counterbalance or oscillating lever, fulcrumed to the case A, and to which is attached, by a swinging joint at *f*, the yoke G. This yoke acts as a yielding device, as will hereinafter appear, on account of its being divided into two swinging portions, held together by the action of the spiral spring *g* or its equivalent. Upon either extremity of the yoke G are attached the friction-rollers H. J is the dog-block, bolting device, or locking-piece, attached to lever F. K K are studs by which the clock-movements are attached to the case A. S S are the springs and *k k* the nuts on the studs K K. By means of the springs on the studs the liability of damage to the clock by any sudden concussion or percussion is, to a great degree, obviated. L L are dials for the indication of minutes. M M are winding-indicators, upon which are placed figures, for purposes which will hereinafter more fully appear. *m m* are stationary pointers operating in connection with the winding-indicators M M. N N are winding-stops of the usual or any desired construction. *n n* are pinions for the winding-stops N N. O O are regulator-hands for setting the hour-dials so that they shall indicate the correct time of day. O′ O′ are the nuts for fastening the same upon the dials D D.

I have shown two independent clock-movements, which have no combination of action whatever with each other, for the purpose and intention that should either one of said movements at any time run down, or for any reason become inoperative, the remaining one shall perfectly perform the entire function of the lock. Should it ever be deemed necessary to multiply the clock-movements to a greater number than I have shown, the same may be done, and the mechanism operating the dog-block J be suitably adapted thereto. Any appropriate clock-work may be employed so long as the same is capable of keeping correct time, or is capable of operating the lock at stated and definite periods in a stated and definite manner, as herein described.

The action of the clock-work is to revolve the dials D. As here shown, the hour-dials D D revolve in a direction outward from the center, and the adjustable pins E E must accordingly be arranged so as to read, the one to the right and the other to the left. These adjustable pins are made to pierce the dials, and when not withdrawn or brought forward, they provide a support or bearing for the friction-rollers H, and by their action upon said rollers, through the yoke G, the counterbalance-lever F is so operated upon that the dog-block J closes the bolt-opening J′; whereas, were the pins E withdrawn or brought forward, the friction-rollers H would be permitted to drop down behind the disk or dials D, whereby the counterbalance-lever F would be deflected, carrying with it the dog-block J, and thereby permitting access to the bolt-opening J′.

In order to set or adjust the dials D D so that they shall indicate the correct time of day, it is necessary to unscrew the nuts O′ and lift off the regulator-hands O, when the dials D may be revolved at pleasure by the hand.

The dials D may be divided from 6 a. m. to 6 p. m., and the two halves denominated night and day; or they may be divided from meridian to meridian and marked "a. m." and "p. m." The correct time is to be read from the top of the dials; therefore, in setting a dial to correct time it should be turned until the correct time is indicated at the top, and its opposite—*i. e.*, the time twelve hours ahead—is directly in line with the stationary pointer *d* at the bottom, after which the regulating-hand O is replaced and made to engage in the nearest or most convenient hole upon the face of the dial. Fractions of an hour are indicated upon the minute-dials L L, which may be set by moving the pointer to the correct indication.

In order to insure uniformity and reliability of action, any proper regulating mechanism may be attached to or introduced into the clock mechanism, whereby the same may be made to travel slower or faster.

The winding-post and the winding-indicators M, pointers *m* for the same, winding-stops N, and pinions *n* for the same so co-operate that the figures upon the winding-indicators M which represent the hours show how long the clock mechanism has been running, and how long it will continue to operate before running down.

It will therefore be seen that my time-lock is open when the adjustable pins immediately under one or both of the rollers are pulled out or forward, and during the hours that the lock is desired to remain open the pins representing those hours should be pulled out or forward, while those representing the hours at or during which it is desired to have the lock closed are to be pushed in, so that they shall force up the counterbalance-lever and dog-block or bolting mechanism, and thereby close the opening J′. Both or all of the dials should be set alike and regulated to run equally, so that if one should fail in its operation the others shall properly perform the functions of the lock.

To prevent the clock's being deranged by any accident, intentional jarring, or concussion of the door or lid to which the lock is attached, the whole clock movement is held between springs S, arranged upon the studs K. To guard against the stoppage of the clocks by the dog-block being prevented from moving by reason of friction against it from the bolt-work of the door, the effect of which would be to prevent the friction-rollers H from rising, and thereby prevent the rotation of the

hour-dial D, the yoke G is made in two parts or sections, held together by the spring *g*, as heretofore described. Should the upward motion of the counterbalance-lever F be impeded or prevented, the spring *g* permits the two sections of the yoke G to separate, and the rollers to rise to their places without stopping the clocks. When the obstruction or impediment is removed, the operation of the spring *g* will raise the lever and dog-block to the locked position.

This chronometer or time lock is designed to be applied to a door, in combination with an ordinary non-chronometric dial or combination lock. For use upon a bank-safe, the cashier, upon closing his door, locks the dial-lock as usual, prior to which, however, he winds up, and properly sets and adjusts, the time or chronometer lock to lock at any desired hour, say at 7 or 8 p. m., and to remain locked during any period, and to unlock at any desired hour, say at 9 a. m. the next morning. This is done by withdrawing and leaving pushed in the proper hour-pins upon the dials D, which operate as hereinbefore described. This leaves the safe-door in such a condition that up to 7 or 8 p. m. the cashier can open it by unlocking the non-chronometric lock; but from 8 p. m. until 9 a. m. the next day the time-lock A is closed, during which period, although the non-chronometric lock might be unlocked or destroyed, no one can open the door until 9 o'clock a. m. of the next day, when the clock-work of the time-lock operates to free the opening J, and thus permit the retraction of the bolt-work.

I am aware that chronometer-locks, automatically locking and unlocking, are furnished with yielding devices, operated and released by the clock mechanism only, and interposed between the bolt and clock work, and that the clock in said locks is not stopped when the bolt-work is blocked, but that in said locks the yielding mechanism does not of itself produce this result.

What I claim as my invention is—

1. A chronometric lock, the clock mechanism thereof cushioned on springs, which are interposed between said mechanism and the case of the lock, substantially as and for the purpose described.

2. In a chronometric lock, a pair of revolving dials provided with a series of adjustable pins, whereby the locking and unlocking of the lock may be fixed at any desired hours or periods of time, substantially as and for the purpose described.

3. In a chronometric lock, the adjustable pins for determining the time of locking or unlocking, in combination with friction-stops, for securing them in the desired positions, substantially as and for the purpose described.

4. In a chronometric lock, the combination of two separate and independent clock movements, each having a revolving dial provided with a series of adjustable pins, over which the yoke rides, with bolting or dogging mechanism common to both, and operated by either one or both of said dials, substantially as and for the purposes set forth.

5. In a chronometric lock, a yoke resting upon moving supports, which are actuated by independent clock-movements, the motion of any one of which supports will, through said yoke, effect the locking and unlocking of the lock, substantially as shown and described.

6. In a chronometric lock constructed to automatically lock and unlock, a yielding device operated and released by the clock mechanism, and interposed between the clock mechanism and the bolting mechanism, to prevent the operation of the clock mechanism from being stopped by the blocking of the bolt mechanism of the lock, substantially as shown and described.

7. In a chronometric lock, two revolving dials, with a series of adjustable pins, and constructed to be revolved independently of their axes or not, as may be desired, substantially as and for the purpose described.

8. In a chronometric lock, the combination of the yoke, pivoted to the lever, with one or more revolving dials, and with rollers bearing thereon, substantially as and for the purpose described.

9. In a chronometric lock, the combination of the yoke, having a yielding device, with the lever and gate or dog, substantially as and for the purpose described.

10. In a chronometric lock, the yoke pivoted to and in combination with the oscillating lever, as and for the purpose described.

11. In a chronometric lock, the combination of an oscillating lever with the yoke pivoted to it, and with a sliding dog or block, substantially as and for the purpose described.

12. In a chronometric lock, the combination of an oscillating lever with a counter-weight and yoke, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of March, 1875.

EMORY STOCKWELL.

Witnesses:

HENRY R. TOWNE,

FRANKLIN UNDERHILL.