

(No Model.)

F. H. PECK.
TIME LOCK ATTACHMENT.

No. 472,224.

Patented Apr. 5, 1892.

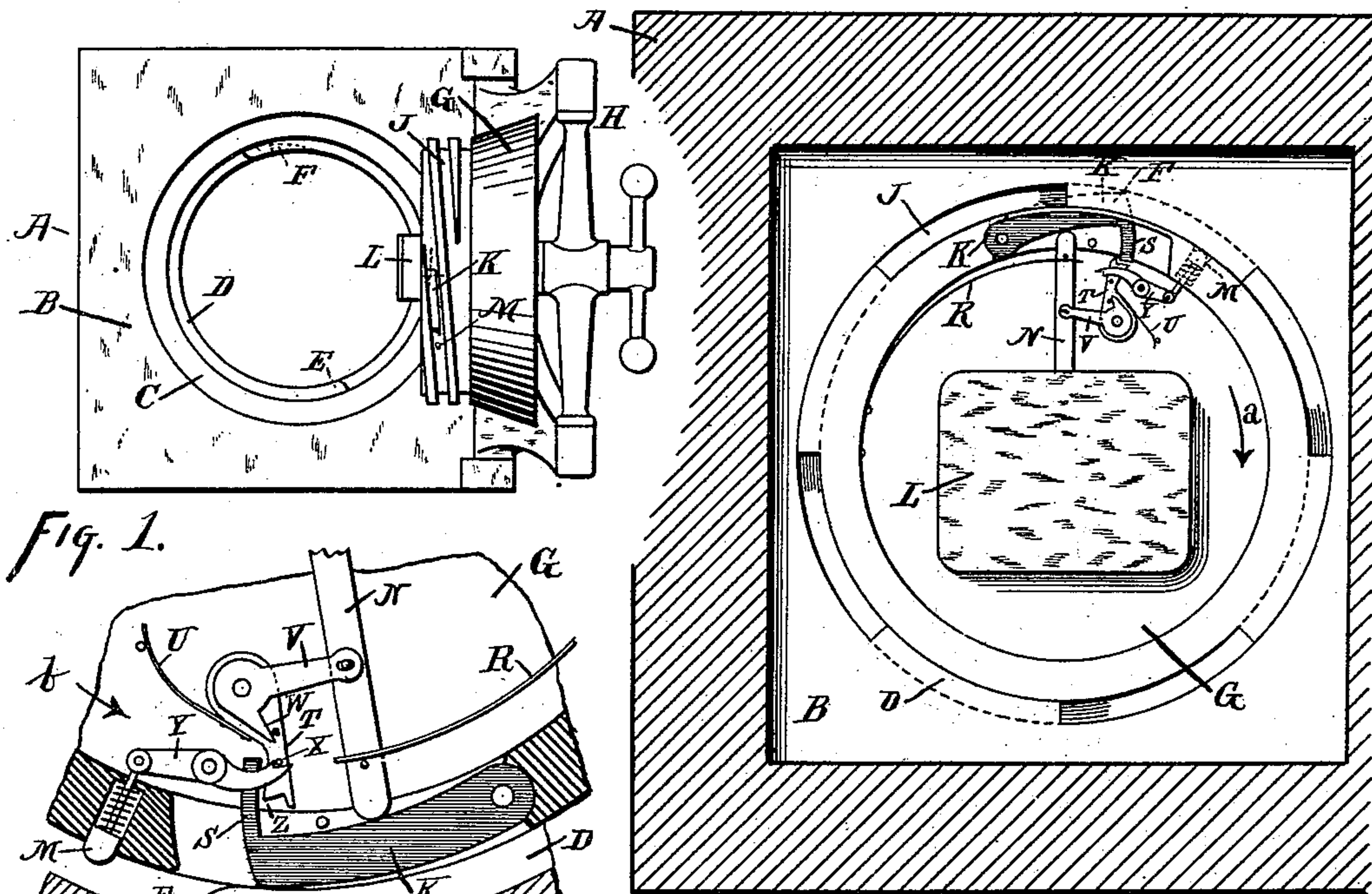


Fig. 1.

Fig. 2.

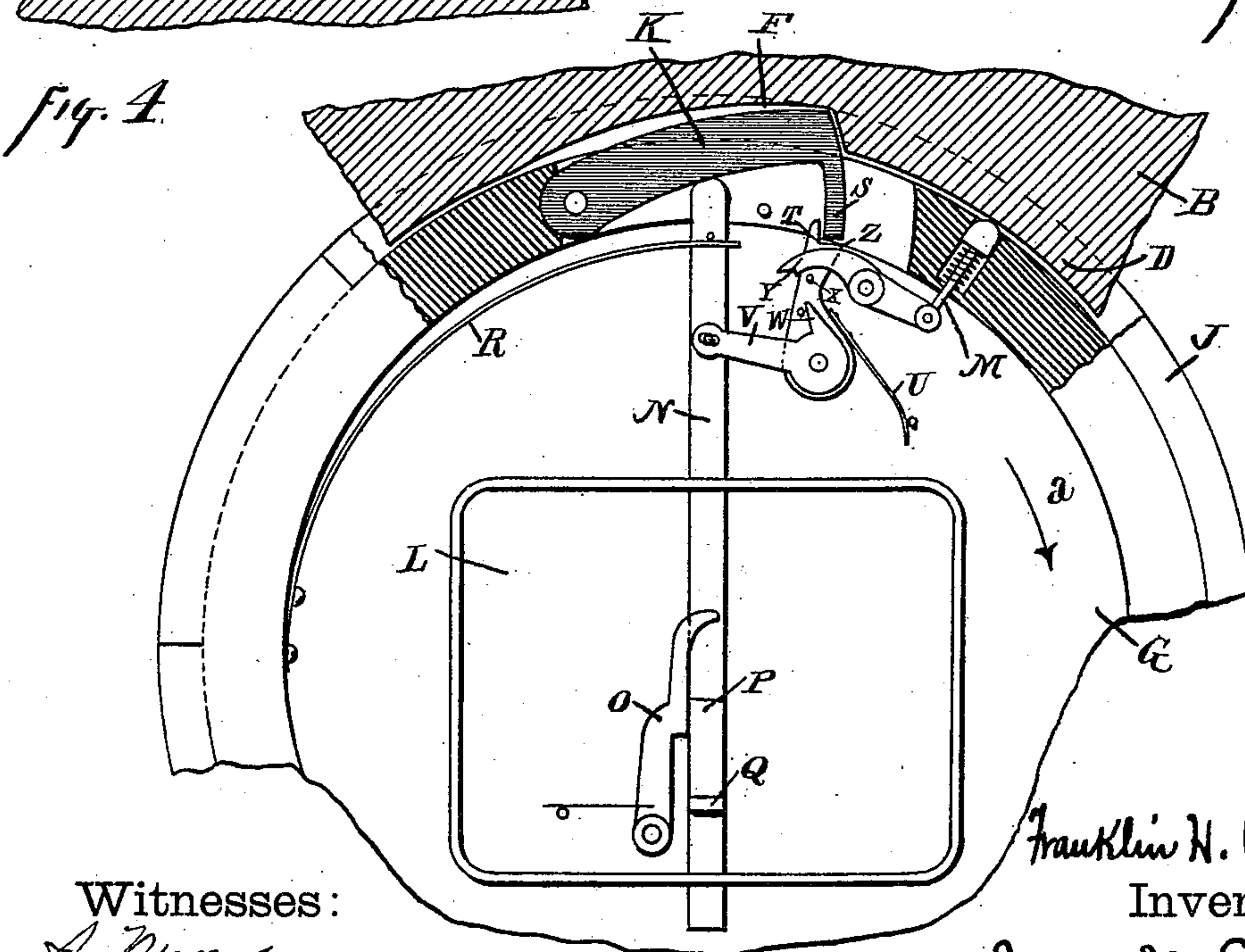


Fig. 3.

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TIME-LOCK ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 472,224, dated April 5, 1892.

Application filed December 14, 1891. Serial No. 414,921. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN H. PECK, of Des Moines, Polk county, Iowa, have invented certain new and useful Improvements in Time-Lock Attachments, of which the following is a specification.

This invention pertains to improved connections between time-locks and the safe-locking devices which they control; and it has thus far been developed with special reference to that class of safes in which a circular door is closed by being screwed into place and locked by mechanism within the safe, preventing the unscrewing of the door before the time-lock shall have released the locking device.

The objects of the invention are to secure an instantaneous locking when the door shall have been screwed home or when the time-lock shall go on guard, and to secure an instantaneous unlocking when the time-lock goes off guard, and to provide a dead-lock while the time-lock is on guard.

For an example of the class of screw-door safes above referred to, see King's patent, No. 457,122, of August 4, 1891. Safes of this class are always guarded by time-locks.

Any ordinary suitable time-lock may be employed in connection with my improvements; but in setting forth an exemplification of my invention I have chosen to assume the employment of a time-lock substantially such as is shown in King's patent, No. 450,293, of April 14, 1891, which patent may be referred to, if necessary, in order to understand that the time-lock goes on guard by allowing its bolt to spring up and do the desired locking work, the time-lock going off guard by pulling its bolt down at the proper time. This time-lock goes on guard suddenly by the release of a spring, while it goes off guard slowly by straining the spring back.

My invention will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a front elevation of an ordinary screw-door safe with the door open and swung into a plane at right angles to the front of the safe, so as to show the edge of the door; Fig. 2, a vertical section of the safe with the door closed and locked and showing the door and

the front wall of the safe in rear elevation; Fig. 3, an enlarged repetition of portions of Fig. 2 with some parts shown in section and with the cover of the time-lock removed; and Fig. 4, an enlarged repetition of portions of Fig. 2 with some parts shown in section, but showing the door instead of in the locked position as just being started into place—in other words, just as the screwing-in begins.

In the drawings, A indicates the body of the safe; B, the front wall of the safe; C, the usual circular door-seat, into which the door tightly fits and into which the door is to be drawn by means of a screw; D, the usual threads in the door-jamb to the rear of the door-seat and forming the nut with which the screw on the door engages when the door is closed; E, the initial end of this thread at the lower portion of the door-jamb; F, the usual pawl-notch cut out of the rearmost threads D of the door-jamb at the top of the door-jamb, the object of this notch being to furnish an engaging point for the pawl on the door-screw to prevent improper unscrewing of the door; G, the door, adapted to fit air-tight into the door-seat; H, the usual crane-hinge supporting the door and allowing the door to be opened and closed and also to be rotated upon its axis; J, the usual threads upon the rear of the door, adapted to engage the threads D of the door-jamb, the screw formed by these threads having in the example the usual form of a ring secured to or formed with the door; K, the usual pawl, pivoted in a mortise in the door-screw between two of the threads thereof and adapted to swing outwardly, so as to engage the pawl-notch F in the door-jamb and prevent the unscrewing of the door, or to swing inwardly so as not to engage the notch; L, the usual time-lock secured to the rear of the door, the interior time mechanism not being shown in the drawings, as my invention requires nothing different from that in ordinary use; N, a spring-plunger working radially in the screw J a slight distance circumferentially to the rear of the pawl, this plunger projecting, like the pawl, outwardly between two of the threads of the door-screw, but adapted to move inwardly, so as to have no projection between the threads; N, the bolt of the time-lock, projecting from the time-lock upwardly into con-

tact with the under side of the pawl, so that if the bolt goes up the pawl must move outwardly in position to engage the notch, it being impossible for the pawl to drop back until the bolt of the time-lock retreats and permits it to do so; O, the usual trigger-hook of the time-lock, adapted to engage over a shoulder on the bolt end when the bolt is retracted by the time mechanism, the bolt being thus held down until the time mechanism shall again disengage the trigger-hook; P, the shoulder just referred to as being engaged by the trigger-hook when the bolt is retracted; Q, the usual shoulder on the time-lock bolt, engaged by the time mechanism in retracting the bolt N; R, a light spring holding the bolt N, up and thus pressing the pawl K into outward position; S, a depending finger on the outer end of the pawl; T, a lever loosely pivoted to the door under the pawl, the upper end of this lever coming under the pawl-finger S, the lever being adapted to swing to one side, so that its upper end will no longer be under the pawl-finger; U, a light spring tending to hold the lever T in position, with its upper end under the pawl-finger; V, an arm mounted loosely on the pivot of the lever T and connected with the bolt N of the time-lock, so that as the bolt N moves down the arm will be tipped downwardly; W, a projection on this arm engaging behind a pin projecting from the lever T, so that as bolt N descends and tips arm V downwardly the lever T will be swung to the left and have its upper end removed from under the pawl-finger; X, a trigger-pin projecting from lever T; Y, a trigger-lever pivoted at its center and having its outer end connected with the spring-plunger M and having at its inner end a trigger-notch adapted to engage behind trigger-pin X, and Z the corner of the upper end of the lever T.

Confining attention now exclusively to Figs. 2 and 3, the operation will be described. The door is found to be screwed fully home and the pawl seated outwardly in the jamb-notch. The time-lock bolt N is in its upward position, being held there by the spring R. To unscrew the door requires that it be turned in the direction of arrow *a*. The door cannot be so turned because the pawl engaging the jamb-notch will not permit. The pawl cannot drop down out of the notch because spring R holds it up. Again, if spring R and bolt N were absent, even then the pawl could not fall because it would be intercepted by the lever T. Thus it will be seen that the door is locked not by the action of the time-lock, but by the action of spring R. The door can never be unscrewed until spring R is pulled down and lever T gotten away from under the pawl-finger. When this is done, the pawl will fall to idle position and the door may be unscrewed. In the present arrangement the pawl if unsupported by the spring would be supported by lever T and could not drop. As the time-lock pulls bolt N down the pawl does not follow, being supported by lever T,

and it is only when the movement of the time-lock has tipped lever T far enough to the left to allow the pawl-finger to drop off of corner Z that the pawl may drop, and when it does drop it drops instantly. Thus it will be seen that there is a positive support under the pawl while the safe is locked and that notwithstanding the time-lock goes off guard slowly the real unlocking takes place instantaneously. When the time-lock has pulled bolt N down the full distance, then the unlocking duty of the time-lock is fully performed, for trigger-hook O catches over shoulder P and holds the bolt down until, when the proper time comes around, the time-lock will release trigger-hook O and allow the bolt to rise again. This is all that need be said regarding the unlocking operation, which may be described briefly as the deliberate pulling down of the spring, the leaving of a temporary support under the pawl in the absence of the spring, and the eventual sudden removal of that temporary support. So long as the door engages the jamb-threads the plunger M will be held inwardly and lever Y will be without effect; but bolt N having been pushed down by the time-lock, thus pulling down the spring and swinging aside the lever P, the pawl falls and I am at liberty to unscrew the door in the direction of arrow *a*. I continue the unscrewing motion, and finally the head of plunger M, which has been held inwardly by the jamb-thread, reaches the beginning E of that thread. When this happens, the plunger springs out and the trigger-notch in the end of lever Y now engages behind pin X, thus holding lever T in its unobstructing position, to which it has been pulled by the action of the time-lock. I now have the door open and spring R pulled down and the pawl entirely free. Assume that at four o'clock in the afternoon the door stands open and the time-lock goes on guard—that is, it unhooks trigger-hook O. Spring R will then lift the bolt and force the pawl outwardly; but lever T will not swing under the pawl-finger, being restrained by trigger Y. At five o'clock I proceed to close the safe. I turn the door until the pawl is below, as seen in Fig. 4, except that the pawl would be somewhat farther to the left and pressed outwardly by the spring. I now start to screw the door in the direction of arrow *b*. If the pawl was unyielding, it could not mount the thread end E. Spring R will yield and permit the pawl to ride up on the thread end E. But if lever T had taken its normal position as an obstruction to the pawl-finger when the time-lock went on guard, then this rigid finger would prevent the yielding of the pawl; but when the door was finally unscrewed the trigger-lever Y caught pin X and held lever T in unobstructing position. Therefore when the time-lock went on guard the spring R forced the pawl out, but lever T did not go into obstructing position. In closing the safe with the time-lock on guard

I can therefore turn the door in the direction of the arrow *b*, the pawl riding freely upon the jamb-thread. Soon after reaching the position shown in Fig. 4 the head of the
 5 plunger *M* will reach the thread end *E* and ride upon the thread. This will untrigger the lever *T*, and spring *U* will tend to throw that lever into obstructing position, but is prevented from doing so by the side engagement
 10 of the lever with the pawl-finger. I continue the screwing until the door is home and the pawl reaches the notch *F*, as in Figs. 2 and 3, whereupon the spring forces the pawl out into the notch and lever *T* goes to its obstructing position and the safe is locked and
 15 will remain so till the time-lock again pulls down the spring and pulls aside the lever *T*. It will thus be seen that the locking was instantaneous and took place the instant the
 20 door was screwed home.

I have just assumed the closing of the safe some time after the time-lock went on guard. Assume now that I close the door at three o'clock—an hour before the time-
 25 lock goes on guard. Spring *R* is pulled back and held so by trigger *O*, and lever *T* is pulled aside and held so by trigger *Y*. I screw the door home as before, the pawl in this case, however, riding over thread end *E*
 30 without being resisted by spring *R*. When plunger *M* reaches thread end *E*, it untriggers the lever *T*, which makes side engagement with the pawl-finger, as before. I screw the door home, as in Figs. 2 and 3; but the pawl
 35 does not move up into the notch, spring *R* being held down by the time-lock or trigger *O*. The safe is closed, but not locked, and the door may be unscrewed at any time before four o'clock; but at four o'clock the time-lock
 40 releases bolt *N*, and spring *R* forces the pawl into the notch and lever *T* goes into its obstructing position, and the safe is locked. Thus the unlocking takes place instantly. The locking takes place instantly whether the
 45 locking be done before or after the time-lock goes on guard, and while the time-lock is deliberately going off guard the pawl has a dead locking-support, and while the time-lock is on guard the lever *T* is always present to furnish
 50 a rigid support for the pawl.

I claim as my invention—

1. In a time-lock attachment, the combination, substantially as set forth, with a safe-door, a latch therefor arranged to fall to un-
 55 latched position by gravity, a spring to force the latch to latched position, and a time-lock arranged to retract the spring and again to permit it to act at proper times, respectively, of a movable support arranged to normally
 60 engage below said latch and support it in latched position, a connection between said

movable support and time-lock to cause the support to be moved to inactive position when the time-lock retracts said spring, a trigger to engage said movable support and
 65 prevent it returning to active position when said spring is permitted to act, and a plunger engaging said trigger and projecting from the door in position to be actuated by the door-jamb to release the trigger in the act of closing the door. 70

2. In a time-lock attachment, the combination, substantially as set forth, with a safe-door, a latch therefor arranged to fall to unlatched position by gravity, a spring to force
 75 the latch to latched position, and a time-lock arranged to retract the spring and again to permit it to act at proper times, respectively, of a rigid movable support disposed below said latch, and connections between said movable support and time-lock, whereby when
 80 said spring is retracted the movable support is moved to inactive position.

3. In a time-lock attachment, the combination, substantially as set forth, of a safe having
 85 a circular door-seat and a jamb-thread and a notch in the jamb-thread, a door fitting said door-seat and having a thread to fit said jamb-thread, a pawl pivoted in said door and adapted to engage said notch when the door
 90 is screwed home, a spring to force said pawl into the notch, a time-lock arranged to retract said spring and to permit it to act at proper times, respectively, a movable rigid support under said pawl, and connections be-
 95 tween said movable support and time-lock to cause the support to move to inactive position when the spring shall have been retracted.

4. In a time-lock attachment, the combination, substantially as set forth, of a safe hav-
 100 ing a circular door-seat and a threaded jamb provided with a notch, a door fitting said seat and having a thread to engage said threaded jamb, a pawl pivoted to the door and adapted
 105 to engage said notch when the door is home, a spring to force the pawl into the notch, a time-lock arranged to retract the spring and to permit it to act at proper times, respectively, a movable rigid support under the pawl, con-
 110 nections between said support and time-lock to move the support into in active position when said spring is retracted, a trigger to hold the support in inactive position, and a plunger connected with said trigger and ar-
 115 ranged to engage the initial end of said jamb-thread as the door is screwed to place and thereby release said trigger.

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