

L. HUBBELL.

TIME-LOCK.

No. 172,629.

Patented Jan. 25, 1876.

fig. 1

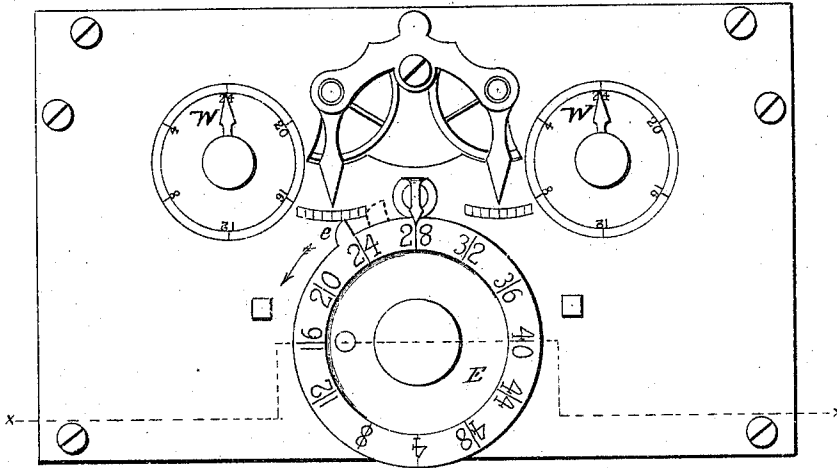


fig. 2

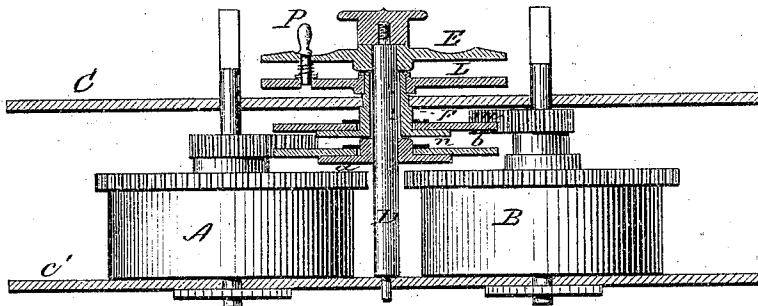


fig. 3

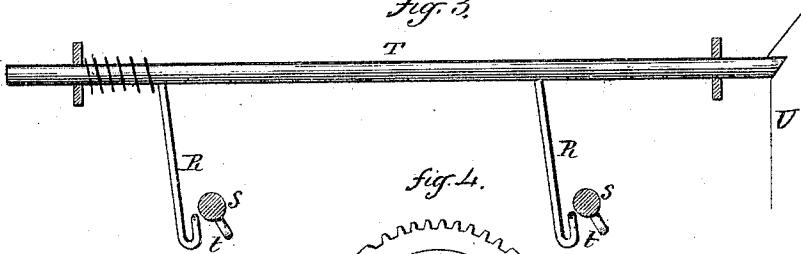
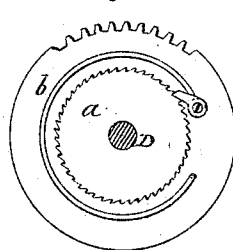


fig. 4.



Witnesses.

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LAPORTE HUBBELL, OF FORESTVILLE, CONNECTICUT, ASSIGNOR TO L.
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IMPROVEMENT IN TIME-LOCKS.

Specification forming part of Letters Patent No. **172,629**, dated January 25, 1876; application filed
September 15, 1875.

CASE B.

To all whom it may concern:

Be it known that I, LAPORTE HUBBELL, of Forestville, in the county of Hartford and State of Connecticut, have invented a new Improvement in Time-Locks; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, front view; Fig. 2, sectional view on line *x x*; Fig. 3, the automatic locking-bar.

This invention relates to an improvement in the mechanism employed in locks to automatically release the lock at a predetermined hour. In this class of locks two independent clock-movements are usually employed, but connected, so that if one stops the other may continue, so that the simple stopping of one movement will not interfere with the unlocking at the predetermined time; but in such construction some portion of the stopped movement must be driven by the other, hence adding somewhat to the labor to be performed by the working part, and thereby increasing the liability of the said movement to stop.

The object of this invention is to avoid this difficulty; and it consists in arranging the operative cams respectively upon two independent concentric shafts—that is, one within the other—each driven directly by its respective movement, so that working together the two operative cams move as one, that in case of the stoppage of one the other goes on without any possible effect upon the first or its movement; also, in the arrangement of the tripping mechanism, which automatically secures the lock at a predetermined time, so as to be actuated independently by either of the movements, all as more fully hereinafter described.

A B are the two driving spring-barrels of independent movements, arranged between the plates C C' in the usual manner, there being no connection between the two movements.

At a convenient point between the two

a shaft, D, is arranged, fast upon which is a ratchet-wheel, *a*, and in connection with this ratchet a loose gear, *b*, which engages with one of the clock-movements by the usual train of wheels; and so that when driven by that movement the pawl on the wheel *b* will engage with the teeth of the ratchet *a*, and cause the rotation of the shaft in the direction denoted by the arrow. This shaft extends through the plate, and on its upper end there is arranged, by preference, a disk, E. On the edge of this disk E is a projection or cam, *e*, so that as the disk is rotated through its shaft the cam will be moved around to the lock mechanism, and so as to operate upon it to disengage the lock mechanism, in substantially the usual manner for this class of locks.

Around the shaft D is a hollow shaft, F, taking its bearing in the plate C of the movement-frame, and forming practically the bearing for the shaft D at that end. On this shaft F is a ratchet, *n*, with a loose gear, *m*, engaging with the other or second movement, in substantially the same manner as that described for the ratchet *a* and gear *b* on the shaft D.

On the outer end of the shaft F, and below the disk E, is a similar disk, L, and provided with a cam corresponding to the cam *e*. (Shown in broken lines, Fig. 1.) This disk is independent of the first movement, as the first is independent of the second. Each is driven by its own movement, and without effect one upon the other; hence, if one movement stops the other goes on without in any way being retarded by the first.

This construction has another great advantage over the usual one, from the fact of the two concentric cams—as, for instance, each cam makes a full revolution in forty-eight hours; hence, if it be desirable to set the lock so as to open at a certain time each twenty-four hours, the two cams may be set opposite each other, and thus one day one cam will operate, and the next day the other; then, when forty-eight hours is required to elapse, as for Sundays or holidays, the two cams are brought together and act as one; whereas, if

it be a single dial with a single cam, it must be set every day, except the Sunday or holiday, when the forty-eight-hours time is desirable.

The cams are represented, and are preferably attached to corresponding disks, one at least figured as a dial; but, if preferred, the cams may be simply an arm projecting from their respective shafts, and the dial made stationary.

The object of the ratchets is for the setting of the cams—that is, so they may be turned without effect upon the clock-movement in the opposite direction to which they are driven. By the illustration and terms “pawl” and “ratchet” I wish to be understood as including any mechanism which will engage the respective driving-gears with their shafts in one direction, and leave the shafts free in the other.

If at any time it be desirable to engage the two cams, it may be done by a bolt, P, or otherwise, to couple the two.

If the door be locked with the mechanism described for unlocking it cannot be opened until that time for which it is set. In banks and other places where such locks are used it is often desirable to open the door within the time so indicated. To allow this to be done a mechanism is applied, so that the door will not be completely locked within the control of the time-movement until a specified hour.

This mechanism consists of a bolt, T, arranged longitudinally in the frame of the clock-movement, with arms or projections R extending into convenient proximity to a shaft, S, in each movement, which revolves, say, once in twenty-four hours. On each of the shafts is a cam, *t*, which, in revolving, will strike the arms R, and move the bolt longitudinally.

In connection with this bolt is a latch, U, which, when hung upon the bolt, as shown in Fig. 3, prevents the full engagement of the lock mechanism with the time-movement; but so soon as the bolt is thrown back to disengage the latch U, then the locking is complete, and cannot become disengaged until the time indicated for the operative cams.

Outside the clock-plate a dial or pointer, W, is attached to each of the said shafts S, so that each may be turned independent of the other, the graduation of the dials, however, being

alike, so that when the two shafts be set to a corresponding point on the dial their respective cams will also correspond. Hence, at each revolution the bar T will be moved by the said cams, a spring being provided to return the bar after it has been moved by the cams.

For illustration of this part of the device, supposing the time within which it may be desirable to open the door be four hours, the shafts S are turned to such point indicated by the dial that it will be four hours before the cams on the shaft will have drawn back the bolt. The latch U is then hung upon the bolt, and in that condition the door is closed and locked in the usual manner.

At the expiration of the four hours the bolt will be drawn back, and the door securely locked until the principal cams *e* perform their operation of unlocking; but at any time during the said four hours the door may be opened in the usual manner.

The shafts S are each in connection with their respective driving-gears, in like manner as described for the shaft D.

I claim—

1. In combination, the two independent clock-movements, the two independent concentric shafts, each driven directly by its respective movement, and a cam upon each of said shafts independent one of the other, substantially as described.

2. In combination, the two independent clock-movements, the two independent concentric shafts, each driven directly by its respective movement, and a cam upon each of said shafts, independent one of the other, and the tripping-bolt, with the two independent cams, acting upon said bolt together, or each independent of the other, substantially as set forth.

3. In combination, the two independent clock-movements, the two independent concentric shafts, each driven directly by its respective movement, a cam upon each of said shafts independent one of the other, and a coupling device to engage the said two cams, substantially as specified.

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Witnesses:

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