

(No Model.)

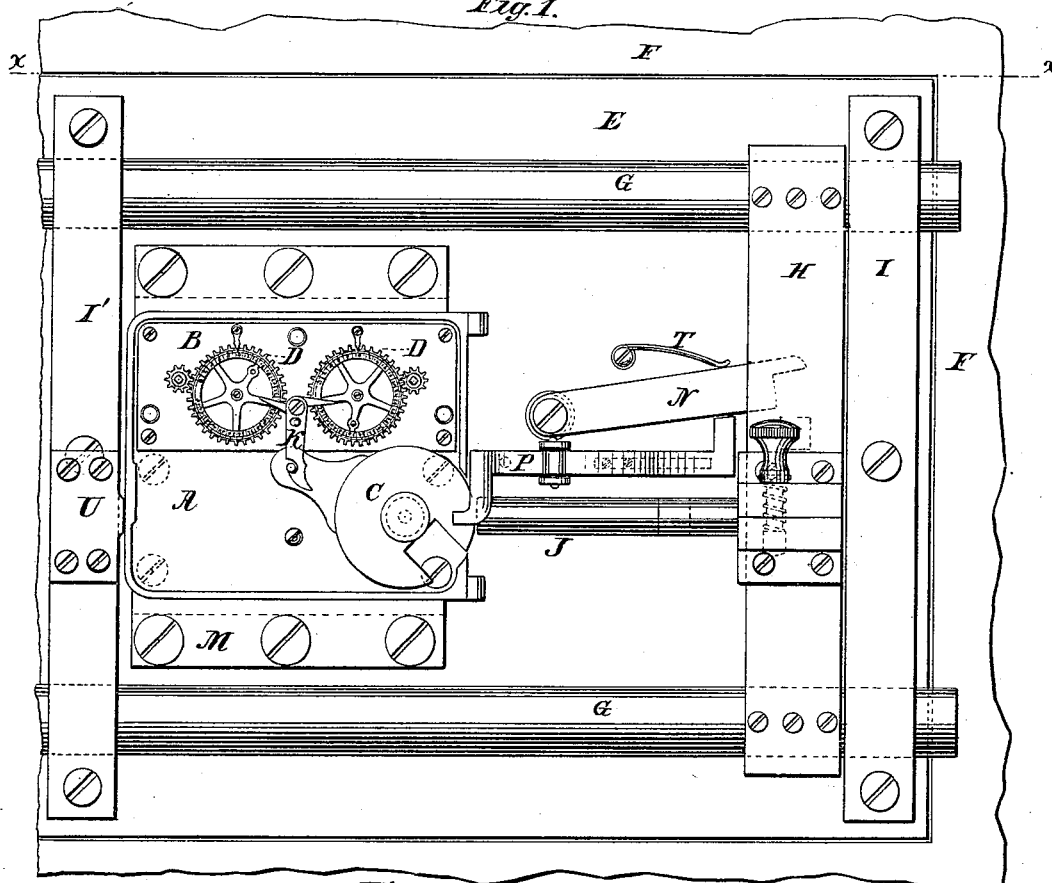
H. F. NEWBURY.

TIME LOCK.

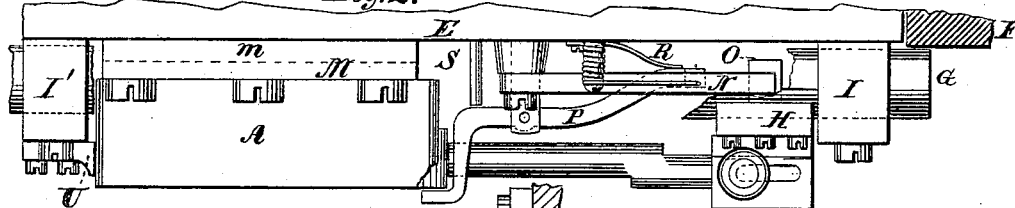
No. 262,099.

Patented Aug. 1, 1882.

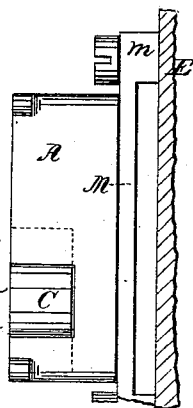
*Fig. 1.*



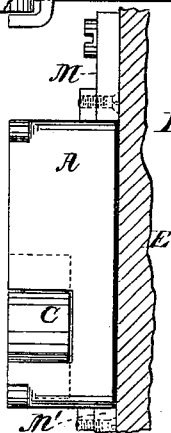
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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## TIME-LOCK.

SPECIFICATION forming part of Letters Patent No. 262,099, dated August 1, 1882.

Application filed June 26, 1882. (No 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 G; 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at least, under the control of a time-movement capable of withdrawing it automatically or of permitting it to be withdrawn from the locking position upon the arrival of the hour for which the mechanism has previously been set.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 combination. 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 to 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 when thus mounted a supplemental check or dog in such manner that when the lock is subjected to a sudden shock calculated to break the time-movement and let the mainspring run down such supplemental check will be brought into action and made to serve as a locking device to prevent the retraction of the door-bolts of the safe-door.

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 parts which constitute the supplemental locking mechanism. Fig. 2 is a plan of the same on the horizontal plane of the line *x x* of Fig. 1, the upper door-bolt, G, being, for greater distinctness, broken away; and Fig. 3 is a vertical section, showing the lock in elevation.

Referring to the drawings more in detail, A represents a time-lock (that here shown being the well-known Sargent lock with the door of the case removed); B, the time-movement of the same; C, the revolving lock-bolt; D D, the dials; 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 I', the bolt-bars; and J a tongue-piece or stud secured to the tie-bar H in the usual method practiced with the Sargent lock, and taking against the face of the lock-bolt C, or entering the recess therein, according to the position which such bolt for the time being assumes. When this bolt is hooked up to the catch K, as shown in the drawings, the stud J abuts against the solid part of the bolt and the bolt-work of the door is dogged, and the door itself, if closed, is locked. When the bolt is released from this catch it turns on its pivot and presents the square recess cut in its face to the end of the stud J, and the door-bolts can then be thrown back and the door opened.

As shown in the drawings, 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 farther from or brought nearer to the door, thus releasing the supplemental guard or check and bringing it into engagement with the bolt-work of the door.

The supplemental locking mechanism may be constructed and arranged as follows: The latch N, which forms the check or dog, is pivoted to the door, and is arranged to take against a stud, O, on the carrying-bar H. In the normal operation of the parts this latch is held out of engagement with the stud by means of the bent lever P, the toe of which serves as a detent to the latch. The other end of the bent lever comes in front of the lock-bolt C. A spring, R, pressing against this lever from behind, tends to keep the one end far enough forward to engage with the latch, while the stop S operates to prevent the spring from pushing such end of the lever forward too far. A second spring, T, may be used to press upon the latch from above to force it downward when the toe of the lever is removed from under the latch.

With the parts thus constructed and combined, it is plain that under normal conditions the time lock will perform its work without in any way affecting the supplemental check or locking device. 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 will thus be caused to strike the adjacent end of the lever P and swing this lever out from under the latch N. The latch thereupon will fall or be forced downward into engagement with the stud O and securely lock the bolt-work, notwithstanding the time-movement may be broken and thus caused to run down.

If the rubber support has ribs upon it, as shown in Figs. 1 to 3, 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. 4, 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 M'. Screws passing through these strips of rubber 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 being stripped or broken, and thus trip the detent, which holds the supplemental check out of action.

If, as indicated in Fig. 3, a space be left between the lock and the door, the lever P might be arranged to come behind the lock-bolt C, instead of front of it, as shown, the positions of the spring R and the stud S being correspondingly changed. In such case the detent P would be tripped by the first inward movement of the door and before the door would strike the lock.

Instead of bringing the end of the lever directly in front of or directly behind the door-bolt, it might be brought in front of or behind any other part of the lock, as found convenient, or of a stud or pin projecting from the top or the bottom of the lock-case.

I do not limit myself to the use of any one kind of time-lock in practicing my invention, as it is plain that the invention does not depend upon the special construction of the time-lock itself. Nor do I limit myself to the precise form of connecting-lever between the time-lock and the supplemental guard or check, as it is manifest that this connection can be varied largely, according to the judgment of the constructor, without departing from the principle of the invention. In fact, instead of using a separate detent-lever, as shown in the drawings, the check N might be made in the form of a bent lever, one arm of which might rest against the lock-case or some pin projecting therefrom, and thus under normal conditions hold the other arm in the raised position. A slight movement of the lock would release such lever and let its locking end fall. Nor, again, when flexible supports are to be used do I limit myself 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 ar-

range ment of the Sargent and the Yale locks,) an abutment should be provided for the lock to bear against. Such an abutment is seen at U in Figs. 1 and 2 in connection with the Sargent lock there shown, and serves to 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 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.

It is plain that instead of mounting the entire lock on either flexible or frangible supports, as shown and described, it might be sufficient to so mount the time-movement alone, in which case, of course, the detent of the supplemental locking mechanism would be arranged in connection with such part only of the lock.

What is claimed as new is—

1. The combination, substantially as and for the purpose set forth, of a time-lock, a flexible or frangible support for holding the same in place under normal conditions, but permitting it to move under the force of a heavy and sudden shock, a supplemental lock or check, and an intermediate detent mechanism for holding such supplemental device normally out of engagement with the door-bolts, but permitting it to come into action when the main lock is moved.

2. The combination, substantially as and for the purpose set forth, of a time-lock, a flexible or frangible support for holding the same in place under normal conditions, but permitting it to move under the force of a heavy and sudden shock, a supplemental lock or check, and intermediate detent mechanism for holding such supplemental device normally out of engagement with the door-bolts, but permitting it to come into action when the main lock is moved, and an abutment for supporting the main lock against the backward thrust of the door-bolts.

HENRY F. NEWBURY.

Witnesses:

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SAM'L. A. DUNCAN.