Nov. 19, 1929. A. J. MACY 1,736,205

AUTOMATIC SAFE BURGLAR LOCK

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FIG. 1

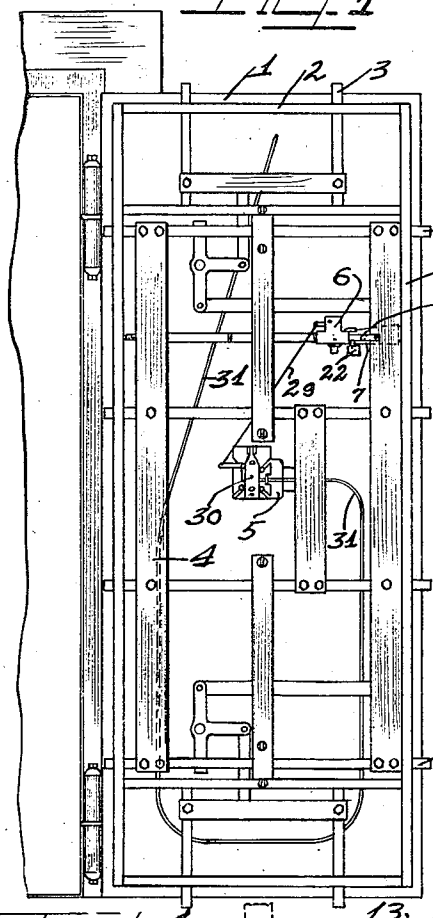


FIG. 2

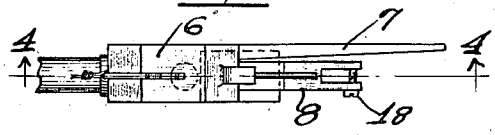


FIG. 3

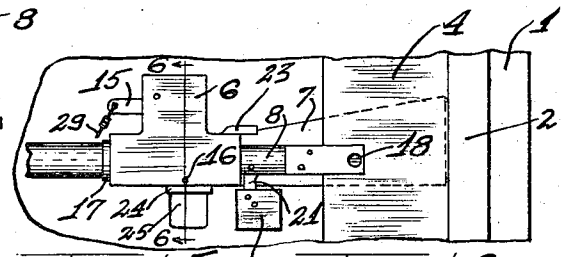


FIG. 5

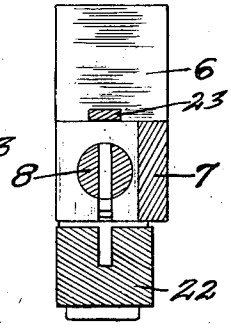


FIG. 6

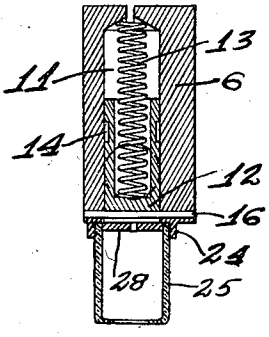
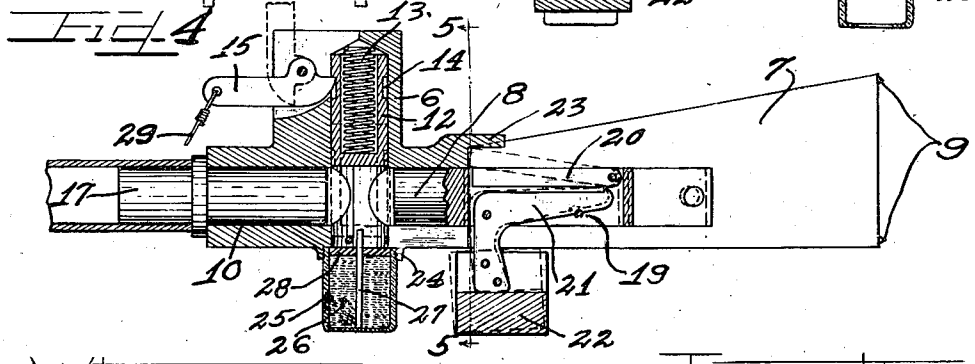


FIG. 4



Witnesses

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AUTOMATIC SAFE BURGLAR LOCK

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FIG. 7

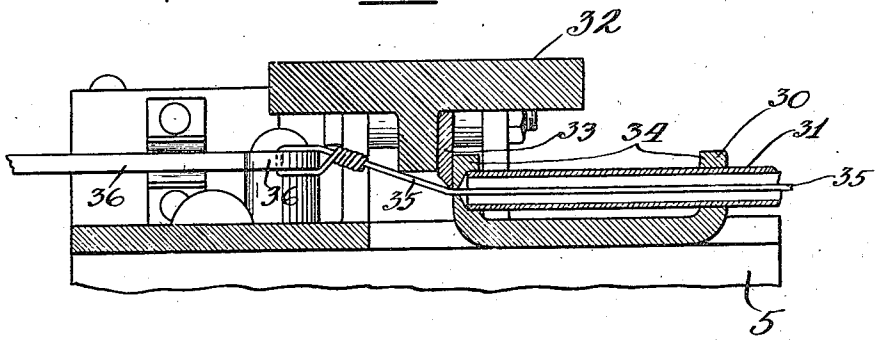
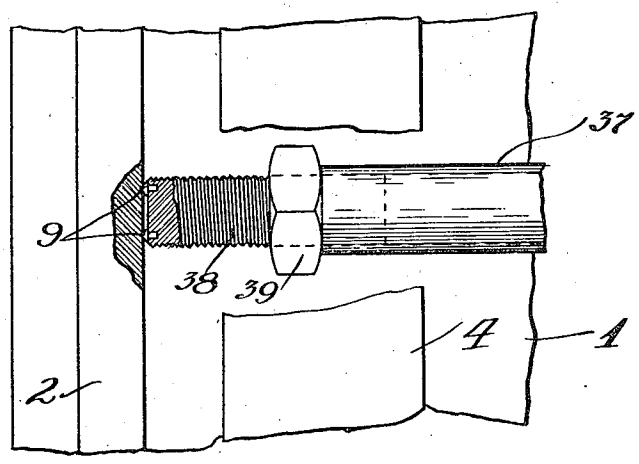


FIG. 8



Witnesses
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1,736,205

UNITED STATES PATENT OFFICE

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AUTOMATIC SAFE BURGLAR LOCK

Application filed June 23, 1922. Serial No. 570,437.

My invention relates to auxiliary locking means for vault and safe doors adapted to be operated by an attempt at tampering with the regular lock of the door or by attempted forceful entry through the door. Such auxiliary locks are desirable because of the comparative ease with which a burglar can remove the regular lock or cut his way through the door. In such a lock the prime requisites are reliability and speed of action when an unauthorized attempt at entry is made. Moreover, the auxiliary lock will probably remain inactive for years under the regular conditions of the use of the vault, yet must function perfectly when finally called upon to protect the contents of the vault. To insure such a result, I have provided a supplemental operating mechanism to reduce the chance of failure of the major mechanism. I have further provided a means for preventing actual entry even if an entrance opening should be cut in the door without disturbing the regular locking means in any way.

It is an important object of my invention that no hint of its presence or location should be given on the outside of the door, either by fastening means for the lock inserted through the door or operating mechanism visible in any way. Such concealment is highly desirable because it will tend to delay the burglar and so increase the chances of his being discovered before he can get the door open. If the burglar is given a visual hint as to what additional equipment is installed on the vault door, he can locate and remove the extra lock just as he would an ordinary combination lock.

The primary object of my invention is to utilize an attempt to tamper with a door, or the regular lock thereon, to throw a supplemental lock into action.

A further important object of my invention is to provide a means of filling the vault with noxious vapors such as mustard gas released within a vault or other enclosure of this nature, upon the severance or loosing of a means normally restraining the releasing of the vapors and so arranged along the major portion of a vulnerable part of the enclosure, as to be severed or loosed in case of an attempt to cut through such part of the enclosure.

A further object is to construct such a device so that it will be alterable to fit various width of doors without requiring special parts for each width of door.

An important object of this invention is to allow the auxiliary lock to be placed in various locations on the door so that the device cannot be located from the outside of the door without a record of its position made by measurements previously taken on the inside of the door.

A further important object of this invention is to connect this device directly to some part of the locking mechanism of the door so that part of the auxiliary lock will be moved each time the door mechanism is operated, so that it will require the same attention as is given the rest of the mechanism, thereby keeping the auxiliary lock in good order. An auxiliary lock that is installed and then forgotten may be neglected so long that when it is finally called upon to function it may be inoperative from rust or other causes and the device of this invention is designed to overcome these disadvantages.

A further object of this invention is to provide an inertia stop that will prevent rapid operation of the door mechanism. It is possible that the door mechanism might be operated practically simultaneously with the destruction of the regular lock and so not allow the small interval of time required for the operation of the auxiliary lock. This invention provides an inertia stop which functions in such cases and delays the operation of the door mechanism until the auxiliary locking means have functioned properly.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention (in a preferred form) is illustrated on the drawings and hereinafter more fully described.

On the drawings:

Figure 1 shows a rear elevation of a vault door with the device of this invention installed thereon.

Figure 2 is an enlarged plan view of the operating end of the device.

Figure 3 is a fragmentary elevation of this device.

Figure 4 is an enlarged sectional elevation on the line 4—4 of Figure 2.

Figure 5 is a section on the line 5—5 of Figure 4, with parts in elevation.

Figure 6 is an enlarged section on the line 6—6 of Figure 3, showing the plunger in the locked position shown dotted in Fig. 4.

Figure 7 is an enlarged section of the wire cutting mechanism shown mounted on the combination lock in Figure 1.

Figure 8 is an enlarged detail of the adjustable means for securing the device of this invention in place on a vault door.

As shown on the drawings:

In the diagrammatic view of the rear of the vault door shown in Fig. 1, the numeral 1 refers to a plate used as the front and principal part of the door, with a frame or casing 2 fastened to the door to hold the locking bolts 3. The several bolts 3 are fastened together by bars 4 so as to slide as one unit when the door handle (not shown) is operated. In such a construction of vault doors the bars are locked in an extended position by some common form of combination or time lock 5.

A device embodying the present invention is shown in detail in Figures 2 to 6 inclusive, where an inverted T-shaped block 6, apertured for the operating parts of the lock, is mounted on a plate 7 projecting beyond the operating element 8 of the lock to engage on the inside of the door frame 2 by means of hardened points 9 inserted in the edge of the plate as disclosed in my Patent No. 1,551,580, issued Sept. 1, 1925. In the drawing, the plate 7 is shown as integral with block 6, but it may also be fastened to the block to form an extension for the purpose mentioned.

As shown in Fig. 4, a horizontal hole 10 extends lengthwise of the block 6, and a vertical hole 11, whose center intersects that of the horizontal hole, forms a pocket for a sliding plunger 12 and an operating spring 13. The plunger has a groove 14 turned in its surface in which a trigger 15 engages to hold the plunger in retracted position to clear the horizontal hole 10. The plunger is prevented from dropping out of the hole 11 when released by the trigger by a removable pin 16 extending across the bottom of the hole. A coupling 17 is inserted in the end of the horizontal hole 10, opposite the plate 7, to which is added a plurality of spacers 37 and an adjustable end consisting of a threaded shaft 38 and a nut 39 on the same bearing against the end of the last spacer; as described in my above-mentioned patent.

A sliding bar or operating element 8 is forked and attached to the bar 4 by a cap screw 18 and slides in the hole 10. This bar has a slot 19 and carries a pivoted dog 20 within the slot adapted to be thrown upwardly by a pivoted crank 21 from which a weight 22 is suspended, the weight forcing up the dog 20 by its inertia when the door locking mechanism is started suddenly, and thereby engaging the dog against the face of the block 6. A stop 23 is provided on the block to prevent the dog from slipping over the edge of the block.

The block 6 is provided on its underside with a threaded annular ring 24 for attaching the body 25 of a bomb. The bomb consists of a breakable receptacle 25 containing a liquid 26 which will vaporize almost instantly on contact with the atmosphere to produce noxious vapors unbearable by a human being, such as so-called tear gas or similar preparations. A tappet 27 is inserted in the body and the liquid sealed into the body by a coating of paraffin 28 which also serves to support the tappet. As shown, the tappet projects into the vertical hole 11 and above the pin 16 so that the plunger 12 will strike the tappet when released and so break the bottom of the bomb body, thus releasing the liquid contents, which rapidly volatalize and fill the vault with gas.

Normally the trigger 15 is held substantially horizontal and engaged in the groove 14 of the plunger 12 by a connection 29 leading either to some stationary part of the regular vault lock 5 or to an "automatic releasing mechanism for locks" 30, as illustrated in Fig. 1 of this application and described in my Patent 1,627,189, dated May 3, 1927. In the release mechanism illustrated a wire 35 is threaded through the tube 31 and fastened thereto at the outer end. The mechanism is arranged to cut this wire and release the connection 29 if the lock 5 should be damaged by attempted removal. This mechanism comprises a back plate 30 mounted on the combination lock 5 and has a front plate 32 pivotally mounted thereon at one edge and carrying a knife 33. Lugs 34 are struck up from the back plate to support the tube 31 carrying the wire 35 which is attached to a bell crank 36. The knife 33 on the front plate is arranged to cut the wire 35 if the combination lock 5 should be struck or jarred by a heavy blow such as would be used in an attempt to break off the lock. The tube 31 is carried around other vulnerable parts of the door so that burning through the door will burn off the tube and wire releasing the latter and producing the same result as an operation of the releasing mechanism mounted on the lock.

The operation is as follows:

The connection 29 is broken or released by damaging the regular vault lock in any way or with my releasing mechanism referred to an attempt to burn through the door will

release this connection by cutting the tube 31. A slight movement of connection 29 is sufficient to release the trigger 15, allowing the plunger to drop against the tappet 27, breaking the body 25 of the bomb. The plunger is prevented from dropping out of the hole 11 by the removable pin 16 and so blocks the movement of the bar 8 thus preventing retraction of the door bolts.

After the plunger has been released by the trigger, the vault can be opened by drilling a small hole through the door and pushing out the pin 16, which allows the plunger to drop out of the block, carrying away the paraffin cap of the bomb, and so releasing the lock. This drilled hole must be located within narrow limits by means of a record prepared during the installation of my device.

In order to prevent practically simultaneous removal of the regular lock and operation of the door mechanism, I have provided an inertia stop consisting of a suspended weight 22, whose inertia to movement is caused to lift a dog 20, normally lying within the operating element 8 so that the dog will strike against the face of the block 6 when the door mechanism is given a quick start, thus delaying the retraction of the door bolts and insuring the slight fraction of time required for the movement of the plunger into locking position.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

I claim as my invention:

1. The combination with a closure and the locking mechanism therefor, of an automatic safety lock consisting of an apertured member supported on the inside of the closure, a member slidable in said apertured member and attached to some movable part of the locking mechanism to move in unison therewith, and a sliding plunger adapted to span the aperture in the first mentioned member to prevent the retraction of the slidable member and thereby supplement the regular locking mechanism.

2. The combination with a closure and the locking mechanism therefor, of an automatic safety lock consisting of an apertured member supported on the inside of the closure, a member slidable in said apertured member and attached to some movable part of the locking mechanism to move in unison therewith, means in said apertured member for preventing the retraction of the slidable member and thereby supplementing the regular locking mechanism, and inertia operated means on said slidable member adapted to prevent sudden operation of the regular locking mechanism.

3. The combination with a closure and the locking mechanism therefor, of an automatic safety lock consisting of an apertured member supported on the inside of the closure, a member slidable in said apertured member and attached to some movable part of the locking mechanism to move in unison therewith, means in said apertured member for preventing the retraction of the slidable member and thereby supplementing the regular locking mechanism, and means for releasing a noxious vapor within the closure when the slidable member is prevented from being retracted.

4. The combination with a closure and the locking mechanism therefor, of an automatic safety lock consisting of an apertured member supported on the inside of the closure, a member slidable in said apertured member and attached to some movable part of the locking mechanism to move in unison therewith, means in said apertured member for preventing the retraction of the slidable member and thereby supplementing the regular locking mechanism, inertia operated means on said slidable member adapted to prevent sudden operation of the regular locking mechanism, and means for releasing a noxious vapor within the closure when the slidable member is prevented from being retracted.

5. In a device of the class described, the combination with a lock releasing mechanism of inertia actuated stop mechanism carried thereby adapted to be actuated by a sudden operation of said lock releasing mechanism to dog said lock releasing means from movement.

6. In a device for attachment to closures having locking bolts, a supplemental bolt adapted to prevent retraction of the regular locking bolt, a normally inactive lock for said supplemental bolt, and means for discharging a noxious vapor upon operation of the lock for said supplemental bolt.

7. The combination with a closure, and locking means therefor, of supplemental locking means, a normally confined source of noxious vapor, and means for discharging the noxious vapor from said source operated in unison with the supplemental locking means when the closure is tampered with in an effort to open the closure without operating the locking means in the usual manner.

8. In a device of the class described, an emergency locking mechanism including means normally preventing effective operation of said mechanism, and means for discharging a noxious vapor simultaneously with the operation of said first named means to render the emergency locking means effective.

9. A vault protecting device, comprising an auxiliary locking device operable by disturbance of the locking mechanism on the door, a

gas receptacle within the vault, and means operable by release of said auxiliary locking device for discharging the contents of said receptacle into the vault.

10. A vault protecting device, comprising a vault door having main locking mechanism thereon, an auxiliary locking device operable by disturbance of said main locking mechanism to lock the door closed independently of said mechanism, and means operable by the action of said auxiliary locking device for discharging noxious gas in the interior of the vault.

11. A vault protecting device, comprising a vault door having main locking mechanism thereon, an auxiliary locking device operable by disturbance of said main locking mechanism, or by cutting through the body of the door, to lock the door closed independently of said mechanism, and means operable by the action of said auxiliary locking device for discharging noxious gas in the interior of the vault.

12. A vault protecting device, comprising a door having locking bolts on the interior thereof, a main locking device for holding said bolts in locking position, an auxiliary locking device operable by disturbance of the main locking device for locking the door closed independently of the latter, and means operable by the action of said auxiliary locking device for discharging noxious gas inside the vault.

13. A vault protecting device, comprising a door having locking bolts on the interior thereof, a main locking device for holding said bolts in locking position, an auxiliary locking device operable by disturbance of the main locking device for locking the door closed independently of the latter, a gas receptacle positioned interiorly of the vault, and spring actuated means operable by the action of said auxiliary locking device for discharging the contents of said receptacle inside the vault.

14. A vault protecting device, comprising a door having locking bolts on the interior thereof, a main locking device for holding said bolts in locking position, an auxiliary locking device operable by disturbance of the main locking device for locking the door closed independently of the latter, a frangible gas receptacle supported within the vault, a breaking member arranged in contact with said receptacle, and means operable by the action of said auxiliary locking device for striking said breaking means to break said receptacle and discharge the contents thereof inside the vault.

15. A vault protecting device, comprising a door having locking bolts mounted on the interior thereof, a regular locking device for normally holding said bolts in locking position, an auxiliary locking device operable by disturbance of said regular locking device for locking the door closed independently of the latter, a gas receptacle supported in the interior of the vault, means for discharging the contents of said receptacle, means operated by the action of said auxiliary locking device for releasing said last-mentioned means, and a flexible connection between said discharging and releasing means.

In testimony whereof I have hereunto subscribed my name.

ALFRED J. MACY.