2 Sheets—Sheet 1.

J. SARGENT.

TIME ATTACHMENTS FOR LOCKS.

No. 186,369. Patented Jan. 16, 1877.

Fig. 1.

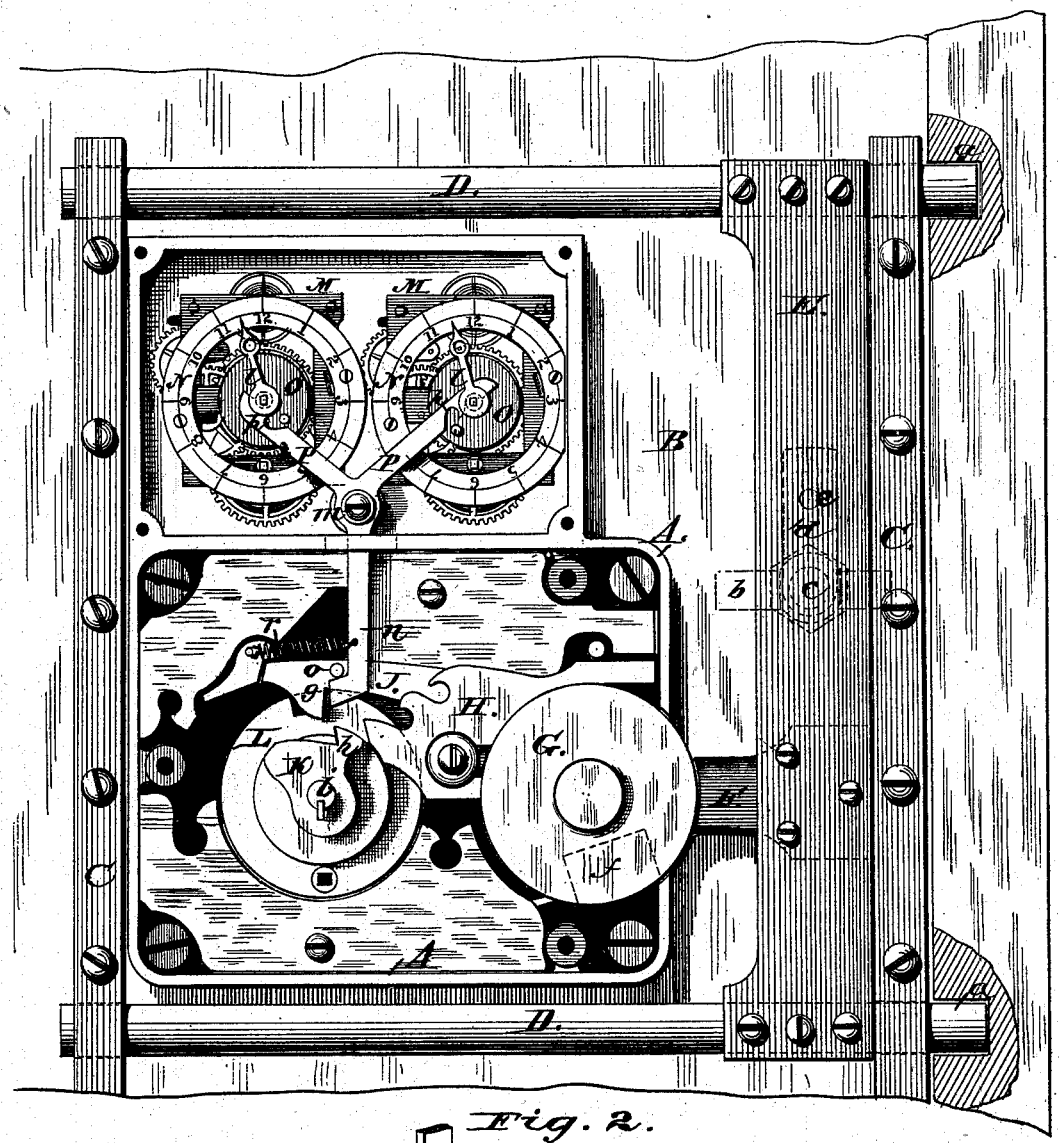
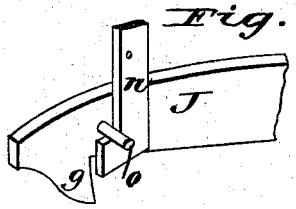


Fig. 2.



Attest:
H. L. Perrine
W. L. Boomer

James Sargent.
Inventor.

By. James L. Norris.
Attorney.

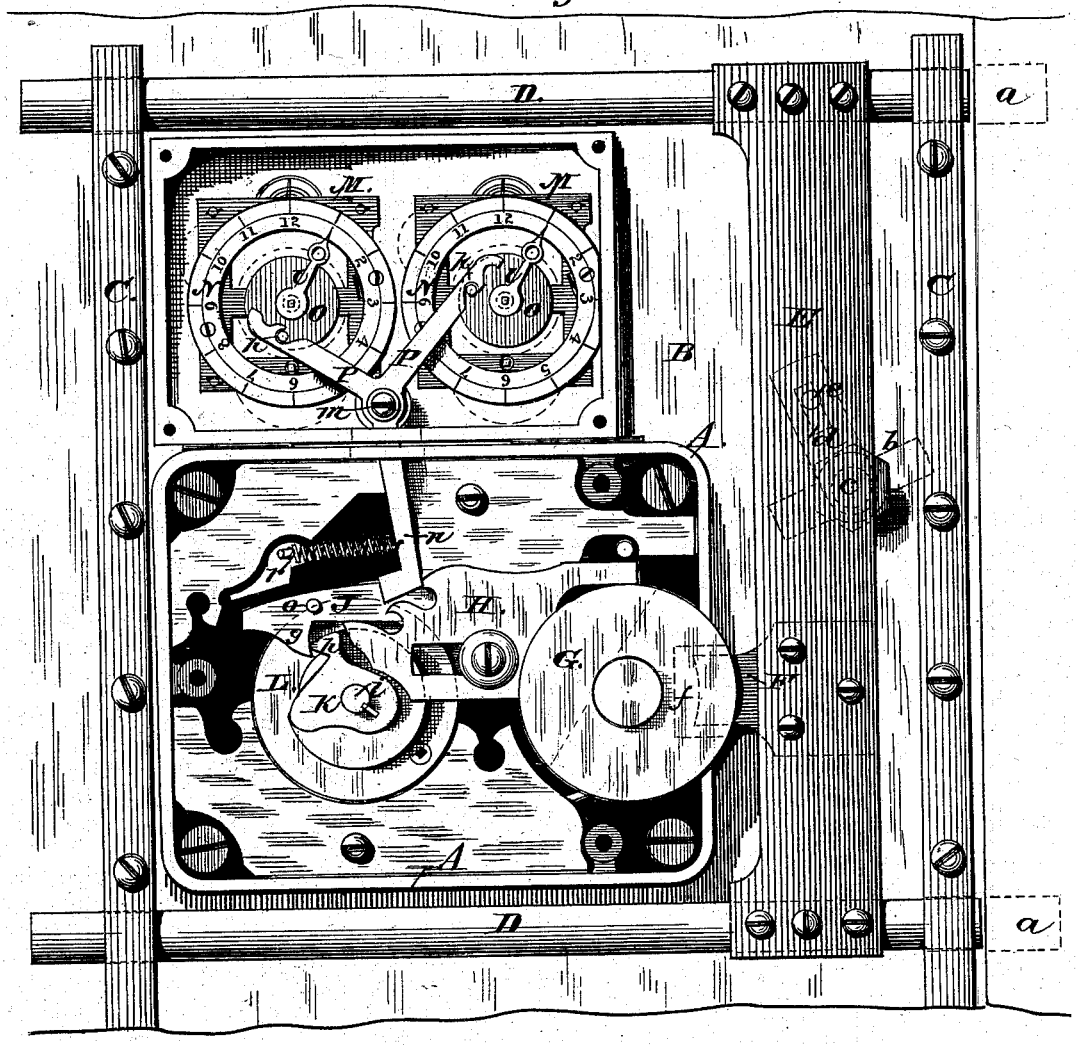
2 Sheets—Sheet 2.

J. SARGENT.

TIME ATTACHMENTS FOR LOCKS.

No. 186,369. Patented Jan. 16, 1877.

Fig. 3.



Attest:
H. C. Perrine
Jos. L. Coombs

James Sargent.
Inventor.
By. James L. Norris.
Attorney.

UNITED STATES PATENT OFFICE.

JAMES SARGENT, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN TIME ATTACHMENTS FOR LOCKS.

Specification forming part of Letters Patent No. **186,369**, dated January 16, 1877; application filed January 9, 1877.

To all whom it may concern:

Be it known that I, JAMES SARGENT, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Locks for Safe and Vault Doors, of which the following is a specification:

This invention relates to certain improvements in locks for safe and vault doors, its object being to construct a time-movement in such a manner as to have it guard and act in conjunction with a combination-lock, so as to render said combination-lock, when locked, inoperative and incapable of being unlocked until the arrival of the appointed hour, at which time the time mechanism will liberate or cease its guarding action on the combination-lock, and admit of said lock being operated and unlocked by the person having knowledge of the combination upon which said lock is set, so as to enable the bolt-work of the safe or vault door to be retracted and the door opened.

My invention consists in combining a time mechanism with a combination-lock, and adapting the same to operate in connection with the bolt-work of a safe or vault door, the time mechanism being constructed to act in conjunction with, and guard, dog, or render inoperative, the aforesaid combination-lock when locked, the said combination-lock having a bolt or bearing specially constructed and arranged, so that when in one position it will rest upon or receive the pressure of the bolt-work of the door when the latter is thrown out and the lock locked, and thus prevent the retraction of the bolt-work.

This arrangement retains the bolt-work in a locked condition during the hours appointed for it to remain locked, and prevents the lock from being unlocked by any one having legitimate or surreptitious knowledge of the combination upon which the lock is set, until the arrival of the appointed hour, when the time mechanism will cease its dogging or guarding action upon said combination-lock, and admit of said lock being operated by those in possession of the combination, so as to enable them to place the bolt or bearing of the lock in such position as to enable the retraction of the bolt-work, whereby the safe or vault door can be opened.

The invention further consists in a certain combination, substantially as hereinafter set forth—that is to say, a union consisting of a combination-lock, a time-movement, and a yoke lever or connection adapted to be placed upon a safe or vault door to operate in conjunction with the bolt-work thereon, said yoke lever or connection being constructed and located in such respect to the combination-lock as to render the unlocking of the same absolutely impossible when locked, and so remain locked until the arrival of the appointed or predeterminate time, at which time the said yoke lever or connection, through the action of the time-movement, is caused to cease its guarding or dogging action upon the combination-lock, at which time, or any time after during the time the time mechanism has ceased its dogging or guarding action, the said lock can be unlocked by the person in possession of the proper combination upon which the lock is set, the peculiarity and novelty of this union being that when the said combination-lock, with its time mechanism, is arranged upon a safe or vault door to operate in conjunction with the bolt-work thereon, and all locked, the tumblers, or combination-wheels of the said lock, and the spindle of the same, together with its usual indicator, are all left free to be moved or rotated without exerting any unlocking action or strain whatever upon the mechanism composing the combination-lock, or the delicate mechanism composing the time-movement.

In the drawings, Figure 1 represents a portion of a safe or vault door, illustrating thereon a bolt-work and a combined time mechanism and combination-lock, with covers removed, the bolt-work being thrown out into the jamb of the door, and the combination-lock locked and guarded by the time-movement. Fig. 2 is a detail view, illustrating a yoke lever or connection adapted to connect with the dog, angle-bar, or fence of the combination-lock. Fig. 3 represents a portion of a safe or vault door, having thereon a bolt-

work, and a combined time mechanism and combination-lock, the combination-lock being unlocked and the bolt-work retracted.

Referring to the drawing, the letter A designates the case of a combination-lock, the lock-works of which may be of any of the well-known forms now in use, provided the same is supplied with a lock-bolt, or a bearing constructed and arranged so as to connect with or receive the pressure of the bolt-work located on a safe or vault door, when said lock-bolt or bearing and the bolt-work are placed in a position for locking the door.

The combination-lock illustrated in the drawings is one known as "Sargent's Automatic Bank-Lock," upon which Letters Patent were granted August 28, 1866, reissued January 2, 1872.

Said combination-lock is shown as applied upon a safe or vault door, B, upon which is arranged a bolt-work, consisting of the usual bolt-supporting bars C, bolts D, carrying-bar E, having a tongue-piece, F, said carrying-bar serving as a medium for projecting or retracting the bolts into and out of the sockets *a*, constructed in the jamb of the safe or vault, for the purpose of locking or unlocking the door, as shown in Figs. 1 and 3.

The bolt-work has the requisite projecting or retracting motion imparted to it from the outside of the door, when opened or closed, through the medium of the usual knob *b* and the spindle *c*, which spindle passes through the door, and connects with the carrying-bar by any suitable fastening, such as a slot, *d*, pin *e*, and suitable fastening-nut.

The lock-bolt or bearing of the combination-lock may be of a circular, segmental, or other desired form, provided said lock-bolt is arranged and adjusted so as to turn upon a suitable axis or bearing, and is so constructed that in one position it will prevent the retraction of the bolt-work to retain the safe or vault door locked, while in another position it will admit of the bolt-work being retracted, for the purpose of allowing the safe or vault door to be opened.

In the present example, the lock-bolt is shown as provided with an offset or recess, *f*, which offset or recess is brought in or out of coincidence with the tongue-piece on the carrying-bar, to admit of the bolt-work being projected or retracted through the medium of a sliding bar, H, which carries a dog, fence, or angle-bar, J, having a hook, *g*, which engages with the bit *h* of the cam K, secured upon the dial-spindle *i*, which spindle passes through the safe or vault door, in the usual manner, and serves to operate the series of tumblers or combination-wheels L.

The sliding bar H is connected with the lock-bolt or bearing in any suitable manner, its object being to impart motion to said lock-bolt or bearing, to secure the objects above specified.

The said lock-bolt or bearing, it will be perceived, is located in its casing so as to rest closely in the rear of the tongue piece or connection secured upon the carrying-bar, and is isolated, so to speak, from the tumblers or combination-wheels and the other main working parts of the lock, and therefore any strain which is brought to bear upon it by the heavy bolt-work will be expended upon the bolt or bearing and its axis or bearing, and not upon the tumblers or combination-wheels.

It will be seen that to unlock the combination-lock, the hook of the dog, angle-bar, or fence J will drop into the notches or slots of the tumblers or combination-wheels, when the notches are brought into juxtaposition by the operator who has possession of the combination upon which the lock is set, at which time the bit *h* of the cam K will also engage with the hook *g* of the said dog, angle-bar, or fence, when, by moving the dial-spindle, the lock-bolt or bearing can be moved or rotated, so as to admit of the tongue piece or connection, with the carrying-bar and bolt-work, being moved back or retracted, as in Fig. 3 of the drawing, and the safe or vault door opened; but when said combination-lock is locked, the hook of the dog, angle-bar, or fence J is elevated, due to the combination-wheels being disarranged, as in Fig. 1 of the drawings, and then no action can be had upon the connecting-bar, dog, angle-bar, or fence, or upon the lock-bolt or bearing by turning of the dial-spindle, and hence the tongue piece or connection on the carrying-bar of the bolt-work rests upon or connects with the lock-bolt or bearing, and the bolt-work is securely retained in a locked condition.

With such combination-lock, or one of substantially the same construction and operation, constructed to be applied for use upon a safe or vault door, to operate in connection with the ponderous or great bolt-work thereon, is combined a time mechanism, the works of which may be of any of the improved or desired kinds, since its action is to measure time correctly, the object being that, during the interval that the combination-lock is locked and the time-movement wound up, the same, through a suitable connection made between it and said combination-lock, will guard the said lock, and prevent its being unlocked, even by a cashier or other person in possession of the combination upon which the said combination-lock is set.

In the present example a duplex or double time-movement is illustrated, such being preferable to a single time-movement as a safeguard against stopping.

Each of the time-movements, which are designated by the letters M M, which may consist of a chronometer or clock movement, is supplied with a pointer or hand, attached to a spindle, *l*, in such a manner as to be capable of being moved backward to set at any elected number on the dials N, said dials being spaced off, or marked with a scale of hours

and divisions, from one upward, to any desired number, according to the mechanism of the chronometer or clock. With each of the dials are combined adjusting disks or arms O, or some equivalent mechanical device, each of which carries a stud, or a pin or projection, which acts upon a yoke or lever, which connects with and guards the combination-lock the number of hours or time for which it is designed said lock is to remain locked, and thus controls the action of its lock-bolt or bearing while the same is in a locked condition.

The yoke lever or connection is designated by the letter P, and it is pivoted or loosely fixed on its support or axis, as at *m*, or otherwise arranged so as to operate in conjunction with the moving or revolving disks or arms O, the object being that the yoke lever or connection and the disks can be adjusted with respect to each other, so as to connect with the dog or fence, or other working part of the lock, and thus control the movement of the lock-bolt or bearing, and hence the locking and unlocking of the combination-lock.

One end or the extension of the yoke lever or connection, in the present example, has a suitable hook, *n*, that engages with a pin, *o*, on the dog, angle-bar, or fence J by striking under it, in which case it holds said dog, angle-bar, or fence elevated out of contact with the tumblers or combination-wheels and the cam of the dial-spindle. The arms of said yoke lever or connection connect with or rest upon the axis or spindle of the adjusting disks or arms; and the arrangement of the studs, pins, or projections on said disks or arms is such that when the indicators have reached the proper number on the dials said studs, pins, or projections will have acted upon the yoke lever or connection, and moved it sufficient to withdraw the cam-hook from beneath the pin *o*, and thus allow the dog, angle-bar, or fence to fall, ready to engage with the tumblers or combination-wheels and the lock-bolt or bearing, at which time the combination-lock can be operated by the person in possession of the "combination," as the time-movement has ceased its guarding or dogging action.

Notches *p p* should be formed in the yoke lever or connection, to allow the stud, pins, or projections to fall therein when the disks or arms and the indicators have reached the designated number, thus serving as stops for the adjusting disks or arms, and prevent the same from moving on beyond the prearranged hour to reset the yoke lever or connection upon the studs or projections, for if some such provision were not made the combination-lock could not be opened until the disks or arms, with the indicators, came round again to said previously-appointed hour; at least, there might be danger of such occurring.

The double time-pieces are employed, as hereinbefore stated, so as to insure the releasing of the combination-lock in case one of the time-works should stop or fail to come to proper position. A spring, *r*, or an equivalent, such as a weight, should be connected with the lower end of the yoke lever or connection, to produce the necessary reaction to bring the hook of the yoke lever or connection under the pin on the dog, angle-bar, or fence.

Thus it will be seen from the foregoing that the bolt-work of the safe or vault door connects with, or rests upon, the bolt or bearing of the combination-lock, and that the yoke lever or connection of the time-movement connects with the dog, angle-bar, or fence of the said combination-lock, rendering the said combination-lock inoperative when locked—that is to say, said yoke lever or connection has the effect of dogging or guarding the combination-lock during the time it is locked, and prevent its being unlocked until the arrival of the hour previously designated by the time-movement; and should pressure be exerted upon the great or ponderous bolt-work of the door when locked, it will be received, and arrested, and retained by the lock-bolt of the combination-lock, and will not be transmitted to the tumblers or combination-wheels of the combination-lock, or to the time-movement, or to the yoke lever or connection.

In lieu of the lever connecting with the dog or fence, it may be made to connect or operate on the lock-bolt itself, and thus secure the result hereinbefore recited.

The time mechanism may be in the same case containing the works of the combination-lock; or it may be in an apartment connected with the case of the combination-lock, or in a case separate and distinct from the case containing the combination-lock.

The advantage of this invention over common time-locks is, that when the time mechanism releases the lock mechanism—that is, ceases its dogging or guarding action—it does not admit of the unlocking of the bolt-work of the door, but simply leaves the combination-lock in the condition that it can be unlocked by the person in possession of the proper combination upon which said lock is set, thus securing the advantages of a combination-lock for use during the day, with a time mechanism for guarding and protecting said lock during the night.

This improvement is of the utmost importance, for, during the hours when the time mechanism is set, no one—not even the officers of a bank or other institution—can open the combination-lock; and when said time mechanism is not set or adjusted, no one, except the holder of the combination upon which the lock is set, can open it. No one who has the combination, whether obtained surreptitously or otherwise, can open the lock when the time-movement is set, for the simple reason that no connection can be made be-

tween the tumbler or combination-wheels, the dog, angle-bar, or fence, the spindle, and the lock-bolt or bearing.

Further: Another feature of the utmost importance present in the combination of parts brought together is, that the connection between the time-movement and the combination-lock is such that when the time-movement is set, the parts adjusted, and the safe-doors closed, the combination-lock will be rendered inoperative until a predeterminate hour, during which interval of time the unlocking action of the combination-lock will be suspended by the time-movement, while the tumblers or combination-wheels of the aforesaid combination-lock are left free to rotate, if power is exerted upon the dial-spindle for the purpose of twisting said spindle out of place, or impairing the lock mechanism and, by such, the working parts of the combination-lock cannot be injured or rendered useless for future action.

I have made a special claim, in a separate application for Letters Patent, for the combination of a time-movement and a lock with a lever adapted to be connected with the dog of said lock, to hold it from falling into the slots or notches of the combination-wheels except when released by the time-movement. So, therefore, in this application, such special construction and arrangement of parts is not specially claimed.

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

1. The combination, substantially as hereinbefore set forth, of a time mechanism and a combination-lock with the bolt-work of a safe or vault door, the time mechanism being constructed to act in conjunction with and render inoperative the combination-lock when locked, said lock having its bolt or bearing constructed to receive the pressure of the series of bolts constituting the bolt-work of the door when locked, and prevent the unlocking of said bolt-work until the arrival of a certain predeterminate hour.

2. The combination, substantially as hereinbefore set forth, of a combination-lock, and the series of bolts constituting the bolt-work of a safe or vault door, with a time-movement and a yoke or lever connection, said lever being constructed and located to render the bolt or bearing of the combination-lock inoperative when locked, the tumblers of the combination-lock and its spindle being free to rotate, while the bolt-work is held in its locked position by the bolt or bearing of the combination-lock.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

JAMES SARGENT.

Witnesses:

PHILLIPS ABBOTT,

JOS. L. COOMBS.

2