

(No Model.)

2 Sheets—Sheet 1.

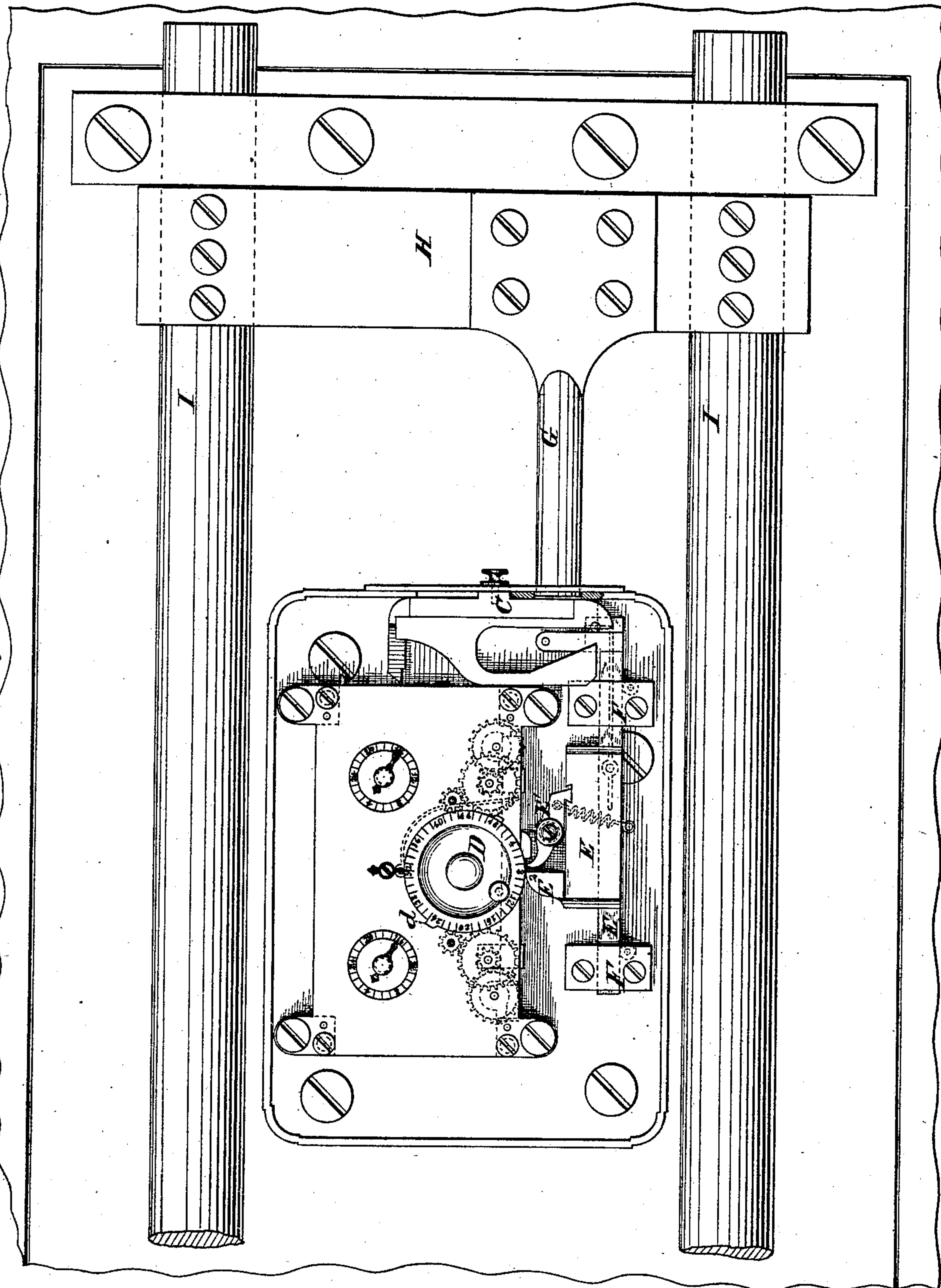
H. F. NEWBURY.

TIME LOCK.

No. 265,931.

Patented Oct. 10, 1882.

Fig. 1.



Witnesses:

R. D. Gaylord

Robt H. Duncan

Inventor

Henry F. Newbury

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

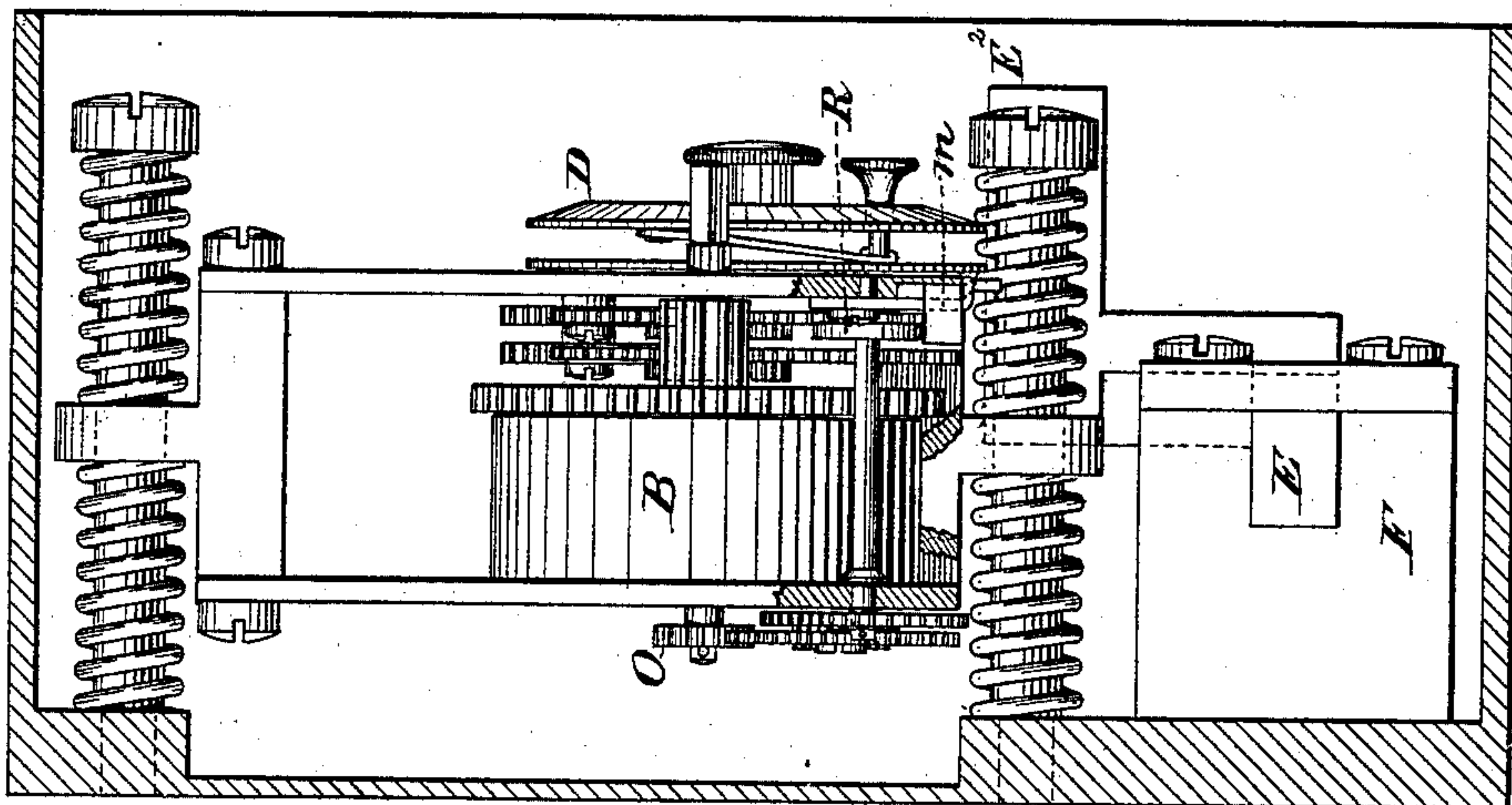


Fig. 3.

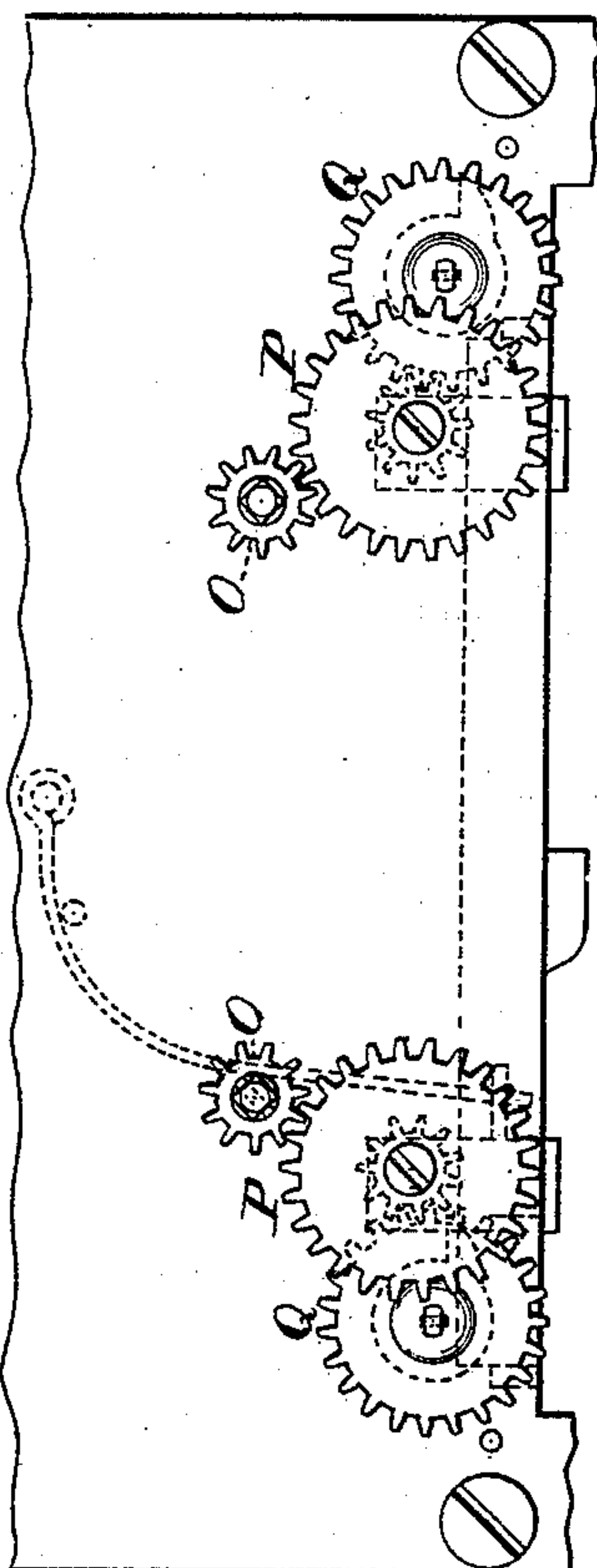
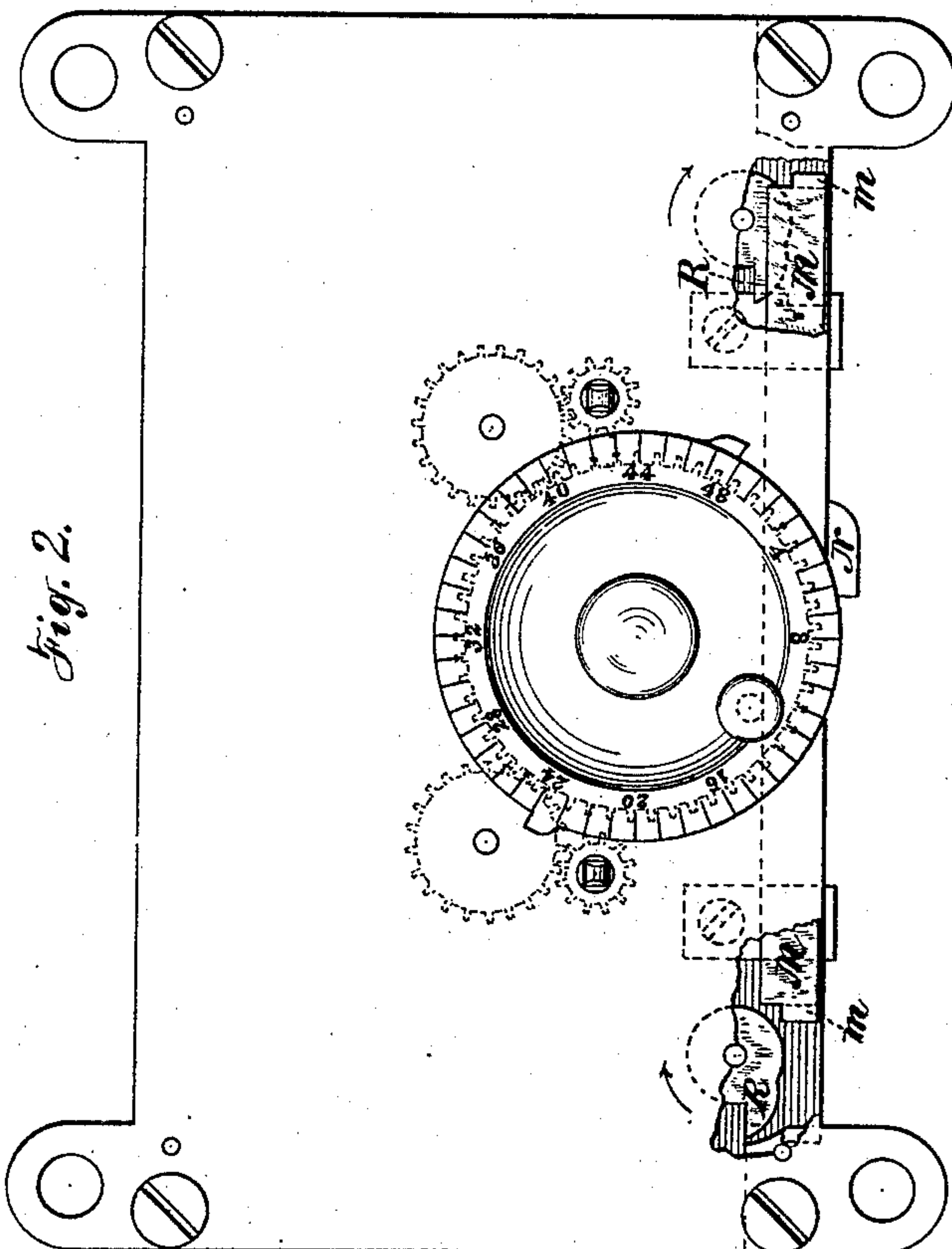


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY F. NEWBURY, OF BROOKLYN, NEW YORK.

TIME-LOCK.

SPECIFICATION forming part of Letters Patent No. 265,931, dated October 10, 1882.

Application filed May 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. NEWBURY, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Chronometric or Time Locks and the Mode of Mounting the Same; and I hereby declare that the following is a full, clear, and exact description of one division of my invention, and will enable others skilled in the art to which it appertains to make, construct, and use the same.

A "chronometric" or "time" lock, as the term is understood in the art of safe or vault protection, is a lock whose bolt or checking device (sometimes technically called "dog") is, for the purpose of unlocking, at least, under the control of one or more time-movements capable of withdrawing it automatically, or of permitting it to be withdrawn, from the locking position upon the arrival of the hour for which the mechanism has previously been set. Some of these locks have been constructed to operate with a continuously-revolving dial, and when so constructed, in order to guard against a "lock-out" from the running down of the clocks during the locking period, (which is liable to occur from an omission to wind the clocks properly,) it has been found advisable to employ some form of supplemental unlocking mechanism which will remain inert so long as the periodical winding of the clocks is regularly performed, but which, if by neglect or willful derangement either of the clocks is permitted to run down when the lock-bolt or dog is in the locking position, will unlock the lock irrespective of the position of the other or ordinary unlocking devices. When such supplemental unlocking mechanism is employed it may, as in the case of the Pillard lock, be operated entirely by the mainsprings used to drive the clocks, or, as in the case of the Yale lock, the power of the mainsprings may be availed of to trip a detent which brings into play an independent power for the purpose of operating such mechanism.

The present invention has special relation to locks which are provided with a supplemental unlocking mechanism of the character embodied in the Pillard lock—that is, locks in which such mechanism is operated by the power of the main spring or springs.

The object of the invention is to protect such mechanism from being operated by the force of an explosion or other sudden and heavy shock directed against the exterior of the structure in which the lock is used.

The general construction and operation of the Pillard lock is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the lock mounted upon the door of a safe or vault. Figs. 2 and 3 are detached views, front and rear, of the case containing the time-movements, designed particularly to show the parts that relate to the unlocking mechanism; and Fig. 4 is a vertical section on an enlarged scale, showing the mode of protecting the lock, so as to guard the supplemental unlocking mechanism against interference from without.

As the time-movements of this lock, which are two in number, are of the ordinary construction, it has not been deemed necessary to represent them fully in the drawings.

D is the unlocking-dial, which is connected with the mainspring of each of the clocks and is driven by each or both, as the case may be.

C is the lock-bolt or dog or "gate," as it is sometimes called. This dog or gate is supported in the locking position by means of the sliding bar E, which is capable of being moved in ways F. As long as the end of the bar E is under the lower end of the gate the solid portion of the gate is presented to the tongue-piece G, which extends out from the carrying-bar H, to which the bolts I I are connected, and thus effectually prevents their retraction. When, however, the end of the bar E is withdrawn from underneath the gate C the latter falls, and then, the obstruction in the path of the tongue-piece G being removed, the bolts I I can be thrown back. The bar E is withdrawn from under the gate C in the following manner: As the dial revolves a projection or finger, d, on its periphery strikes the tail of the pivoted detent E', which engages with the bar E and lifts it out of such engagement, and afterward strikes an arm, E², rising from the bar E, and draws the bar backward. This portion of the mechanism of the Pillard lock is fully illustrated in Letters Patent No. 166,632, granted to Oliver E. Pillard, August 10, 1875.

The supplemental unlocking mechanism of

this lock, as sold in the market, is as follows:

Upon the lower edge of the inside of the front plate of the frame which supports the time-movements is a sliding bar, M, which has its two ends *m m* bent at right angles, and which carries an unlocking projection or finger, N, which finger, when bar M is retracted, acts upon the pivoted detent E' and the arm E² of the tripping-bar E in precisely the same way as the finger *d* of the revolving dial would act upon them. Each of the winding-arbors is continued through the barrel containing the mainspring, and is provided on its projecting end with a pinion, O. As the mainspring unwinds this pinion drives the wheel P, the shaft of which carries a pinion that drives the wheel Q. On the front end of the shaft of each of the wheels Q is a revolving finger, R, capable of engaging with the corresponding end, *m*, of the supplemental unlocking-bar M, so that if one of the movements should stop the other would be able to operate it.

It is manifest that if any of the parts intermediate between the balance-wheel and the main wheel should be broken or displaced the spring would at once be released from the control of the escapement and would immediately run down with great speed, and thus actuate the supplemental unlocking-lever in a very brief space of time.

I have discovered by repeated experiments that with existing time-locks employing supplemental unlocking mechanism of the foregoing character, as such locks have heretofore been mounted, such result can be easily effected by the explosion of a charge of dynamite against the exterior of the safe in proximity to the lock so small as to make but little noise and not even indent or otherwise appreciably affect the walls of the safe. For this reason locks of this class are largely in the power of burglars. In order to prevent this some means must be employed to protect the lock, so that if the safe or vault in which it is used be subjected to a shock sufficient to break the more delicate parts of the clock-work of the lock, as ordinarily mounted, the mainsprings of the clocks will not run down prematurely. Several forms of such safety mechanism have been invented by me and have been made the subject of various applications for Letters Patent heretofore filed by me in the Patent Office of the United States, and designated as Cases "A," "C," "D," and "E," the same having been patented to me August 1, 1882,

in patents numbered respectively 262,093, 262,095, 262,096, and 262,097. According to these inventions a supplemental guard or checking device may be arranged, in combination with the lock, in such a manner as to remain inactive under ordinary circumstances, but to be brought into operation to dog the train of the clock or the bolt of the lock upon the occurrence of any shock sufficient to break the time-movement, (Case A;) or, again, (Case C,) the staffs of the time-movement may be provided with supplemental bearings, which will preserve the continuity of the train, although the staffs should be broken; or (Case D) a centrifugal detent may be attached to one of the wheels of the clock, which, upon any undue acceleration of the speed, will be thrown out, and by acting upon a fixed stop, or upon the trigger of some supplemental automatic stop, will arrest or retard the motion of the clock; or (Case E) the time-movements may be mounted upon a flexible or yielding support, with sufficient space between them and the adjacent parts of the lock-case or the safe to prevent concussion between them under the force of an explosion directed against the exterior of the structure. This last mode of protection, in one form of application to the Pillard lock, is illustrated in transverse section in Fig. 4 of the accompanying drawings, in which the time mechanism B is shown as secured to the lock-case by means of bolts which carry long and stiff spiral springs, and in which the space between the movements and the back of the lock-case is greatly increased over that which exists in the lock as heretofore constructed. With this improved mode of seating the time-movements in the lock-case an intensely-violent shock might be brought to bear against the lock-case without producing concussion between it and the movements, and without danger, therefore, of breaking the more delicate parts of the movements.

What is claimed as new is—

The combination, with a time-lock, of a supplemental unlocking mechanism operated by the power of the springs that drive the clocks, and means, substantially as specified, for preventing the premature running down of the mainsprings when the lock is subjected to a sudden and heavy shock.

HENRY F. NEWBURY.

Witnesses:

R. F. GAYLORD,
ROBT. H. DUNCAN.