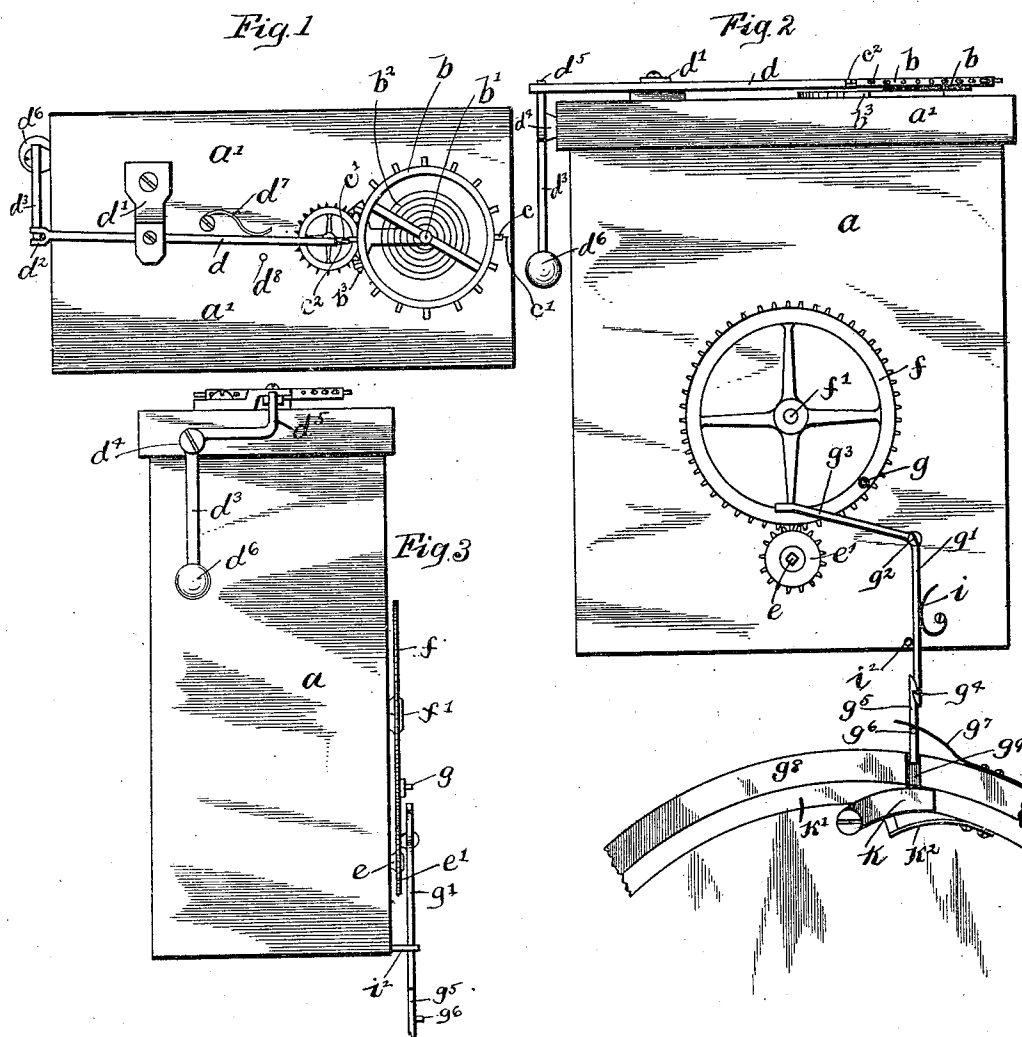


(No Model.)

C. W. HAIN.
ATTACHMENT FOR TIME LOCKS.

No. 466,135.

Patented Dec. 29, 1891.



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ATTACHMENT FOR TIME-LOCKS.

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To all whom it may concern:

Be it known that I, CHARLES W. HAIN, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Attachments for Time-Lock Safes, of which the following is a specification.

My invention relates to that class of safe attachments which are designed to be used in connection with safes having time-locks; and the objects of my invention are to provide an attachment of this class so arranged and constructed as to admit of its being utilized to unlock the doors of safes where the locks are controlled by a time-lock mechanism when from any cause said time-lock mechanism fails to be operative; to so construct said attachment as to admit of its working parts being readily and easily set in motion when desired, and to construct the same in a simple and reliable manner and without complication. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of my improved attachment. Fig. 2 is a face view of the same in elevation, showing in connection therewith the mode of releasing the locking-lug of a screw-door safe; and Fig. 3 is an end view of my attachment.

Similar letters refer to similar parts throughout the several views.

a represents a rectangular housing or case similar in form to that employed for incasing a time-lock mechanism, said case having mounted therein in the usual manner the usual clock or watch mechanism.

a' represents the top plate of the case *a*, which, as shown, preferably projects slightly over the top of the case-body.

b represents a balance-wheel, which is supported upon and carried by the upper end of the usual balance-wheel shaft *b'*, which projects upwardly from the case *a* through the top plate *a'* near one end of the latter. The balance-wheel post or shaft is provided with the usual hair-spring *b²* and imparts in the usual manner a reciprocating motion to an escapement *b³*, the pallets of which engage with the teeth of the usual escapement-wheel

b⁴, which is also supported upon the upper and outer side of the case.

Secured to and projecting outwardly from each of two oppositely-located balance-wheel studs *c* is a short metallic stop *c'*, which is preferably formed of a thin strip of metal.

d represents an arm or bar, which is pivoted at one side of its center to the under side of the higher portion of a bridge-plate *d'*, the lower portion of which is secured to the plate *a'* of the case at a point near the opposite end of the plate from that occupied by the balance-wheel. This arm *d* has its inner end provided with a projecting stop *c²*, which corresponds in form with the stops *c'*, with one of which it is normally in engagement. The outer end of the arm *d* projects slightly over the end of the top plate *a'* and has its outwardly-projecting end portion forked or bifurcated, as shown at *d²*.

d³ represents a gravity-trigger, which, as shown, is of the bell-crank-lever form, and is pivoted at its vertex to one end of the case top plate *a'* at a point *d⁴* to one side of the center of the width of said top plate. The upper and normally horizontal arm of this bell-crank trigger terminates in an upward extension *d⁵*, which, as shown, is normally supported between the jaws or forks of the bifurcated end of the horizontal arm *d*. The lower and normally vertical arm of the trigger *d³* is suitably weighted or enlarged, as shown at *d⁶*. The connection of the trigger-extension *d⁵* with the forked end of the arm *d* serves to hold the stop projection in the inner end of the latter in engagement with the stop projection of the balance-wheel, and thus prevent the rotation of the latter. This arm *d*, however, is subjected to the pressure of the free end of a spring-strip *d⁷*, one end of which is fixed to the top plate *a'* on one side of said arm, and which, when said arm is released, as hereinafter described, will serve to press the latter out of the path of the balance-wheel stop projections and against a stop-pin *d⁸*, which projects upwardly from the top plate *a'*.

Through the front face of the plate *a*, near the lower end thereof, projects, as shown, the mainspring-post *e* of the clock or watch mechanism.

anism which is within said case. Upon this post *e* is mounted a pinion-wheel *e'*, the teeth of which, as shown, gear with the teeth of a larger gear-wheel *f*, which is journaled upon a supporting shaft or pin *f'*, which projects from the face of the case *a* at a point above and in vertical alignment with the spring-post *e*. The gear-wheel *f* is provided on its rim with an outwardly-projecting contact-pin *g*.

g' represents a trigger of bell-crank form, which is pivoted at its vertex, as shown at *g*², to the face of the plate *a* at a point to one side of the pinion *e'*. The upper arm of the trigger *g'* is inclined slightly from a horizontal position, as shown at *g*³, and extends in close proximity to and in front of the rim of the gear-wheel *f* within the path traversed by the pin *g* of the gear-wheel *f*. The lower and normally-vertical arm of the trigger *g'* extends, as shown, below the case *a*, and is retained in its vertical position by the pressure of the spring-strip *i*, which has one of its ends fixed to the case *a* on one side of said trigger-arm, and has its free end pressing said trigger-arm against a fixed stop-pin *i*², which projects from the case on the opposite side of said arm.

As will be seen by the description of the operation of my device given hereinafter, the operation of unlocking the safe-door is accomplished through the movement of the trigger *g'*, which is imparted thereto in the manner hereinafter described at the end of a certain measure of time. As this device is adapted to be used in connection with different forms of locks, it is obvious that the manner of unlocking a safe-door by the movement of said trigger must vary somewhat; but in case the mechanism herein shown is desired for use in connection with what is known as a "screw-door safe," I provide the lower end portion of the trigger *g'* with a suitable notch, as indicated at *g*⁴, with which normally engages the upper notched end of a vertical pin or pressure-bar *g*⁵. This pressure-bar *g*⁵ has connected therewith or bearing upon the upper side of a suitable pin *g*⁶, which projects from said bar, the free end of a spring-strip *g*⁷, which, extending downwardly and outwardly from said pressure-bar, has its remaining end rigidly secured to the safe-doorway rim or receiving-thread *g*⁸. This rim *g*⁸ is provided with a mortise *g*⁹, within the outer end of which the lower end of the pressure-bar normally projects. The slotted rim opening *g*⁹ is located directly opposite the usual pivoted locking pawl or lug *k*, which in the class of safes mentioned serves by engagement with the shoulder of the door screw-thread *k'* to prevent the opening of said door. This locking pawl or lug *k* is ordinarily supported in its locking position by a spring-pressure, as indicated at *k*², and, as is well known, is released from its engagement with the shoulder of the screw-threads by the inward pull of the usual time-lock mechanism.

The manner of utilizing and operating my device is as follows: The device herein shown and described is adapted to be attached to the inner side of or to the frame-work on the inner side of a safe at any convenient point, it being preferably arranged above or at one side of the inner face of the door in case it is applied to a screw-door safe. The mainspring of the clock or watch mechanism within the case having been wound or placed under tension by winding or turning the key-post *e* in the usual manner, and the usual time-lock mechanism failing from any cause to perform its office, the clock or watch mechanism is set in motion by tipping the safe, which may be accomplished in any desired manner. The tipping of the safe will result in a swinging movement of the weighted trigger-arm *g*³, which in turn will result in the withdrawal of the trigger-extension *g*⁵ from the forks of the arm *g*⁶, and the latter being thus freed it will be seen that the pressure of the spring *g*⁷ will serve to drive said arm and its end stop from contact with the stop projections of the balance-wheel, and that the pin *g*⁸ will limit the lateral movement of the arm. The balance-wheel being thus released, it is observed that said balance-wheel and the mechanism within the case will be at once set in motion. The movement of the internal clock mechanism will operate to rotate the outer pinion *e'*, which in turn will produce a slow rotary movement of the gear-wheel *f*. When the pin *g* of said gear-wheel reaches the point of contact with the arm *g*³ of the trigger *g'*, it is obvious that said arm will be pressed downward and a consequent outward motion of the lower arm of said trigger will be produced.

In case the mechanism herein described is used in connection with a screw-door safe, it is obvious that the movement of the trigger *g'* will operate to release from engagement therewith the pressure-bar *g*⁵, and that the latter through pressure of the spring *g*⁷ will be driven downward against the locking-pawl *k* with sufficient force to drive the latter from engagement with the thread-shoulders of the door, and thus unlock the latter.

In case my device is employed in connection with other safe-locking mechanisms, it is obvious that the movement of the trigger *g'* may be utilized in conjunction with other simple means for throwing the locking parts of the safe open.

It will readily be seen that the size of the gear-wheel *f* and the number of teeth employed therein and the position of the pin *g* when the mechanism is put in operation, as described, will regulate the time which will intervene between the tipping of the safe and the unlocking movement. These parts are, however, preferably so constructed and arranged as to produce the unlocking movement within forty-eight hours from the time of tipping the safe, although it is obvious that the parts may be set for other measures of time.

From the construction shown and described it is obvious that a device of the nature described may be produced in a reliable and simple form, and that the same will be of great utility in opening time-lock safes where the ordinary time-lock mechanism employed has for any reason become inoperative.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an attachment for time-lock safes, the combination, with an ordinary clock or watch mechanism, the balance-wheel, and one or more stop projections c' on said balance-wheel, of the pivoted arm d , normally engaging at one end with one of said balance-wheel stop projections, and a weighted bell-crank trigger d^3 , pivoted to the mechanism frame or case, the upper end of the trigger detachably connected with the outer end of said arm, substantially as specified.

2. In an attachment for time-lock safes, the combination, with an ordinary clock or watch mechanism, the balance-wheel thereof, stop projections c' on said balance-wheel, pivoted arm d , normally engaging at one end with

one of said balance-wheel stop projections, and a bell-crank trigger d^3 , pivoted, as described, to the mechanism frame or case and having one of its ends weighted and its remaining end detachably connected with the outer end of the arm d , of a pinion e' upon the winding-post e , a pivoted gear-wheel f , gearing with said pinion e' , a pin g , projecting from said gear-wheel, and a pivoted bell-crank trigger g' , one arm of which normally projects within the path of the pin g , substantially as specified.

3. In an attachment for time-lock safes, the combination, with the clock or watch mechanism, means for temporarily stopping the latter, a pinion-wheel e' upon the mainspring-post e of said clock mechanism, a gear-wheel f , gearing with said pinion, and a contact-pin g , projecting from said gear-wheel, of a pivoted trigger g' , having one of its arms projecting within the path of the pin g , substantially as specified.

CHARLES W. HAIN.

In presence of—

BARTON GRIFFITH,
C. C. SHEPHERD.