Feb. 5, 1963 R. E. McCLELLAN 3,076,420

TAMPER-PROOF SAFES

Filed Jan. 2, 1958

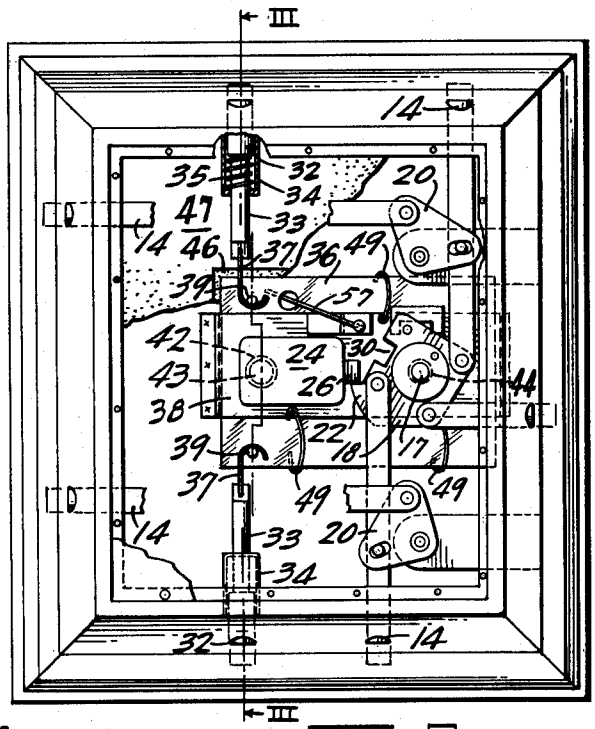


FIG-2-

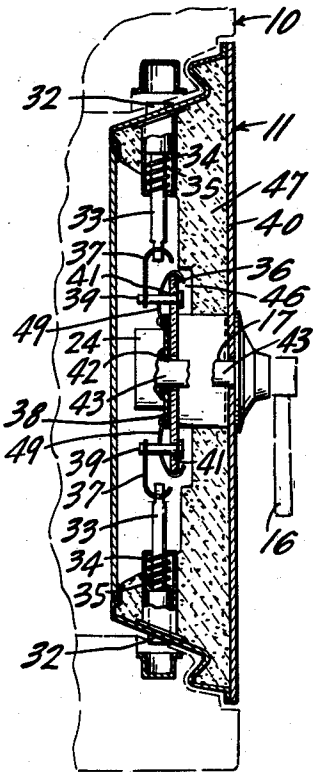


FIG-3-

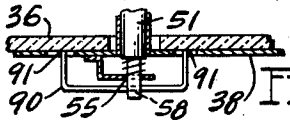


FIG-6-

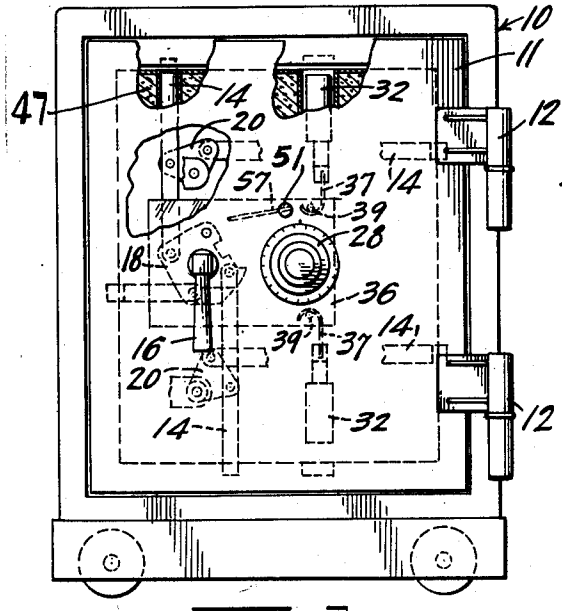


FIG-1-

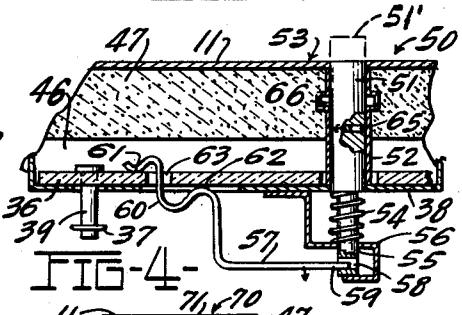


FIG-4-

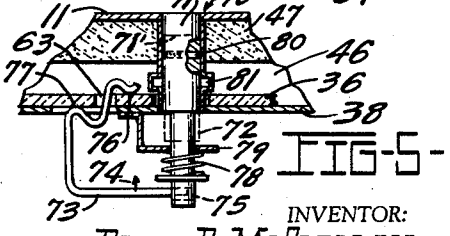


FIG-5-

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TAMPER-PROOF SAFES

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10 Claims. (Cl. 109—38)

This invention relates to a tamper proof cabinet. More particularly it deals with auxiliary locking or bolting means and the means for controlling the operation thereof, for doors for protective metal cabinets, such as for example: safes or vaults and the like, and adapted to be actuated automatically upon unauthorized or forceful tampering with the customary or regular bolting mechanism of the door.

Ordinarily, the door of a safe is provided with bolts which are extended outwardly by means of a knob or handle located in the front face of the door to lock the safe, and a lock is provided to mechanically hold the handle in locked position.

Various means have been devised to make what is commonly referred to as a burglar proof safe, and have included alarms, gas ejection devices, as well as auxiliary bolting mechanisms in order at least, to delay if not to prevent unauthorized entry to the safe.

A frequent unauthorized manner of obtaining access to the interior of a safe is to drill, pound or burn through the face of the door and locking unit associated therewith, and by use of force to throw, remove, or otherwise disengaging the lock pins of the locking mechanism from the bolt operating mechanism, thus permitting turning of the handle and withdrawal of the bolts.

It is a primary object of this invention to provide a new means of circumventing this problem and to prevent unauthorized entry into a cabinet or safe in which the invention may be incorporated, in a simple, efficient, effective and economical manner.

Another object of this invention is to provide a frangible means for automatically actuating an auxiliary bolting mechanism to additionally lock the closure of a safe or the like.

Another object is to provide a signal or visible indicator to indicate tampering and/or if the auxiliary bolting mechanism has been operated.

Another object is to provide an improvement over the disclosure of James L. Taylor U.S. patent application Serial No. 584,965 filed May 15, 1956 for "Protective Apparatus for Combination Locks" in which the shattering of the frangible means for actuating the auxiliary bolting mechanism is positively insured once the frangible means is fractured.

Generally speaking, the elements of this invention comprise a protective cabinet and a door which affords access to the interior thereof, a bolting and locking mechanism for the door, an auxiliary bolting means for the door, and a frangible guard means which is insured of shattering when the lock is tampered with improperly for initiating the operation of the auxiliary bolting means to prevent unlawful access to the interior of the cabinet. Furthermore, this invention also comprises a signalling device for indicating tampering and misuse of the bolting and locking mechanism associated therewith.

The above mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be understood best by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

FIG.1 is a front elevational view of one embodiment of this invention adapted to a safe with certain parts

broken away to show a portion of the bolting means and the general arrangement thereof;

FIG. 2 is a rear elevation on a larger scale of the safe door in which the bolting means are located;

FIG. 3 is a cross sectional view taken at line III—III of FIG. 2;

FIG. 4 shows one embodiment of means for mounting a visual signalling device to make known any tampering operation of the auxiliary bolting mechanism as disclosed in this invention;

FIG. 5 shows another embodiment of a signalling means similar to that shown in FIG. 4; and

FIG. 6 shows a modified form of construction of a portion of a signalling means shown in FIG. 4.

This invention may be utilized in a number of types of protective cabinets having closures, one of which is shown in FIG. 1 to be a safe comprising a walled receptacle **10**, having a door or closure **11**, which may be mounted on hinges **12**, for permitting access to the interior of the receptacle **10**. The walls often are thick and comprise inner and outer panels with a fire resistant filler **47** between them.

Bolting means **14** may be carried in a wall of the cabinet or by the door **11**, and may be operated by a handle **16**, or other means such as mechanical or electrical or remote control devices well known in the art. The handle **16** may have a spindle or stem connection **17** to a revolvable bolt actuating plate **18**, and fulcrumed intermediate motion transfer plate **20**. A bolt actuating plate **18** may be provided with a stop **22** to limit swinging movement of the plate. The plate **18** may be provided also with a notch **30** adapted to receive the latch **26** when it is desired to lock the bolting mechanism against unauthorized use, such as by burglars. As seen in FIGS. 2 and 3, the lock mechanism **24** may be carried by a support plate **38** which may be mounted on the exterior panel member **40** of the door **11**.

The auxiliary bolting mechanism of this invention may comprise plungers **32** having stems **33**, guides **34** for the plungers **32**, and actuating means such as springs **35** within the guides **34** and surrounding the stems **33**, adapted to maintain a resilient force or pressure outwardly upon the plungers **32**. The plungers **32** are ordinarily held in retracted position as shown in FIG. 2 by means presently to be described.

An essential feature of this invention resides in the embodiment of a frangible barrier or interferent member **36** as a guard against false entry into a cabinet or safe and to use this frangible characteristic as a release agent to allow the pre-loaded bolts **32** of the auxiliary bolt system to move into bolting position thus augmenting the normal or regular bolt system **14**. According to accepted meaning, to be frangible is to be capable of being broken; breakable; brittle; fragile. Thus it may be possible to choose a suitable material from a number of categories including minerals, ceramics, metals or plastics, in which the frangible characteristic as noted above may be present.

The frangible material in this instance may be what is commonly termed as tempered glass, although other substances having highly stressed bounding areas and which may shatter or fracture when stressed, twisted, or otherwise mishandled or disturbed may be employed. Tempered glass is an especially treated type of glass which will withstand normal handling and usage, but will shatter in a semi-explosive manner into tiny fragments when fractured by impact, scratching, attempted drilling or burning. It will be evident, of course, that all necessary steps involved in the fabrication of the guard, to define the size, contour, openings, etc., must be done before the tempering operations are performed; otherwise anything which might be done subsequently and during or after installation thereof, which will disturb the surface of the glass,

may then cause it to shatter. Furthermore, with such a barrier in place, access to the regular bolting mechanism may not only be blocked, but the auxiliary bolt system may be so attached to the barrier that when the barrier is caused to shatter, the auxiliary bolts will no longer be held in their withdrawn position by their attachment to the barrier, but will immediately move under their resilient preload into their respective advanced and bolting positions.

A frangible plate **36** of sufficient size such as a flat piece of tempered glass, is positioned within the door **11** to act as a shield, guard or barrier against unlawful access to the lock **24** and/or bolt actuating plate **18**. The support plate **38** may be provided with rubber coated spring clips **49** adapted for engagement with the edges of the guard plate **36**, and resiliently support the said plate **36** in its normal functional position. This method of supporting the guard plate **36** will also help to prevent jarring or premature shattering of the plate when the closure is slammed or moved abruptly; however, other means for supporting the guard plate **36** may be employed.

The plungers **32** and stems **33** of the auxiliary bolting mechanism may have wire hook members **37** attached thereto which may be adapted to hook over studs **39** seated in holes **41** in the guard plate **36**. These studs **39** may be provided with stops, flanges or heads at one end to prevent them from being pulled through the holes **41** in the plate **36**, and with means such as hole or groove at or near their other end for engagement or connection with the hooks **37**, said other ends being spaced away from the adjacent surface of the guard plate **36** so that a pull on the hook **37** caused by the spring **35** to urge the relocking bolt mechanism **32** and **33**, will produce forces or a couple in the stud **39** which will tend to bend as well as pull apart the frangible guard plate **36** and thereby insure its complete shattering once it has been punctured, twisted, fractured or cut. A hole **42** in the guard plate **36** may be provided to permit passage of a spindle **43** of the lock **24** to an associated knob or dial **28** located on the exterior surface of the door (see FIGS. 1 and 3). A similar hole **44** also may be provided in the guard plate **36** to permit passage therethrough of the stem **17** of the handle **16**. The holes **41**, **42** and **44** are of sufficient size to provide easy movement of the lock spindle and bolt operating parts therein so as not to bind or rub or thus to cause or tend to cause premature fracture of the guard plate **36**. Suitable holes may be provided to accommodate other parts or mechanisms such as operating bolts or locks, and for signalling device which will be described later.

The guard plate **36** and associated hooks **37** act to restrict or resist the action of the spring coils **35** against the plungers **32**, so that if the guard plate is destroyed, the plungers **32** will immediately be urged outwardly by the springs **35** to act as an auxiliary bolt system to augment the main bolt mechanism **14**, and thus prevent or at least delay opening of the door of the safe. The guard plate **36** being of tempered glass will shatter into tiny fragments when attempt is made to cut or damage it in any way. Thus any forceful action on the guard plate **36** such as drilling, burning or the like to reach the lock or bolt control mechanism will cause it to shatter and disintegrate in the space **46** provided therefor in the filling **47** surrounding the plate **36**, so that the hooks **37** will be set free to permit the auxiliary bolts **32** to act under the force of the springs **35** to additionally bolt the door **11** against opening. The fractured particles of the guard plate **36** may fall or disperse themselves in the space **46** provided, since it is an aid to complete shattering of tempered glass to have substantial freedom of movement for the disintegrating fragments of this material. As mentioned above, the bending as well as pulling action of the hook **37** connected to the outer or off-set ends of the stud **39**, also aid in the complete shattering of the tempered glass to insure proper operation of the relocking mechanism of this invention.

In order to indicate tampering or attempted entry into the safe, with consequent shattering of the tempered glass guard plate **36** and the auxiliary bolting of the door, there may be provided a signalling device which may be a visual signalling device **50** as shown in FIG. 4 or a similar device **70** in FIG. 5.

Referring to FIG. 4, the visual signal device **50** shown therein comprises a plunger **51** guided in a sleeve **52** mounted within the exterior surface of the cabinet as here shown within the surface **53** of the door **11** and may be affixed to a panel **40** of the door or to the lock mechanism supporting plate **38**. A coil spring **54** may normally exert an outward pressure upon the plunger **51** and surround a stem **55** of the plunger which plunger is held in operating position by a bracket **56** which also may be mounted upon the plate **38**. A triggering means comprising a prop member, which may be in the form of a specially formed spring wire **57** and which may be positioned as shown to normally hold the plunger **51** against the pressure of the spring **54** so that the face of the plunger **51** will be substantially flush with the exterior surface **53** of the door **11**. To this end a hole **58** in the stem **55** may be adapted to receive the free end **59** of the resilient wire or trigger **57**. The opposite end **60** of the trigger wire **57** is preferably shaped to provide pressure sensitive supports **61** and/or **62** on at least one side of the guard plate **36** either at its edge or through a hole **63** which may be provided in the guard plate **36** to permit passage therethrough of the wire **57** and to allow freedom and easy setting of the trigger **57**, i.e. the insertion of the end **60** in hole **63** in the plate **36** and of end **59** into the hole **58** in the stem **55**. Another form of trigger or prop member (FIG. 6) may comprise a U shaped element **90**, as shown in FIG. 6, which prop **90** may be passed through the opening **58** of the stem **55** and may have its ends **91** placed to rest against a guard plate **36**. This construction allows support of the plunger **51** without the need of the hole **63** in the guard plate **36**.

Upon shattering of the guard plate **36**, the pressure which is created at the contact points **61** and especially at **62** or **91** by the resiliency of the trigger or prop element **57** or **90**, will disappear, thus freeing the trigger and its control upon the plunger **51**, and permit the plunger **51** to move under the action of spring **54** into a protruding or visual signalling position as indicated by the dash lines **51'** in FIG. 4. A detent **65** may be provided to enter a groove **66** in the sleeve **52** to hold the plunger **51'** in its signalling position when the guard plate **36** is destroyed, so that its signal cannot be easily changed.

Reference to FIG. 5 shows a signalling device **70** similar to the device **50** in which a plunger **71** is arranged to be normally flush with the face of the door **11** as in FIG. 4, but which is drawn inwardly to a retracted position **72** when the guard plate **36** is destroyed. To this end a hook or spring wire trigger **73** may be formed to exert a pressure as indicated by the arrow **74** upon the stem **75** of the plunger **71**. Contact points **76**, **77** and particularly point **76** on the hook or trigger **73** provide supports for the trigger **73** when in its normal unactuated position. A coil spring **78** may be provided between a support **79** and plunger **75** to maintain actuating pressure upon the plunger stem **75** in order to immediately retract the plunger to its signalling position. A detent **80** may be provided to enter the groove **81** in the sleeve for maintaining the plunger **71** in retracted and visual signalling position. Thus, it would be more difficult to change this visual signal because it cannot be sawed, cut or knocked off as can the protruding signal **51** in its position **51'** shown in FIG. 4 described above.

The wire triggers **57** and **73** which operate the visual signaling means shown in FIGS. 4 and 5, respectively, also by action of their respective springs **54** and **78**, produce forces or a couple in the wire between the two opposite contacting surfaces of the frangible guard means **36**, which forces further aid in bending and insuring the complete shattering of the frangible plate **36**, once it is

fractured, as do the forces producing the bending moment applied to the stud 39 described above for the connection of the relocking mechanism to said plate means 36.

It should be apparent that the mechanism herein disclosed may be adapted to other situations; for instance, instead of the entire bolting mechanism being mounted in the door as illustrated, some parts or all may be mounted in one or another of the walls of the cabinet. Also other types of signalling devices may be employed to indicate fracture of the plate 36, which may be connected to the trigger means and/or plungers shown, such as mechanical alarm devices, or gas bombs, or the like.

While there is described above the principles of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of this invention.

What is claimed is:

1. In a cabinet having an outer wall and including: a closure, means for fastening said closure to said cabinet, and means for controlling the operation of said fastening means, the improvement comprising: an auxiliary closure fastening means, means for normally urging said auxiliary fastening means into closure fastening position, and means for restraining said urging means comprising: a shatterable flat plate means inside said outer wall and located to shield at least part of said controlling means, said plate means having the property of cracking into small fragments substantially uniformly throughout its entire extent when any part thereof is abnormally disturbed, means to connect said auxiliary fastening means to said plate means, comprising a portion of said plate means having an aperture therein and being located in a space sufficient to permit bending and pulling apart of said plate when shattered, a stud means in said aperture having means at one end thereof to engage one surface of said plate means and having means at the other end of said stud means extending away from the opposite surface of said plate means, and a link means connecting said other end of said stud means to said auxiliary fastening means to restrain said urging means, whereby any drilling, punching or heating of any part of said plate causing it to shatter causes said urging means to bend and pull on said portion of said plate means through said stud means and said link means to remove the effect of said restraining means and to permit said urging means to move said auxiliary fastening means into its closure fastening position.

2. A cabinet according to claim 1 including means for signalling the fracture of said shatterable means.

3. A cabinet according to claim 1 wherein said auxiliary closure fastening means comprises a pair of spring loaded bolts arranged in opposite force tensioning alignment, said shatterable plate is located substantially in the plane of movement of said spring loaded bolts, and wherein said link means includes hooks attached to said spring loaded bolts to render the said bolts inactive until the shatterable plate becomes shattered.

4. A cabinet according to claim 1 comprising supporting means for said shatterable plate means to preclude premature fractiure of said shatterable plate means.

5. A protective apparatus for use in a security closure having a locking mechanism located internally of the security closure, comprising: a relocking means supported within said security closure for movement from a closure unlocking position into a closure locking position, means continuously biasing said relocking means to lock said closure in closed position, and a control member for restraining said relocking means from its closure locking position, said control member being formed of a flat tempered glass plate and located in shielding relation to at least a part of said locking mechanism to intercept tools projecting from selected regions externally of said security closure in the direction of said part of said locking mechanism, said control member having the property of shattering into small fragments substantially uniformly throughout its entire extent in response to drilling, punching, or heating thereof at any location along said control member, and said plate control member having portions thereof located in a space larger than that taken by said portions to provide adequate space for its shattering, said portions having apertures therein, studs in said apertures, each stud having means on one end thereof to engage one surface of said plate and having the other end of said stud extending away from the opposite surface of said plate, and connections from said relocking means to said other ends of said studs for applying through said studs both pulling and bending forces to said glass plate and for restraining said biasing means from shifting said relocking means into locking position when said control member plate is intact, and to permit said biasing means to release said relocking means to shift said relocking means to closure locking position upon shattering of said control member.

6. An apparatus according to claim 5 wherein said portions of said plate having said apertures are located in the marginal regions of said plate.

7. A protective cabinet including a closure, comprising: a means for bolting the closure, a control means beneath the outer surface of said cabinet to control the operation of said bolting means, an auxiliary means for bolting said closure, means for supplying an actuating force to said auxiliary means, a shatterable interferent means in a space larger than said interferent means between the outer surface of the cabinet and the control means for restraining the means for supplying said actuating force and for guarding said control means, a signalling means to indicate shatter of said interferent means, means to urge said signalling means into its shatter indicating position, and connecting means between said interferent means and said signalling means to restrain said urging means and to permit said urging means to actuate said signalling means into its shatter indicating position when said interferent means shatters.

8. A protective cabinet according to claim 7 wherein said signalling device comprises a plunger.

9. A protective cabinet according to claim 8 in which said plunger normally is situated substantially flush with the outer surface of the cabinet and is moved therefrom when said means to urge said signalling means acts to release said plunger.

10. A protective cabinet according to claim 8 wherein said means to urge said signalling means includes a spring for operating said plunger.

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