

No. 611,992.

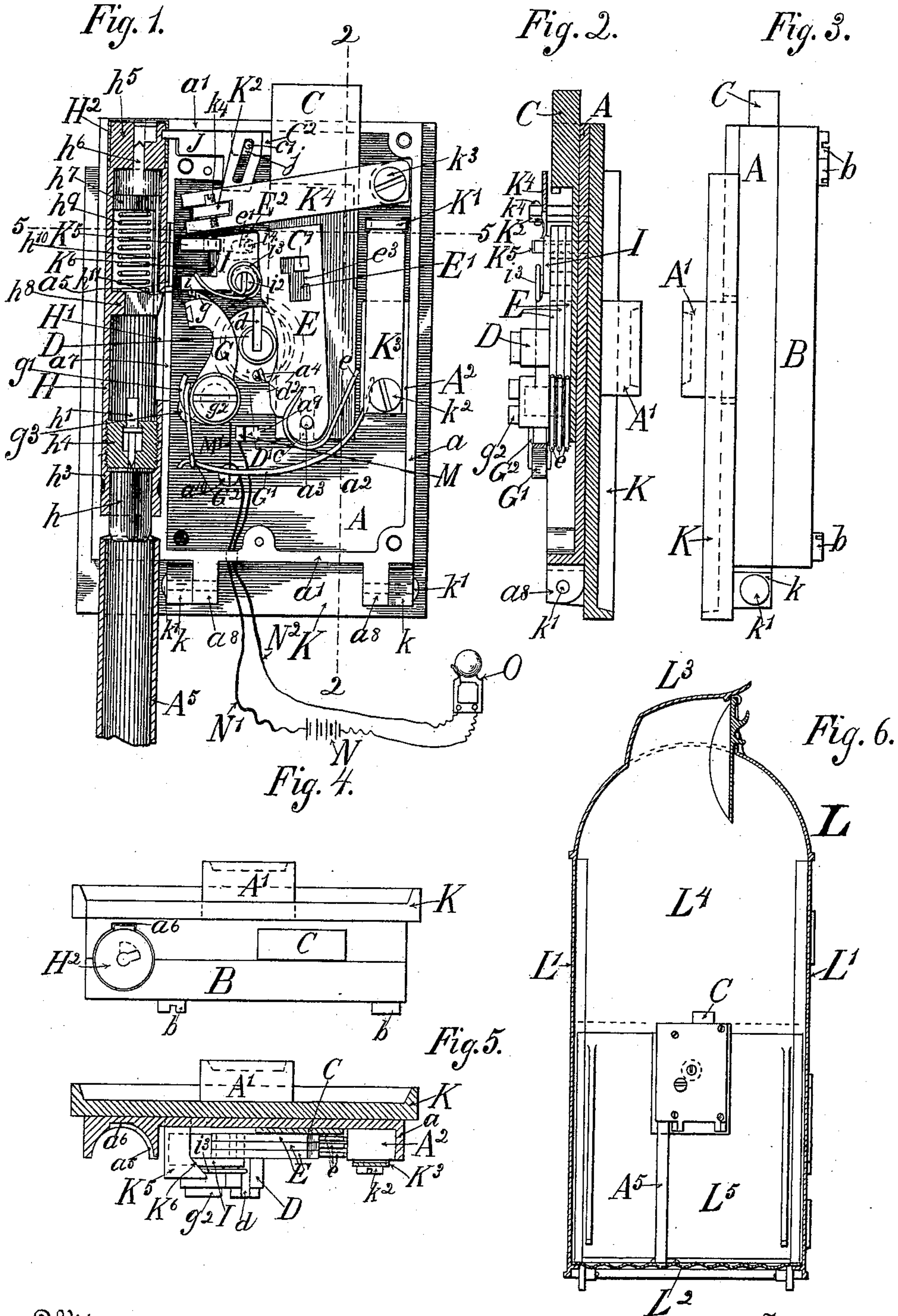
Patented Oct. 4, 1898.

E. N. CASE.
ALARM LOCK.

(Application filed Jan. 3, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
Edmund H. Strauss.
Edward Barrett.

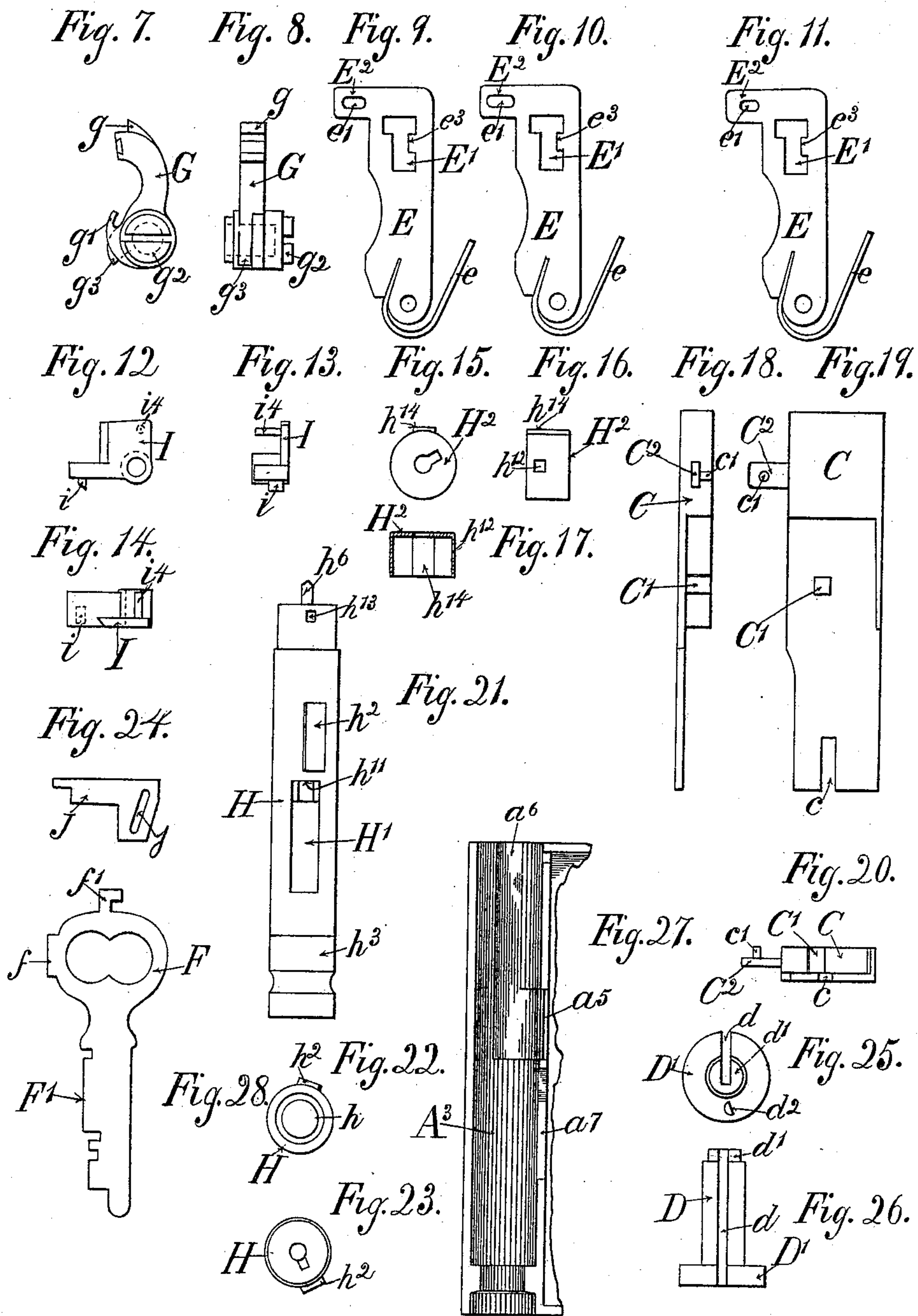
Inventor
Edward Brewell Case

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UNITED STATES PATENT OFFICE.

EDWARD NEWELL CASE, OF CHICAGO, ILLINOIS.

ALARM-LOCK.

SPECIFICATION forming part of Letters Patent No. 611,992, dated October 4, 1898.

Application filed January 3, 1898. Serial No. 665,380. (No model.)

To all whom it may concern:

Be it known that I, EDWARD NEWELL CASE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Alarm-Locks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in alarm-locks of that class in which an alarm device is located within the lock-case and is so constructed that when the lock is being tampered with by an unauthorized person the alarm device will be actuated to give an alarm without releasing the locking mechanism.

The lock herein shown is of that type which is provided with a reciprocating bolt adapted to engage a keeper placed either upon the stationary or movable member of the parts to be locked together, and is designed more particularly for swinging doors, sliding drawers, and the like, in which the movable member of the parts to be locked together is adapted to swing or slide laterally away from the stationary part thereof in a direction perpendicular to the adjacent face of said stationary member. Said lock is so constructed that the alarm therein will be actuated either when an attempt is made to open the lock by the use of an improper key, to pry open the member to which it is attached without having first released the lock, or to break the lock by applying force thereto. Said lock is also adapted to be provided with a seal which is visible from the outside of the case and which is mutilated when the lock is being tampered with in any of the manners above noticed.

In the drawings, Figure 1 is a view in rear elevation of the parts of the lock in place in the casing with the rear wall of the casing removed. Fig. 2 is a longitudinal section thereof, taken on line 2 2 of Fig. 1. Fig. 3 is an edge view of the lock-casing. Fig. 4 is a top plan view thereof. Fig. 5 is a cross-section taken on line 5 5 of Fig. 1. Fig. 6 is a vertical sectional view of a mail-box provided with my improved lock. Figs. 7 and 8 are detail views of the firing-hammer. Figs. 9, 10, and 11 are detail views of the tumblers. Figs. 12,

13, and 14 are detail views of the detent forming the operative connection between the tumblers and the hammer. Figs. 15, 16, and 17 are details of the seal-cap. Figs. 18, 19, and 20 are detail views of the locking-bolt. Figs. 21, 22, and 23 are detail views of the cylinder carrying the seal-puncturing devices and also a portion of the alarm device. Fig. 24 is a detail of the seal-locking detent. Figs. 25 and 26 are details of the key-actuated locking-cylinder. Fig. 27 is a fragmentary view of that portion of the casing in which the cylinder shown in Fig. 21 is located. Fig. 28 is a view of the key adapted for use with the lock.

As shown in said drawings, A designates the main body of the case in which the lock mechanism is contained, consisting of side and end walls a a' and a front wall a^2 .

B designates the rear wall of the case, which is of hollow construction, having side and end walls fitting upon the side and end walls of the part A and which constitutes a portion of the chamber in which the lock mechanism is contained. Said rear wall of the case is secured to the part A by means of screws or rivets b .

C designates a locking-bolt which has a sliding engagement with the case and which lies against the wall a^2 thereof and passes at its outer end through an opening in the end wall a' . D designates a key-actuated locking-cylinder located at one side of the bolt C and extending between the front and rear walls of the case. Said cylinder is provided with the usual slot d , adapted for the reception of a key. E designates tumblers which are pivoted at one end adjacent to the inner end of the locking-bolt, as herein shown, and extend at their other ends beyond the locking-cylinder D. Said tumblers are herein shown as three in number and of slightly-different conformation. They are pivoted at their inner ends upon a pin a^3 , attached to the front wall of the case, and are held in their normal position or in position to prevent movement of the locking-bolt C by means of leaf-springs e , which engage said tumblers adjacent to the outer ends of the latter and bear at their opposite ends against a stationary part of the case. Said tumblers are provided with the usual angular slots or

openings E', which are engaged by a stud C', carried by the sliding bolt C, and by means of which the movement of said bolt is controlled in a manner common in such locks, 5 said slots E' being provided between its ends with an inward projection e^3 , which engages the stud C' of the locking-bolt C and prevents movement of said bolt until the tumblers have been shipped to move said projection e^3 out of engagement with said stud C'. The rear face of the bolt is cut away, as shown in Figs. 2, 18, 19, and 20, to receive the tumblers mounted thereon, and the inner end of said bolt, as herein shown, is provided 10 with a slot c , adapted to engage the pin a^3 , to which the tumblers are pivoted and by means of which the bolt is guided in its sliding movement within the case.

The locking-cylinder D consists of a main 20 or body portion which is cylindric in form and is provided at its outer end with an annular flange D', through which the key-slot d extends, said flange engaging and turning in an outwardly-extending boss A' on the 25 outer face of the wall a^2 of the case. Said locking-cylinder is provided at its inner end with a reduced portion d' , which has bearing in the rear wall of the lock-case. In order to limit the rotation of said cylinder, it is 30 provided on the inner face of the flange D' thereof on that side opposite the slot d with a short lug d^2 , adapted to engage a stop-pin a^4 , extending radially inward from the boss A'. Said stop is so arranged as to limit the 35 rotation of the locking-cylinder when the locking mechanism is in its locked position, and to thereby indicate the point in the rotation of the cylinder in which the key may be removed therefrom. The pin a^4 is so located as to be engaged by the key at the time 40 the locking mechanism is released, so as to limit the further rotation of the locking-cylinder and render it necessary to turn it to its original position before the key can be withdrawn. 45

The key F is provided on the edge thereof opposite that engaged by the slot d of the locking-cylinder with a plurality of notches and recesses adapted to engage and actuate 50 the tumblers when the key is rotated in a manner common in such locks. The key is provided in its part outside of that engaged by the tumblers with a plane surface F', which is adapted to engage the adjacent surface of the bolt C when rotated in the cylinder D, whereby said bolt is moved endwise 55 after the tumblers have been actuated, so that the lug C' of the bolt may pass through the apertures E' thereof. If a key of other form than that shown were to be inserted 60 into the lock and an attempt be made to rotate it and actuate the tumblers for the release of the locking-bolt, one of the tumblers would be moved too great a distance and 65 would act through its connection with the alarm device hereinafter to be explained to

set off said device without, however, releasing the locking-bolt C.

Referring now to the alarm device and to the parts of the locking mechanism connected 70 therewith, these parts are constructed as follows: G designates a hammer, which is pivoted within the lock-case and which is herein shown as located adjacent to one side thereof. H designates a cylindric casing mounted in 75 one side of the lock-case adjacent to the hammer G, within which is mounted a suitable alarm consisting, in this instance, of a cartridge h . Said cylindric casing is provided with a reciprocating firing-pin h' , adapted to 80 be struck by the hammer G and which in turn acts to indent and fire said cartridge. Said casing H is provided on that side thereof adjacent to the hammer with an elongated slot or opening H', through which the ham- 85 mer passes when it is forced down upon said firing-pin. The hammer is held in its retracted position, as shown in Fig. 1, by means of a spring-pressed detent I, which is provided in its part adjacent to the hammer with 90 a tooth or lug i , adapted to engage a lug g on the hammer. The hammer G is pivoted to an inwardly-extending stud on the outer wall of the casing, (shown in dotted lines, Figs. 1 and 2,) and is actuated by means of 95 a spring G', which is affixed to a stationary part of the casing and is connected at its free end with the hammer by means of a connecting-link G², which has engagement with a hooked lug g' , carried by said hammer. Said 100 spring G' consists of a leaf-spring and is attached to a raised portion or lug A² on the side of the casing opposite the hammer. The detent I is shown as pivotally mounted upon a pin i^2 , secured to the front wall of the cas- 105 ing, and is held in engagement with the hammer by means of a spring i^3 , which engages at one end the outer end of said detent and at its opposite end is wound about the pin i^2 , with the extreme end thereof engaging a slot 110 in the outer end of the pin. With this construction the tension of the spring may be varied by rotating the pivot-pin i^2 in a direction to wind the spring about the same or to uncoil said spring. 115

The cylindric casing H, which contains the alarm device, is so constructed as to be removable from the lock-case and is, in the instance illustrated, located in a cylindric recess in one side of said case, one half of which 120 is formed in the part B thereof and the other half in the part A. Said cylindric casing extends at one end through the end wall a' , through which the locking-bolt C passes and is adapted to be removed from the casing 125 through said opening, as will hereinafter more fully appear. In order to prevent said cylindric casing from accidentally dropping out of its recess or from being forced therefrom under the impulse of the explosion of a car- 130 tridge, said casing is provided on one side thereof with a lug h^2 , adapted to engage a

notch a^5 in the adjacent wall of the recess. One of the walls of said recess is provided with a longitudinal groove a^6 , which extends at one end to the outer end of said recess and opens at its opposite end into the notch a^5 . The lug h^2 of the cylindric casing H passes through said groove when it is being inserted into place, and it may be turned from said groove into said notch, and thereby locked in position. That side of the recess A^3 adjacent to the hammer is provided with an oblong opening a^7 , which registers with the opening H' of the casing H and through which the hammer G passes when actuated to cause the alarm. In order to provide sufficient room for said hammer, which is of considerable thickness, the recesses will preferably be formed one half in each of the parts A and B of the casing.

As a further improvement and as a means for detachably securing the cartridge in place in the casing H the inner end of said casing is made in the form of a tubular nipple h^3 , which has detachable engagement with the casing and in which the cartridge is mounted. Said nipple in the present instance has screw-threaded connection with a plug h^4 , which is located in the end of the casing H, in which the firing-pin h' is secured and which is adapted to withstand the backward pressure of the cartridge-shell in the explosion of the cartridge.

Referring now to the connections between the detent I and the tumblers E, through the medium of which the hammer is released when the tumblers are actuated by a hand-tool or by a key of other than the proper form, these parts are constructed as follows: Each of the tumblers E is provided with an arm E^2 , which is herein shown as mounted upon the end thereof opposite the pivotal point of the connection of the tumbler with the lock-case and which extends at right angles to a line extending lengthwise of the tumbler. Said arms of the tumblers are provided with slots or openings e' , which extend longitudinally thereof. Said detent I is connected with the arms E^2 of the tumblers on that side of its pivot-pin opposite that portion engaging the hammer G and is so connected with said arms that movement thereof beyond a certain limit will act to swing the detent upon its pivot and to thereby release said hammer G. In the present instance that portion of the detent opposite the part engaging the hammer is provided with a pin i^4 , which engages the slots e' of the arms E^2 of the tumblers. With this construction when one of the tumblers is moved a greater distance than is required to allow the sliding bolt C to move inwardly the outer end of the slot of the arm carried by said tumbler will engage the pin i^4 and will act through the same to swing the detent upon its pivot, which will in turn cause the detent to move out of engagement with the hammer and to permit the same, under the action of the spring G' , to strike the alarm.

It will be seen that the form of the outer end of the opening E' is such as to permit the excess of movement in the tumblers necessary to actuate the detent I.

In order to return the hammer to its retracted position, as shown in Fig. 1, said hammer is provided with a rearwardly-extending projection g^2 , which extends through an opening in the rear plate B, and is provided in its outer end with a slot, by which it may be engaged by a suitable instrument to turn the same. In the present instance the key is provided with a lug f , adapted to engage the slot of said projection to turn the same. The detent I is held in such position by its actuating-spring as to engage the hammer when it is returned to its retracted position and to hold such hammer in such position.

As a further and important improvement in locks of that character adapted for use upon a door or other part having movement in a direction at right angles to the plane of the part to which it is to be locked I have shown a lock-case adapted to be so connected with the door or other part that pressure upon the door or other part tending to open the same or an attempt to break the lock will actuate the alarm device. One practical embodiment of this feature of my lock is shown in the drawings and is constructed as follows:

K designates a supporting-plate which is yieldingly connected with the lock-case A. Said plate may be carried by the door or other part to which the lock is to be applied or may be made an integral part thereof, as found most convenient or desirable. In the present instance said plate is of the same general shape and of slightly-greater width and length than the lock-case A and is hinged at its end remote from the keeper to the adjacent or inner end of said case, said plate being provided with apertured lugs k k and the case being provided with similar lugs a^8 a^8 , through which pass pivot-pins k' k' . The opposite end of the casing is attached to the plate K by spring-pressed connections, the connections herein shown being as follows: The plate K is provided adjacent to said end with two lugs K' K^2 , which project perpendicularly from said plate and are arranged on laterally-opposite sides thereof. Said lugs pass through suitable openings in adjacent parts of the wall a^2 of the lock-case and are connected at their outer ends with leaf-springs K^3 K^4 , which are rigidly attached to the lock-case. The spring K^3 has rigid connection at one end with the lug A^2 by means of a screw k^2 and extends longitudinally of the locking-case toward the lug K' . Said lug is provided adjacent to its outer end with an aperture adapted to receive the free end of the spring. The spring K^4 is connected by means of a screw k^3 to a lug on that side of the case occupied by the spring K^3 and extends transversely of the casing toward the lug K^2 on the opposite side thereof. Said spring is bifurcated at its free end to engage the lug K^2 , and said lug is

provided outside of the spring with a cross-pin h^4 , by means of which the spring is maintained in engagement with the lug. Said plate K is provided with a third lug or member K^5 , which passes through an opening in the inner wall of the lock-case at a point adjacent to the detent I and is generally perpendicular to the plane of movement of said detent and is provided on the edge thereof engaging said detent with an inclined surface K^6 , arranged in such manner as to overhang said detent at its outer end. The edge of said detent engaged by the inclined surface of the lug is preferably beveled to correspond with the inclination of said surface of the lug and to thereby insure a smooth action between said parts. With this construction when that end of the plate K carrying said lug K^5 is moved away from the lock-case the inclined surface K^6 will actuate the detent I in the same manner it is actuated by an excess of movement of the tumblers E, or, in other words, will move said detent in a direction away from the lug, and thereby swing said detent out of engagement with the hammer G. The strength of the springs K^3 K^4 determines the force necessary to move the stud K^5 with relation to the detent a sufficient distance to actuate the alarm device. It will be obvious that in all cases a spring of sufficient strength to prevent the accidental setting off of the alarm under ordinary circumstances will be required and that for different purposes the spring will be required to be made of varying strength. Said plate K being attached to or made a part of a door, drawer, or other part to be locked, and the lock-case being mounted thereon and connected to said plate in the manner described, and with the locking-bolt engaging a keeper connected with the stationary member of the parts to be locked together, it will be obvious that a lateral strain applied to open said door or drawer will act through the rigid connection of the bolt with the keeper to separate the plate K and lock-case with the result of setting off the alarm device. An attempt to cut or break the locking-bolt C or otherwise destroy the lock would act through the connections described to release the alarm device. These devices constitute an important feature of my invention and are hereinafter claimed without restriction to the particular embodiment of the same herein shown and described.

It will be obvious that if an attempt be made to cut the locking-bolt C by inserting a tool between the door or drawer and the stationary part to which it is locked, such movement will act through the bolt to move the lock away from the door or drawer, with the result of setting off the alarm. The insertion of an instrument into the keyhole to render the parts of the lock adjacent thereto inoperative by forcing or driving them out of place would obviously effect the same result.

As a further and separate improvement in

locks of this character said lock is provided with means for attaching thereto a seal which is visible from outside the casing, and is provided also with a device adapted to mutilate the seal when the alarm device is actuated through the operation of either of the means provided for this purpose. As a convenient construction said seal and seal-mutilating device are located upon the tubular casing H, carrying the alarm device, said parts being located at the end thereof opposite the cartridge h . Said tubular casing is provided on its outer end with a solid end wall h^5 of considerable thickness, which is provided with an axial aperture adapted to receive a mutilating pin or bolt h^6 , which has reciprocatory movement through the same. Said pin is provided inside of said end wall h^5 with a head or plunger h^7 , which will desirably be of such size as to closely fit within the tubular interior of the casing. Between said head and a shoulder h^8 , formed in the interior of the casing, is interposed an expansion-spring h^9 , which acts, when released from compression, to thrust the pin outwardly through the aperture of the end wall to such extent that it protrudes some distance beyond said end wall. A seal of suitable form and material will be placed upon the outer end of said wall over the axial aperture therein, so that the protrusion of the pin through the same will mutilate the seal. Said head or plunger h^7 of the mutilating-pin is provided on the side thereof adjacent to the locking device with a detent h^{10} , which extends inwardly toward the shoulder h^8 and is provided on its inner end with a tooth which is adapted to engage a shoulder h^{11} in the adjacent wall of the casing H. In the present instance said shoulder h^{11} is formed in the outer end of the opening H' of the casing, through which the hammer G passes when it is operated to cause the alarm. Said detent h^{10} is of such length that when it is engaged with the shoulder h^{11} the spring h^9 will be under compression and the mutilating-pin retracted. These parts are so constructed that when said detent is released from the shoulder said spring will act to forcibly thrust the pin into its outermost position or in that position in which it will mutilate the seal. The detent h^{10} may be disengaged from the shoulder h^{11} in any preferred manner; but as a convenient construction and arrangement this work is performed by the hammer G when it advances to strike the firing-pin h' . This arrangement simplifies the construction and arrangement of the lock, while at the same time insuring an operation of the seal-mutilating device each time the alarm device is operated. The seal will consist of a sheet or disk of paper, sealing-wax, lead, or other suitable material provided with any desired number or symbol. Such seal will be pasted or secured otherwise upon the outer end of the casing in position to cover the aperture in the wall h^5 thereof. As a convenient and preferable con-

struction said seal is shown as mounted upon a part separable from and adapted to be detachably connected with the outer end of the casing H. Said separable part consists of a cap H^2 of a size to fit over the outer end of the casing H, which latter is for this purpose reduced in diameter at its outer end, as shown in Fig. 21. Said cap is provided with a central aperture to register with the aperture in the end wall h^5 of the casing and through which the pin h^6 extends when in its outermost position.

For convenience in removing the cylindric casing H from the recess within the lock-case the outer end wall h^5 is provided with a short inwardly-extending slot which opens at its inner edge into the axial aperture thereof and which also opens into a segmental recess, as shown in dotted lines in Fig. 4, immediately inside of the outer face of said wall, which recess forms an inwardly-facing shoulder in said wall adapted to be engaged by a projecting part or lug f' on the key, by which the casing H may be removed when turned into such position that the stop-lug h^2 thereof lies in the same plane with the longitudinal groove a^6 . The seal-cap is also provided with a slot corresponding in form to the slot in the end wall of the casing H and through which the lug f' of the key is adapted to pass when the parts are to be removed by the key. The seal-cap H^2 may be separately removed by the use of any suitable instrument engaging the central aperture thereof, and being exposed upon the outside of the lock another cap provided with a perfect seal may be substituted therefor by hand and without the use of a tool.

In order to prevent the seal-cap from becoming accidentally detached from the casing H and the cap and casing from turning within the recess A^3 , such cap is provided on the side thereof adjacent to the locking-bolt with an aperture h^{12} , and the casing is provided with a similar aperture h^{13} , which are adapted to register when the cap is in place upon the casing, and such registered apertures are adapted to be engaged by one end of a sliding detent J, the opposite end of which is operatively connected with the locking-bolt C, by which the detent is actuated. The construction of this feature of the device is such that when the locking-bolt is in its outermost or locking position the detent J will be moved laterally into engagement with the apertures of the cap and casing and serve to hold the same rigidly in place. Retraction of the locking-bolt, however, serves to withdraw said detent from engagement with said apertures of the cap and casing, with the result of leaving the cap in position to be readily lifted out of place. As herein shown, the bolt C is provided just inside of the end wall of the lock-case and on that side thereof adjacent to the seal-cap H^2 with a laterally-extending arm or lug C^2 , which is provided adjacent to its outer end with a pin c' , adapted to engage a slot j in the adjacent end of the detent. Said

slot is inclined to the line of movement of the detent, and the end of the slot adjacent to the outer end of the bolt is at a greater distance from the outer end of the detent than the opposite end of the slot, so that when the bolt occupies its outermost position and the pin c' , carried thereby, occupies the outer end of the slot said pin will act to thrust the detent laterally outward into engagement with the cap and casing, while a retraction of said locking-bolt serves, through the parts described, to shift the detent inwardly and out of engagement with said parts. The seal-cap is provided on one side thereof with a lug h^{14} , adapted to engage, when in operative position, the groove a^6 . The relation of the lug h^{14} to the aperture h^{12} in said cap engaged by the detent J is such that when said lug engages the groove h^6 the aperture h^{12} will be in position to receive the detent J. The aperture h^{13} of the casing H will also stand opposite the detent and in position to receive the same when the lug h^2 thereon engages the notch a^5 . This arrangement of the parts insures the prompt and accurate placing of the parts within the casing in position to be engaged by the means by which they are locked in place.

An important part of my invention consists in providing a lock-case with a seal which is visible from the outside of the case and which is designed to be mutilated if an attempt be made by an unauthorized person to tamper with the lock. By this construction such an attempt will always be plainly indicated to a person authorized to have access to the lock. This feature of the invention may be employed either with or without an alarm device, and is therefore made the subject of claims which are not restricted to its use in connection with an alarm device.

In Fig. 6 I have shown the application of my lock to a mail-box of common form. In said figure, L designates the box as a whole, consisting of connected side walls L' L' , bottom and top walls L^2 L^3 , and an end wall L^4 . The lower portion of said end wall of the box is hinged to form a door L^5 , which opens outwardly and to which my lock is applied. When the door is in its closed position and secured by the lock, the locking-bolt C engages the lower edge of the end wall adjacent to the door L^5 , which acts as a keeper to prevent lateral movement of said bolt. To the lock-case is attached a short tube-section A^5 , which serves as a barrel and directs the products of combustion arising from the explosion of the cartridge to a point outside of the box.

As a further and separate improvement in locks of the character described I have shown in Fig. 1 a construction in which the setting off of the alarm devices acts to operate a signaling device which is located at a point outside of the lock-case. Said signaling transmitting means consists of an electric circuit, the terminals of which are connected with contact-points located within the lock-case, and which is brought into action through the op-

eration of one of the movable parts of the alarm device. Within said circuit is located a signaling device of any preferred form, which is adapted to be actuated by the electric current when the alarm device is set off.

As herein shown, the circuit is normally open and is designed to be closed by one of the operative parts of the alarm device to give a signal at a distant point; but I do not wish to be restricted to the particular arrangement of the electrical features of the devices herein shown.

As shown in Fig. 1, a^9 designates a lug located upon the inner face of the front wall of the casing, upon which is mounted a contact-block M, said block being insulated from the lug, as shown. a^{10} designates a second lug located within the casing at one side of the lug a^9 . To said lug a^{10} is affixed a movable contact-piece M', which is herein shown as consisting of a leaf-spring and is adapted to be moved into contact with the block M. N designates a battery or other source of electrical supply, N' a supply-wire which leads from one terminal thereof to the movable contact M', and N² designates a return-wire which leads from the contact-block M to the opposite terminal of said battery or other source of electrical supply. O designates an audible signaling device of common form, which is located within the circuit and is adapted to be actuated when the circuit is closed. As herein shown, the circuit is closed by means of a lug g^3 , which is so located upon the hammer G as to engage the movable contact when the hammer is released to cause an alarm and acts to move said contact against the block M, and thereby close the circuit through said parts. When such auxiliary signaling apparatus is employed, there will desirably be a plurality of locks in circuit with a central station, so that the actuation of the alarm device from each of the locks will be indicated at such central station. In the employment of said auxiliary signaling apparatus substantially the same alarm-actuating device will be used as shown; but it may be desirable in some instances to dispense with the use of the alarm, such as the cartridge h , so that no alarm at the lock will be made, and the only indication that the lock is being tampered with will be that afforded at the central station by the electric signaling device.

I claim as my invention—

1. An alarm-lock comprising a lock-case, an alarm device therein, a keeper, a locking-bolt in the case which is constructed for endwise movement without releasing the alarm device when the latter is set for action and a part or member which is movable in a direction at right angles to the plane of movement of the bolt, which has yielding engagement with the lock-case and which is moved with respect to the lock-case when strain is applied to separate the locking-bolt from the keeper, said movable part or member having operative

connection with the alarm device whereby the latter will be actuated if an attempt be made to force the lock.

2. The combination of a lock-case, an alarm device therein embracing a detent, and a movable part or member having yielding connection with the lock-case and movable in the lock-case in a direction at right angles to the plane of movement of said detent said member being provided with an inclined surface which engages said detent and acts when moved upon the detent to actuate the alarm device.

3. An alarm-lock comprising a lock-case, an alarm device therein, a keeper, a laterally-immovable locking-bolt in the case, adapted for engagement with the keeper, said lock-case having yielding connection with the object which supports the same and being movable with respect to said object in a direction at right angles to the plane of movement of the bolt, and a part or member which is attached to said object and which has operative connection with said alarm device, the parts being so constructed that if in an effort to force the lock, power be applied in a direction to force the lock-case away from said object, to which it is attached, the alarm device will be actuated.

4. An alarm-lock comprising a lock-case, an alarm device therein, a laterally-immovable locking-bolt in the case, a keeper, said lock-case being movably connected with the object which supports the same, and being movable with respect to said object in a direction at right angles with the plane of movement of the bolt, a spring applied between the said lock-case and the object which supports the same, and tending to hold the lock-case in its normal position, and a part or member which is attached to the object which supports the lock-case and which has operative connection with the alarm device, said parts being so arranged that when power is applied to force the lock-case away from the said object which supports the same against the action of said spring, the alarm device will be actuated.

5. An alarm-lock comprising a lock-case, an alarm device therein, a laterally-immovable locking-bolt in the case, a keeper, said lock-case being adapted for hinged connection at one end with the object which supports the same and being movable with respect to said object at its end nearest the keeper in a direction at right angles to the plane of movement of the locking-bolt, a spring applied between the movable end of the lock-case and the object to which it is hinged said spring tending to hold the lock-case in its normal position, and a part or member which is attached to the said object and has operative connection with said alarm device whereby, if an effort be made to force the lock, power applied in a direction to force the movable end of the lock-case away from its supporting object, will move the lock-case with re-

spect to said part or member which is attached to said object, with the result of actuating the alarm device.

6. The combination of a hinged lock-case, an alarm device therein, a plate attached to one of the parts to be joined by the lock, said lock-case having yielding engagement at one end with said plate and the plate being provided with a part which projects into said case and operates to actuate the alarm when said yielding-connected end of the case is moved away from said plate.

7. The combination of a lock-case, an alarm device therein, a supporting-plate to which one end of the lock-case is hinged, the other end of the lock-case through which the locking-bolt projects being attached to said plate by yielding connections, a member on said plate projecting into said casing and operating to actuate the alarm device when said yielding-connected end of the case is moved away from the supporting-plate.

8. The combination of a lock-case, an alarm device therein, a supporting-plate to which an end of the lock-case is hinged, a lug on the opposite end of said plate projecting into said case, a spring attached at one end to said lug and at its opposite end to the lock-case, and a second lug projecting from said plate into the casing and engaging the alarm device.

9. The combination of a lock-case, means for holding a seal in position to be visible from the exterior of the case, a device for mutilating a seal, and means for actuating said mutilating device adapted for operation when the lock is tampered with, said parts being constructed to permit the lock to be released without actuating said seal-mutilating device.

10. The combination of a lock-case, a spring-actuated device for mutilating a seal, a detent which normally holds said mutilating device out of action, and means actuating said detent when the lock is tampered with, said parts being constructed to permit the lock to be released without actuating said seal-mutilating device.

11. The combination of a lock-case, tumblers therein, a device within the case for mutilating a seal and operative connections between said tumblers and mutilating device, said connections being constructed to be held out of operation when the tumblers are engaged by a key of proper form to actuate the same.

12. The combination of a lock-case, tumblers therein, a seal-carrying device removably mounted in the outer wall of said case, means for locking said seal-carrying device in place, a device within the case for mutilating said seal, and operative connections between said tumblers and mutilating device.

13. The combination of a lock-case, a locking member therein, tumblers controlling the actuation of said locking member, a seal-carrying device removably mounted in the outer wall of said case, means connected with said

locking member for locking said seal-carrying device in place, a device within the case for mutilating said seal, and operative connections between said tumblers and mutilating device.

14. The combination of a lock-case, a locking member therein, tumblers controlling the actuation of said locking member, a seal-carrying device removably mounted in the outer wall of said case, a sliding detent engaging at one end said seal-carrying device to hold the same in place and provided at its other end with an inclined slot engaged by a part on said locking member, a device within the case for mutilating said seal, and operative connections between said tumblers and mutilating device.

15. The combination of a lock-case, tumblers therein, a tubular casing in the lock-case adapted to hold on one end a seal in position to be visible and renewable from outside the lock-case and provided in its other end with a spring-pressed part adapted to mutilate said seal, and a part operatively connected with the tumblers and adapted to actuate said plunger, said parts being constructed to be held out of operation when the tumblers are engaged by a key of proper form to actuate the same.

16. The combination of a lock-case, tumblers therein, a tubular casing in the lock-case adapted to hold on one end a seal in position to be visible and renewable from outside the lock-case, and provided on its inner end with a spring-pressed part adapted to mutilate said seal, a detent on said part adapted to engage a shoulder in the casing, and a part operatively connected with the tumblers operating to actuate said detent.

17. The combination of a lock-case, a locking member therein, tumblers controlling the actuation of said locking member, a tubular casing in the lock-case provided on one end with a removable seal-carrying cap and in its other end with a device for mutilating a seal, means actuated by the locking member for locking said seal-cap and tubular casing in place, and operative connections between said tumblers and mutilating device.

18. The combination of a lock-case, an alarm device therein embracing a detent which holds the same out of action, a device for mutilating a seal, and a part controlled by said detent for actuating said mutilating device.

19. The combination of a lock-case, an alarm device therein embracing a spring-pressed hammer, and a device for mutilating a seal actuated by said hammer.

20. The combination of a lock-case, tumblers therein, an alarm device in said case, operative connections between said tumblers and alarm device, and a device for mutilating a seal, said mutilating device being actuated by a part of the alarm device.

21. The combination of a lock-case, tumblers therein, an alarm device in said case embracing a spring-pressed hammer, and a

device for mutilating a seal, said device being actuated by said hammer.

22. The combination of a lock-case, an alarm device therein embracing a spring-pressed hammer, a tubular casing in said lock-case provided in one end with a seal visible from outside the casing and with a device for mutilating said seal and in its other end with an alarm, said tubular casing being provided on one side thereof with a slot through which said hammer may pass, and the hammer being constructed to both actuate the mutilating device and strike the alarm.

23. The combination with a lock-case of a device for mutilating a seal, and a part having yielding connection with the lock-case, said part having operative connection with the mutilating device.

24. The combination with a lock-case of a spring-actuated device for mutilating a seal, a detent holding the same normally out of action and a part having yielding connection with the lock-case, by which the case is attached to the object which supports it, and actuating connections between the said yielding part and detent.

25. The combination with a lock-case, of a device therein for mutilating a seal, an alarm device, a part having yielding connection with the lock-case by which the case is attached to the object which supports it, and actuating connections between said yielding part and the mutilating and alarm devices.

26. The combination with a lock-case, of a device therein for mutilating a seal, an alarm device, springs which operate the mutilating and alarm devices, detents which hold the mutilating and alarm devices out of action, a part having yielding connection with the case, by which the said case is attached to the object which supports it, and actuating connections between said yielding part and detents.

27. The combination of a lock-case, an alarm device therein, a tubular casing removably secured within the lock-case and carrying the alarm device, said casing being provided at one end with a detachable nipple in which said alarm device is mounted.

28. The combination of a lock-case, a cylindric member within the lock-case adapted to hold on one end a seal in position to be visible and renewable from the outside of the lock-case, a seal-carrying cap mounted on said cylindric member provided on one side thereof with a locking-aperture, a locking-detent adapted to engage said aperture; said cap being provided with a lug adapted to engage a groove in the lock-case, said lug being so located with reference to the locking-aperture that when the former is engaged with said groove, said aperture will be opposite said locking-detent.

29. The combination of a lock-case, a tubular casing therein, an alarm device within one end of said tubular case, a seal-cap on the other end thereof which is visible and renewable from the outside of the lock-case, a lock-

ing-detent adapted to engage registering locking-apertures in said cap and tubular casing, said tubular casing being provided with a lug adapted to engage a notch in said lock-case and said cap being provided with a lug adapted to engage a groove in said lock-case, said lugs on the cap and tubular casing being so located with relation to the locking-apertures therein that when engaging said notch and groove, said apertures will stand opposite said locking-detent.

30. The combination with a lock-case of a tubular casing therein, provided on one end with a seal-carrying cap which is visible from the outside of the lock-case and having in its opposite end an alarm, means for setting off said alarm, said tubular casing and seal-carrying cap being provided with registering apertures, and a key provided with a projection adapted to engage said apertures by which said casing and cap may be removed from the lock-case.

31. The combination of a lock-case, an alarm device therein, an electric signaling-circuit embracing a signal device located outside of said lock-case and a circuit-controlling device in the lock-case operated by the movement of a movable part of said alarm device.

32. The combination of a lock-case, an alarm device therein, embracing a spring-actuated hammer, a detent which normally holds said hammer out of action, means for actuating said detent when the lock is tampered with, an electric signaling-circuit embracing a signaling device located outside of said lock-case and a circuit-controlling device in the lock-case operated by the movement of a movable part of said alarm device.

33. The combination of a lock-case, an alarm device therein embracing a spring-pressed hammer, a detent for holding the hammer out of action, a locking member, a tumbler or tumblers which control the actuation of the locking member, means engaging said detent adapted to release the hammer when a key of improper form engages the tumblers, an electric signaling-circuit embracing a signaling device located outside of said lock-case and a circuit-controlling device in said lock-case operated by the movement of said hammer.

34. The combination of a lock-case, a member which is yieldingly connected therewith and which forms the connection between the parts to be locked together, an alarm device within the lock-case embracing a spring-pressed hammer, operative connections between said yieldingly-connected member and alarm device, an electric signaling-circuit embracing a signaling device located outside of the lock-case, and a circuit-controlling device in said lock-case operated by the movement of said hammer.

35. The combination of a lock-case, a key-actuated locking member, a tumbler or tumblers which control the actuation of the locking member, an alarm device embracing a spring-pressed hammer, a detent for holding

said hammer out of action, said detent being constructed for actuation when the tumbler or tumblers are engaged by a key of improper form, a member which forms the connection
5 between the parts to be locked together which is movably connected with the lock-case and is adapted to act on said detent when tension is brought thereon in a direction to withdraw it from the case, an electric signaling-circuit
10 embracing a signaling device located outside of said lock-case and a circuit-controlling device in the lock-case operated by the movement of a movable part of the alarm device.

36. In an alarm-lock, the combination of
15 the detent I an alarm device operatively connected therewith and lug K⁵ having an in-

clined surface engaging said detent for the purpose set forth.

37. The combination of a lock-case, a tubular casing adapted to receive an explosive 20 and a tubular extension detachably connected with said casing and opening at its opposite end at a point remote from the lock-case.

In testimony that I claim the foregoing as 25 my invention I affix my signature in presence of two witnesses.

EDWARD NEWELL CASE.

Witnesses:

TAYLOR E. BROWN,
R. CUTHBERT VIVIAN.