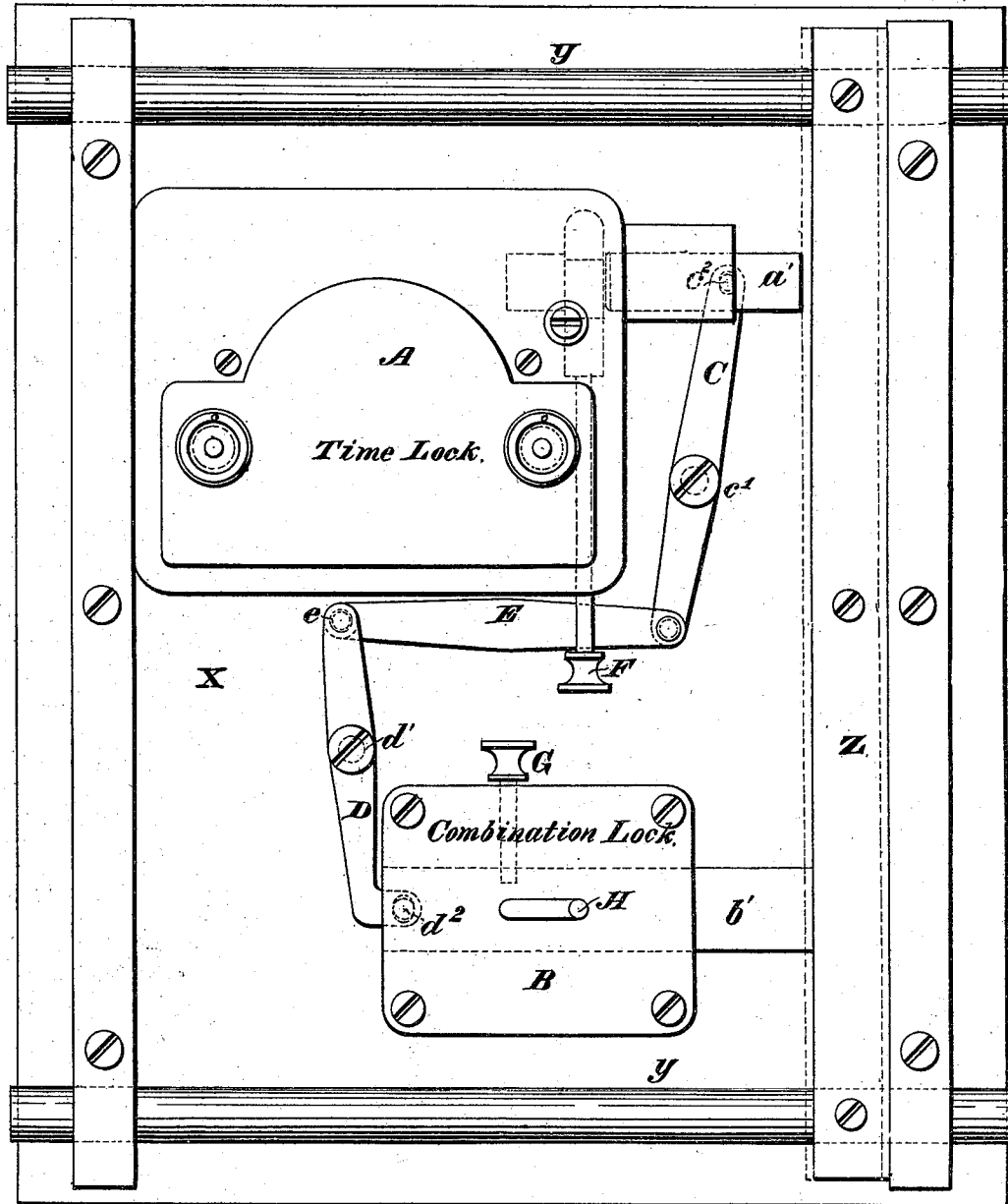


E. STOCKWELL.

LOCKING MECHANISM FOR SAFE-DOORS, &c.

No. 173,367.

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WITNESSES

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IMPROVEMENT IN LOCKING MECHANISMS FOR SAFE-DOORS, &c.

Specification forming part of Letters Patent No. **173,367**, dated February 8, 1876; application filed January 22, 1876.

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 that class of locking apparatus for safe or vault doors in which a chronometric lock is employed as the guard or retainer for a combination or other lock, to prevent the guarded lock from being unlocked until the chronometric lock is automatically or otherwise released.

I am aware that heretofore a chronometric lock has been employed as the guard or retainer to another lock by placing the said locks in close contact with each other; but such an arrangement has this disadvantage, that in the event of the guarded lock being punched off from the door, or otherwise rendered ineffective by violence, the chronometric or guarding lock, from its near proximity, would probably at the same time be damaged; and in any case, at the moment when the bolt of the guarded lock is driven from its hold, the chronometric or guarding lock also becomes useless, having itself no direct and independent bolting action.

I am also aware that a chronometric lock and a combination or other lock have been separately applied upon the same door, both locks acting directly upon the bolt-work; but in such an arrangement the chronometric lock, with its delicate time mechanism, is at first and always exposed to receiving directly, and in their original intensity, all percussive or other shocks applied destructively to the bolts or door, the said direct locking action of the chronometric lock also enabling its precise location to be more readily found from the exterior of the door, thus shortening and facilitating the process of punching it off the door,

or of otherwise destroying its retaining action; and although each lock, thus heretofore separately applied, is an independent security to the door, yet in no way does either lock guard or protect the other lock.

My invention is designed to obviate these defects; and my improvements consist in combining and arranging a chronometric or guarding lock, a connecting device, and another or guarded lock with the bolt-work of a door, in such manner that the chronometric lock is isolated from the bolt-work, and guards the other lock so long as the guarded lock is intact upon the door, and until the moment that the guarded lock is destroyed, or its bolt driven off from its hold upon the bolt-work, when the said chronometric or guarding lock at once, and for the first time, by direct action upon the bolt-work, prevents the withdrawal or retraction of the bolt-work, and prevents the opening of the door until the chronometric lock is unlocked.

This reserved and secondary action or duty of the chronometric lock thus affords an independent security, wholly distinct and separate from the combined security obtained in its normal and ordinary action, which is as a guard or retainer to the other lock, and the removal and peculiar isolation of the said chronometric lock from the other or guarded lock, as well as from the bolt-work, according to my invention, afford extreme safety, as far as is attainable within the limits of the safe or vault door, to the mechanism of the lock, and especially to the delicate time mechanism, for which such protection is in the highest degree desirable.

In the drawings, A is the chronometric or guarding lock, and B the combination or other lock, in their respective positions upon the inner face of a safe or vault door, X. The door-bolts Y Y are united by a transverse carrying bar or bars, Z, and together form the usual bolt-work or gang-bolts. Sliding stops F G, for checking or preventing the retraction of the bolts *a' b'*, are shown in the drawing merely to illustrate the locking effect of complete locks. In like manner, H is a pin or thumb-piece,

merely for projecting and retracting the bolt b' , and for that purpose represents a key and ordinary locking mechanism. The connecting device between the said chronometric or guarding lock and the combination or other lock thereby guarded, in this case, consists of the levers C D and link E. The lever C turns upon a pivot, c^1 , and is pinned at its upper end c^2 to the bolt a' of the chronometric or guarding lock. The lever D turns upon a pivot, d^1 , and is pinned at its lower end d^2 to the bolt b' of the combination or other guarded lock. The extreme ends c^2 d^2 of the said connected levers, if moved, will move in the same direction, thereby insuring simultaneous projecting and retracting motions in the bolts a' b' ; but such corresponding motions are also attainable by levers having toothed segments at their adjacent ends, or by means of rack-teeth formed on the sides of the said bolts, and geared, respectively, to the corresponding teeth of pinions fixed upon a common shaft, or by any other preferred and suitable device.

In the drawings, the combination or guarded lock is shown locked, with its bolt b' bearing directly against the bolt-work Z Y Y. The bolt a' of the chronometric lock is also shown projected into the locked position, and acting directly upon the connecting device C E D, and through it retaining the bolt b' of the guarded lock in its locked position. In this relative position and connection, respectively, of the locks and bolts secured by the connecting device C E D, and shown in the drawings, the bolt a' of the chronometric or guarding lock has no contact with nor direct action upon the bolt-work Z Y Y; but in the event of the bolt b' being displaced or driven off, so that it no longer guards the bolt-work, then a slight backward motion of the bolt-work in the direction for unlocking will at once, and for the first time, bring the bolt-work into direct contact with the bolt a' of the chronometric lock, as shown by the dotted lines, and effectually arrest the retraction or withdrawal of the said bolt-work and prevent the opening of the door. The bolt-work will thus be kept securely locked by the reserved secondary action of the chronometric lock until the hour for its unlocking.

This isolation of the chronometric guarding-lock, in the manner of my invention, also combines further advantages and increased safety, as follows: When in the locked position the bolt b' bears directly upon the bolt-work, and

the bolt a' and lock A cannot, therefore, receive directly any percussive shocks or strains applied with destructive intent to the bolt-work Z Y Y or lock B, and any such shocks transmitted to the said lock A, by way of the connecting device C E D, are necessarily diminished in force by the number of parts and distance so traversed; and, in any case, serious injury in this manner to the lock A is rendered finally impossible by leaving the ultimate strength of the connecting device at some one point, as at e , rather less than that of the bolt a' and lock A.

In the use of my invention any desired location or distance from the guarded lock may be assigned to the chronometric lock, with its fragile and easily-disturbed time mechanism, thus giving to it the highest protection attainable within the limits of the safe or vault door secured thereby.

The said isolation and distance of removal, in some degree, increase the difficulty of determining from the exterior of the door the exact location of the chronometric lock, and the separate attack needful in any attempt to violate it is proportionally delayed.

I do not here claim, broadly, the combination of an independent chronometric guarding-lock and another lock guarded thereby with the bolt-work of a safe or vault door, as I have made that the subject of another application now pending; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a chronometric guarding-lock and a lock guarded thereby with the bolt-work of a safe or vault door, when the locks are so arranged that the normal or ordinary function of the chronometric guarding-lock is merely to guard the other lock, and its reserved or secondary function to bear directly upon the bolt-work, substantially as and for the purposes described.

2. A series of levers or equivalent mechanism, connecting the bolt of the chronometric lock and the bolt of the guarded lock, for securing simultaneous and corresponding locking and unlocking motions in both bolts, as and for the purposes specified.

In testimony whereof I have hereunto subscribed my name.

EMORY STOCKWELL.

Witnesses:

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