(No Model.)

H. F. NEWBURY

TIME LOCK.

No. 262,102. Patented Aug. 1, 1882.

Fig. 1.

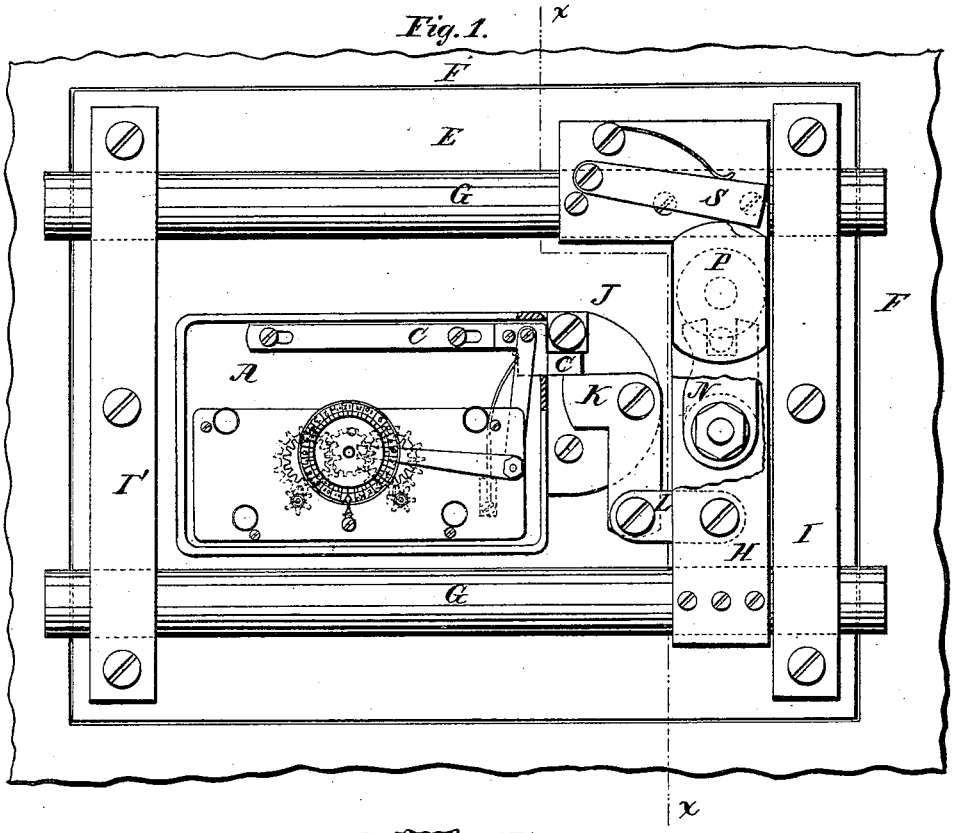


Fig. 2.

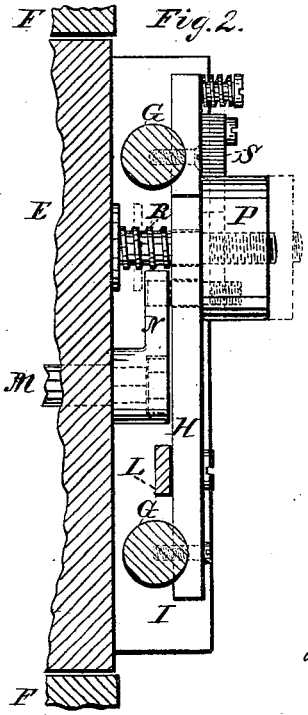


Fig. 3.

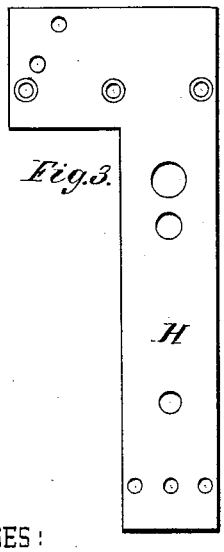
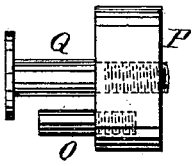


Fig. 4.



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TIME-LOCK.

SPECIFICATION forming part of Letters Patent No. 262,102, dated August 1, 1882.

Application filed May 5, 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 Locks and the Mode of Mounting the Same, (Case J;) and I do hereby declare that the following is a full, clear, and exact description of my invention, which 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at least, under the control of a time-movement capable of withdrawing it automatically, or of permitting it to be withdrawn, from the locking position upon the arrival of the hour for which the mechanism has previously been set.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 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 the safe or vault by the explosion of a small charge of dynamite, nitroglycerine, 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 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 surfaces 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 especially 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. I have also discovered that when time-locks are mounted in the ways heretofore practiced an explosion directed against the exterior of the safe, and of far less intensity than would be re-

quired to destroy or break through the door or wall of the safe, might detach the lock from its fastenings, and by thus moving it from its proper position cause it to release its dogging action upon the door-bolts. So, likewise, in the case of ordinary combination or dial locks, as also with key-locks, when mounted in the ways heretofore practiced, such an explosion would be likely to tear the locks from their fastenings, and thus release the bolt-work from the protection of the lock-bolts. In any of these cases the burglar, having by this simple means defeated the lock or locks of the safe, can at once effect an entrance by merely turning the handle of the spindle which communicates from the outside with the bolt-work within, and thus retract the bolts.

The object of the present invention is to prevent the retraction of door-bolts of the safe or vault when the lock or locks designed for guarding them have been broken or displaced by an excessive shock or vibration arising from an explosion or other cause; and it consists in its main feature in arranging, in combination with the lock or locks, the bolt-work of the door, and the spindle thereof, a movable or detaching device, by means of which, when the lock or locks are subjected to a heavy shock, the operative connection between the spindle and the bolt-work will be destroyed. This will leave the door-bolts in the locking position, and the manipulation of the handle of the spindle will have no effect to withdraw them from such position.

The invention is fully illustrated in the accompanying drawings, in which Figure 1 is a front view of the inner face of the door of a safe furnished with the ordinary multiple bolt-work and a lock, the particular lock here illustrated being the well-known Holmes time-lock. Fig. 2 is a side and sectional view of the same on the line *x x* of Fig. 1, Fig. 3 being a detached view of the carrying-bar, and Fig. 4 being a separate view of the detaching device shown in Figs. 1 and 2.

Referring to the drawings more in detail, A represents the lock; C, the lock-bolt; E, the door of the safe; F, the door-frame; G G, the door-bolts; H, the carrying or tie bar; I I′, the bolt-bars; J, a stud, which serves as an abutment for the end of the lock-bolt C; K, a pivoted angle or bell-crank lever, and L a link connecting this angle-lever to the tie-bar H. When the end of the lock-bolt or dog is interposed between the abutment J and the head of the angle-lever K the bolt-work is locked. When the lock-bolt is retracted the door-bolts G G can be thrown back and the door opened. This is effected by means of the handle (not shown in the drawings) on the outer end of the spindle M, which passes through the door. To the inner end of this spindle there is secured a forked or slotted arm, N, which engages with the pin O, projecting inwardly toward the door from the tie-bar H, and by this means the bolts can be thrown to the right or left, according to the direction in which the spindle is rotated.

Instead of securing the connecting-pin O to the tie-bar H, as has hitherto been the practice, I secure it to a heavy block of metal, P, letting the connecting-pin pass through the tie-bar toward the door. This block P has another pin, Q, which also passes through the tie-bar, and is provided with a button on its end. A spring, R, placed between the tie-bar and this button, operates to hold the block against the face of the tie-bar under normal conditions. When, however, the part of the door in the vicinity of this block is subjected to a sudden and heavy shock, as from the use of some quick explosive against the outer face of the safe opposite the lock, the block will be thrown violently forward, the spring R yielding sufficiently to permit the pin O to be withdrawn from the fork or slot of the spindle-arm N, as indicated by the dotted lines in Fig. 2. A latch, S, dropping behind the block P, will prevent its return.

It is obvious that when the pin O has been withdrawn from the spindle-arm the door-bolts are wholly disconnected from the spindle, so that the turning of the latter will be ineffectual to withdraw the door-bolts from the jamb of the door, notwithstanding that the explosion may have unseated the lock or broken its time mechanism or other parts, and thereby destroyed its control over the bolts. The important function of the block P in this disconnecting mechanism is to weight the pin O. This weight should be sufficient to give the pin such momentum, when subjected to the force of a shock calculated to endanger the lock, as to insure the withdrawal of the pin from the spindle-arm. It will be readily understood that the mere form of the disconnecting mechanism may be widely changed without departing from the principle of the invention, as also the form of the latch for preventing the return of the pin to its normal position. Instead, for instance, of using a latch for this latter purpose, substantially the same result would be secured by so weighting the handle of the spindle that the spindle-arm would move automatically and be carried out of alignment with the pin O the moment the latter should be withdrawn from it. Then, if on the recoil the pin returned to its former position, it would fail to enter the fork of the spindle-arm. So, also, instead of having the pin O arranged to disconnect from the spindle-arm, this arm might be arranged to disconnect from the spindle; and this, again, could be done in various ways.

From the foregoing it will be seen that the essential feature of the invention is that the operative connection between the spindle and the door-bolts, whatever the special form or construction of the devices may be, be such that it will be interrupted by the force of a shock directed against the door of sufficient intensity to endanger the lock. To this end it is manifest that the disconnecting devices should be

placed in proximity to the lock. Otherwise, if the safe were attacked with any of the quick explosives, whose action is intensely local, the lock might be destroyed without affecting the disconnecting devices.

What is claimed as new is—

1. The combination of a lock, door-bolts guarded thereby, a spindle for operating such bolts, and a movable connecting device arranged between the spindle and the bolts and in proximity to the lock, whereby the spindle and the door-bolts may be disconnected on the occurrence of a sudden and heavy shock directed against the lock, substantially as and for the purpose set forth.

2. In combination with a movable connecting device arranged between the spindle of a vault or safe door and the door-bolts of the same, substantially as and for the purpose described, a latch or stop to hold the parts out of engagement when once disconnected.

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