

(Model.)

H. F. NEWBURY.

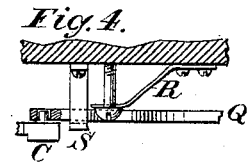
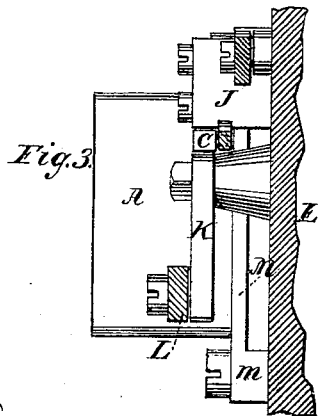
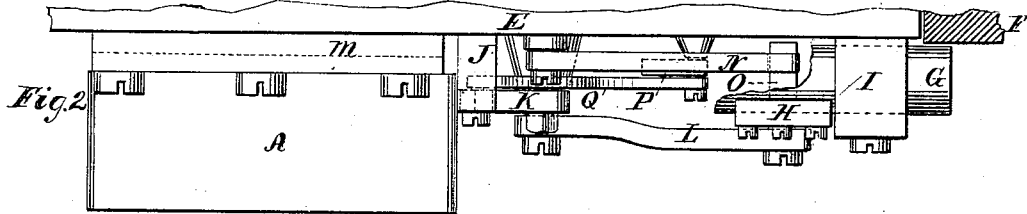
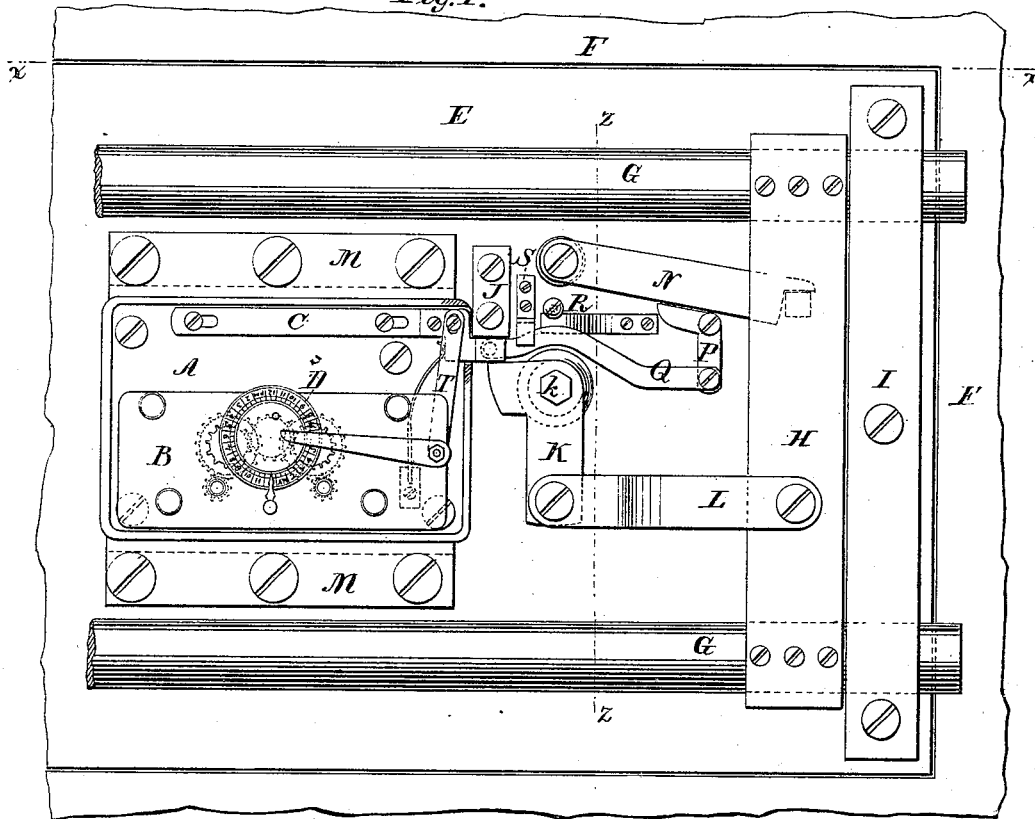
2 Sheets—Sheet 1.

TIME LOCK.

No. 262,098.

Patented Aug. 1, 1882.

Fig. 1.



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INVENTOR

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(Model.)

2 Sheets—Sheet 2.

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Fig. 6.

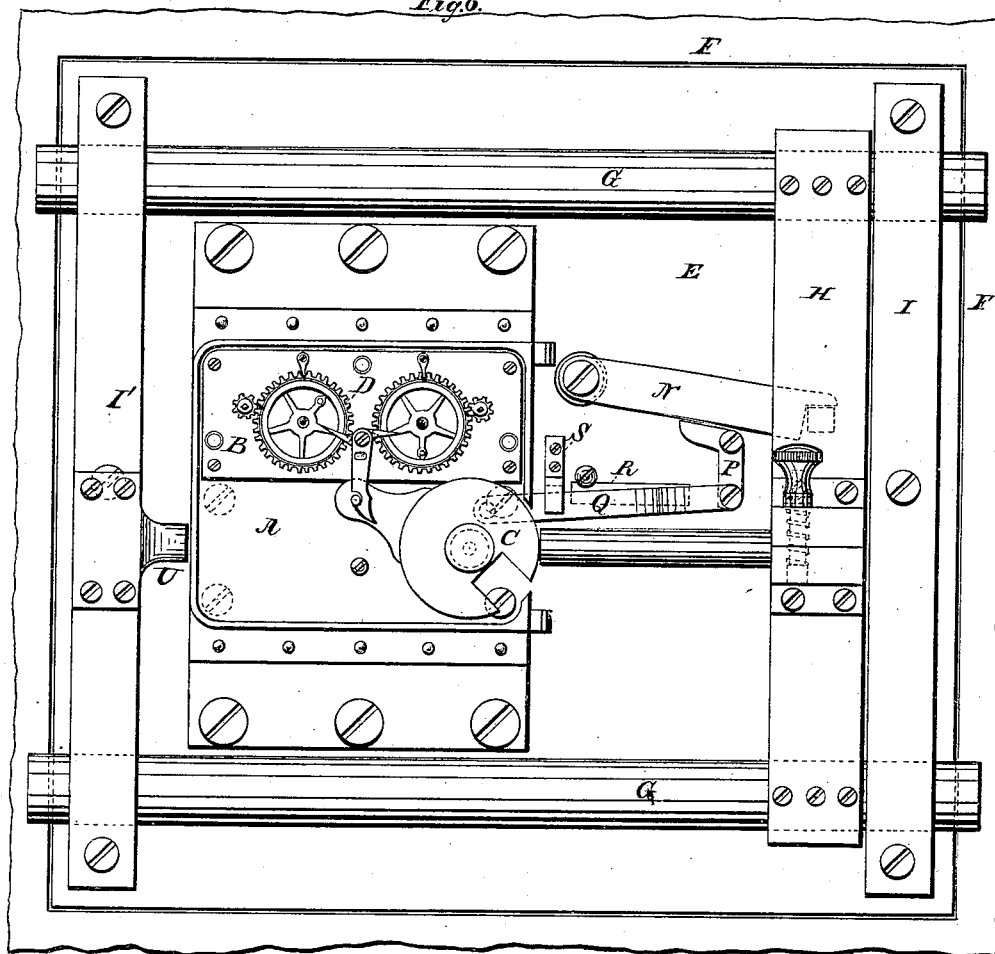
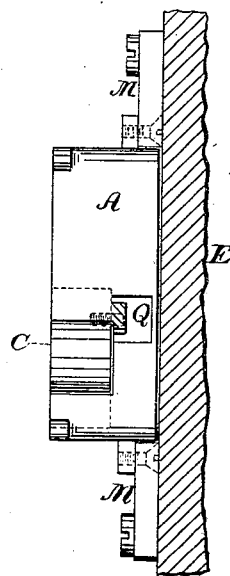


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY F. NEWBURY, OF BROOKLYN, NEW YORK.

TIME-LOCK.

SPECIFICATION forming part of Letters Patent No. 262,098, dated August 1, 1882.

Application filed April 14, 1882. (Model.)

To all whom it may concern:

Be it known that I, HENRY F. NEWBURY, of the city 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 them, (Case F;) and I do hereby declare that the following is a full, clear, and exact description of my invention, and will enable others skilled in the art to which it appertains to make and use the same.

A chronometric or "time" lock, as the term is understood in the art of safe and 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 a time-movement 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. By placing such locks upon the interior of the structures to be protected, and without mechanical connection with the exterior thereof, it has been supposed that an efficient security is provided against what are known as "masked burglaries," and that thus locks of this class afford a complete protection against the operations of the burglar, except when he resorts to violence calculated to force the walls of the safe or vault. I have discovered, however, that the security thus afforded is apparent only, and that any of the time-locks now upon the market, when mounted in the established way, can be defeated by the burglar without difficulty and without resort to force to break or penetrate the walls of the structure in which the lock is used. From this it results that practically a safe or vault guarded by a combination-lock has its security increased but little, if any, by the addition of any of the existing time-locks, and that the protection afforded by such time-lock alone is far less reliable than that afforded by an ordinary combination-lock alone. This defect in the existing chronometric locks as heretofore mounted arises from the frangible character of certain parts of the time-movement, which in all fine work are made so slight and delicate as to be broken readily by a sudden shock, such as might be communicated to them through the walls of a safe or vault by the explosion of a small charge of

dynamite, nitro-glycerine, or other quick explosive outside the walls of the structure, but in proximity to that part of the walls against which the lock is secured. The parts of a time-movement which are the farthest removed from the main wheel are the most delicate, and therefore the most easily broken, this being the case especially with the staff of the third wheel, and with the pallet and escape-wheel staffs. The journals of these staffs as ordinarily constructed are made exceedingly small for the purpose of reducing the surface of contact, and thus the friction, to a minimum, and the finer the workmanship of the lock the slighter and more frangible are these parts likely to be. Any material increase in the extent of the bearings, whereby the strength of the parts would be augmented, would correspondingly increase the friction and impair the time-keeping properties of the movement. Time-locks with jeweled movements, also, are specially exposed to injury in the manner indicated, since the jewels, by reason of their brittleness, might easily be broken by the force of an explosion of great intensity in close proximity to them. The destruction of any of the parts intermediate between the balance-wheel and the main wheel at once releases the main wheel from the control of the escapement, and the movement immediately begins to "run down," a movement which otherwise would continue to run for several days without rewinding now running down in as many seconds. As the dial or other device arranged to act upon the lock-bolt or dog to withdraw it or permit it to move from the locking position is actuated from the same spring that drives the main wheel, its speed will be correspondingly accelerated, so that the dog, instead of being withdrawn from engagement with the bolt-work of the door at the regular hour for which the lock has been set, will be withdrawn immediately upon the explosion or other shock, leaving the safe or vault, so far as the time-lock is concerned, entirely under the control of the burglar. If there are other locks on the door, (either combination or key locks,) the burglar will probably have effected the unlocking of them in advance of his attack upon the time-lock, either by picking them or forcing them, or by threats compelling the co-operation of the custodian of the key or combina-

tion. In whatever way this may be done, the subsequent unlocking of the bolt of the time-lock in the manner indicated (and repeated experiments show that this can readily be done with a charge of dynamite so small as to make but little noise, and not even indent or otherwise appreciably affect the walls of the safe) removes all obstruction to free access to the valuables placed under the protection of such lock.

The present invention consists in mounting the time-lock by means of a flexible or a frangible support, and in combining with it thus mounted a supplemental check or dog which normally is in connection with the bolt or other kindred part of the lock, but from which it may be dismounted automatically under circumstances endangering the integrity of the time-movement.

The invention is fully illustrated in the accompanying drawings, in which Figure 1 is a partial view of the inner face of the door of a safe or vault carrying a time-lock and the connected devices which constitute the supplemental locking mechanism, Fig. 2 being a plan of the same parts on the horizontal plane of the line $x x$ of Fig. 1, the upper door-bolt, G, being, for greater distinctness, broken away; Fig. 3 being a side view of a portion of these parts as seen from the line $z z$ of Fig. 1, looking toward the left; and Fig. 4 being a top view of certain parts shown in Fig. 1, but not fully reproduced in Figs. 2 and 3.

Referring to the drawings more in detail, A represents a time-lock, (that here shown being the well-known Holmes lock;) B, the time-movement of the same; C, the lock-bolt; D, the dial; E, the door of the safe or vault; F, the frame of the door; G G, the door-bolts; H, the carrying or tie bar; I, one of the bolt-bars, the others not being shown; J, the stud or abutment against which the end of the lock-bolt or dog C is pressed by the angle or bell-crank lever K, which is pivoted to the door at k , and is connected by the link L to the tie-bar H. When the dog C is interposed between the stud J and the head of the angle-lever K the bolt-work of the door is dogged, and the door itself, if closed, is locked. When this dog or lock-bolt is retracted the door-bolts G G can be thrown back and the door opened.

As shown in Figs. 1 to 4, the lock is secured to the door by being first mounted on a thick sheet of rubber, M, and this rubber is then bolted fast to the door. By the use of flanges or ribs $m m$ on the back of this sheet the body of the sheet is raised from the door, thus leaving a space of greater or less extent. Whenever the room within the safe is large enough to permit of such construction, it would be preferred to make this space of such depth that the door would not be caused to strike against the lock under any disturbance less than what would suffice to bend or set the door-bolts; but such construction forms the special subject of another application for Letters Patent filed by me contemporaneously herewith,

and designated as Case E. The present invention contemplates a less space than this, and even permits of the lock under some circumstances being placed directly against the door, the essential feature being that, whether placed in contact with the door or at a distance therefrom, it be so attached either by flexible or by frangible connections that upon the occurrence of a shock sufficient to endanger the time mechanism the lock will be moved relatively to the door and by such movement disconnected from the supplemental locking mechanism previously brought into the locking position.

The supplemental locking mechanism may be constructed and arranged as follows: The pivoted latch N takes against a stud, O, on the tie-bar H. One arm of a small angle-lever, P, acts on the under side of this latch to lift it from engagement with the stud, and the other arm of this angle-lever is connected by means of a link, Q, with the lock-bolt C. A small pin projecting rearwardly from the end of the lock-bolt, as seen in Fig. 4, takes into a recess in the adjacent end of the link Q, and a bent spring, R, arranged behind the link, keeps it in engagement with the pin on the lock-bolt so long as the lock is not moved away from the door to a greater than its normal distance. A bent arm, S, coming down in front of the link, holds it from being moved forward or away from the door.

With the parts thus constructed and combined and operating normally, the advance movement of the lock-bolt will bring the latch N into engagement with the stud on the tie-bar H, and the retraction of the lock-bolt will lift it out of engagement therewith. If, however, any shock—as from an explosion—be directed against the exterior of the safe, causing the door to bulge in sufficiently to put the lock in motion, the lock will be thrown inwardly away from the door, and thereby disconnected from the link Q. This leaves the latch N in engagement with the stud O, and thus securely locks the bolt-work, even though the time-movement be broken, and thus caused to run down.

If the rubber support has ribs upon it, as shown in Figs. 1 to 4, the door can be caused to move inwardly under the influence of an explosion to a considerable distance before it strikes the lock; but the lock may be mounted, as shown in Fig. 5, in which the back of the lock is shown as in contact with the door, being secured in this position by a strip or strips of rubber, M. Screws passing through these rubber strips enter lugs on the lock-case, and other screws secure the strips to the door. When thus secured the lock will begin to move inwardly with the first impulse of the shock; but, as in the former case, its motion will continue when that of the door is stopped or reversed. So, also, the lock may be secured to the door by means of bolts or other devices capable of being easily broken by a shock transmitted through the door. This, again, would permit the lock to be projected forward by a sudden and violent shock, the bolts be-

ing stripped or broken, and thus disconnect the supplemental guard or check.

If a space be left between the lock and the door, as shown in Fig. 3, the link Q might be arranged to connect with the lock-bolt C in front instead of behind; and in that case the link would be detached from the bolt upon the first forward movement of the door and before the door would strike the lock.

Instead of connecting the devices which operate the supplemental check with the bolt of the time-lock, it is manifest that they may be connected with some other part of the lock mechanism which moves in unison with the bolt, as, in Fig. 1, the link Q might be connected directly to the lever T, that operates the bolt C to withdraw it. So, also, instead of connecting the supplemental check with the lock-bolt or other moving part of the lock by means of a link, Q, and bell-crank P, any other convenient form of connection may be used, the only conditions being that the mechanism shall bring the supplemental check into the locking position when the lock-bolt is moved forward, raising it therefrom on the reverse movement, and that the connection may be interrupted when the lock-bolt and the door are caused to move violently relatively to each other.

It is manifest that the invention is applicable to time-locks having other forms of bolt than that shown in the drawings—as, for instance, to the revolving bolt of the Sargent lock or to the dropping bolt of the Yale or of the Pillard lock. By the use of levers in the most obvious way the movement of the bolt of any of these locks might be utilized to operate the supplemental guard or check, and of course it is an equally easy matter to arrange the parts so that they will disconnect automatically under the circumstances above explained. I do not therefore limit myself to the use of any particular kind of time-lock in practicing my invention, nor do I limit myself to any particular construction of the connecting devices between the time-lock and the supplemental check, as these manifestly may be varied greatly by the constructor without departing from the principle of the invention. Nor, again, when flexible supports are to be used, do I limit my-

self to the particular construction of supports here shown and described, as manifestly others can be used and the invention still be present.

If the lock be so constructed and arranged relatively to the bolt-work of the safe-door as to receive a direct backward thrust therefrom, (this being the ordinary construction and arrangement of the Sargent and Yale locks,) an abutment should be provided for the lock to bear against. Such an abutment is seen at U in Fig. 6 in connection with a Sargent lock. Such an abutment will prevent the lock being disturbed by any force transmitted to it from the outside of the safe through the medium of the spindle and the door-bolts. Without such abutment the lock, if on flexible supports, might by this means be crowded back far enough to permit the door-bolts to be withdrawn from the jamb, and if secured by easily frangible supports, these might by the same means be broken, when of course the lock would give way and the door be unlocked.

Figs. 5 and 6 also illustrate the mode in which the revolving bolt of a Sargent lock may be made to operate the supplemental locking mechanism.

What is claimed as new is—

1. The combination of a time-lock mounted on a flexible or frangible support, whereby it is made capable of movement relatively to the door or wall to which it is attached, a supplemental checking device, and means for connecting the same with the bolt or equivalent part of the lock, in the manner set forth, whereby such supplemental device is under the control of the lock when the latter is operating normally, but is disconnected therefrom when the lock is subjected to a sudden and heavy shock.

2. The combination, with a time-lock secured in place by a flexible or a frangible support, of a supplemental locking mechanism detachably connected therewith, and an abutment for supporting the lock against the backward thrust of the door-bolts.

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Witnesses:

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