

[54] **MAXIMUM SECURITY LOCK ASSEMBLIES**

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[58] Field of Search **70/103, 104, 134, 70/393, 405, 406, 417, 448, DIG. 57, DIG. 60; 292/340**

[56] **References Cited**

UNITED STATES PATENTS

2,225,663	12/1940	Segal.....	70/104
1,512,939	10/1924	Ledim.....	70/134
3,550,411	12/1970	Neary et al.	70/370
2,683,054	7/1954	Earman.....	292/340
3,541,822	11/1970	Murphy	70/421
1,983,446	12/1934	Falk	70/103

Primary Examiner—Albert G. Craig, Jr.

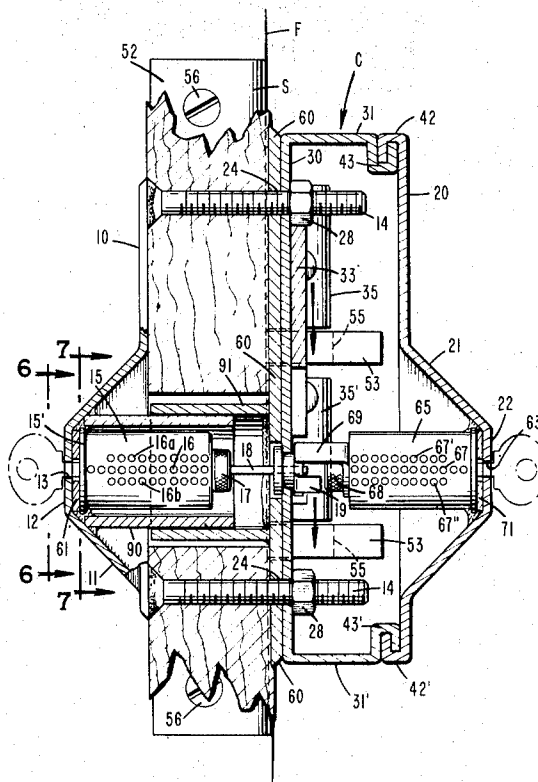
Attorney—Samuel Lebowitz

[57] **ABSTRACT**

A maximum security lock assembly adapted for mounting on a door within a door frame, comprised of

an armor plate of tool-resistant alloy steel having an integral frusto-conical protrusion extending outwardly therefrom, on the interior of which is fixed a pin tumbler lock with a cylindrical plug or core which is released for rotary movement upon the insertion of the properly fitted key into its keyhole. An oscillating crank connected to the rotary plug actuates a bolt mechanism which is selectively engageable with apertured lugs on a strike on the door frame which extend into the field of movement of the locking bolts when the door is in closed position. An opening of restricted area in the outer wall of said protrusion permits the insertion of said key into the keyhole of the lock and the rotation thereof while leaving concealed the main outer face of the lock and especially the portions thereof most vulnerable to picking and drilling of the lock assembly. The screw and bolt fasteners for the complete lock assembly including the components thereof, are hidden, and a shield of tool-resistant alloy surrounds the connections from the lock to the bolt actuating mechanism to prevent the disabling of the locking assembly at this portion thereof. The armor plate and protrusion extending therefrom which is resistant to the operations of drills, wrenches and jimmys thereon may be duplicated on the inner side of the door to secure the lock assembly against operation without a proper key on the inner side of the door as well as on the exterior thereof.

23 Claims, 10 Drawing Figures



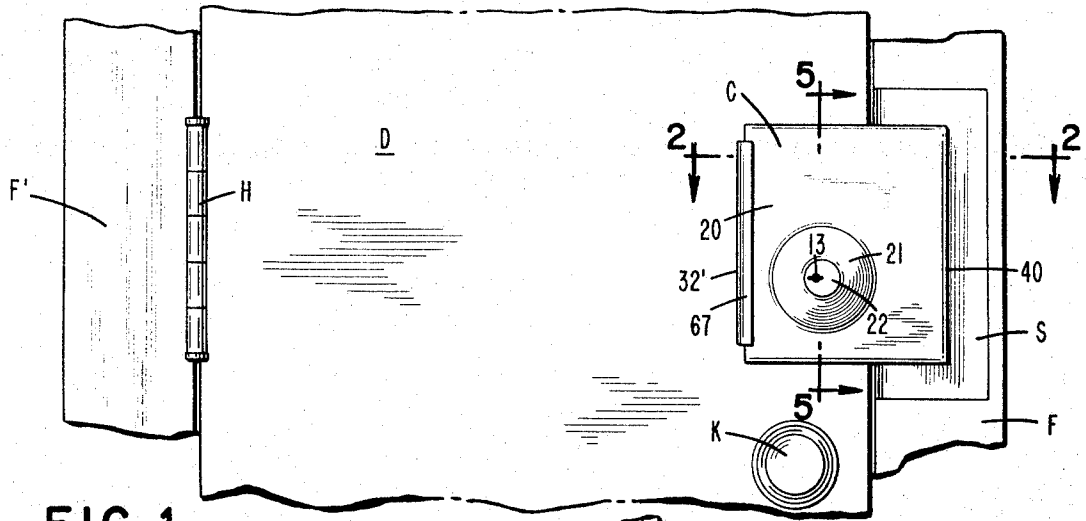


FIG. 1

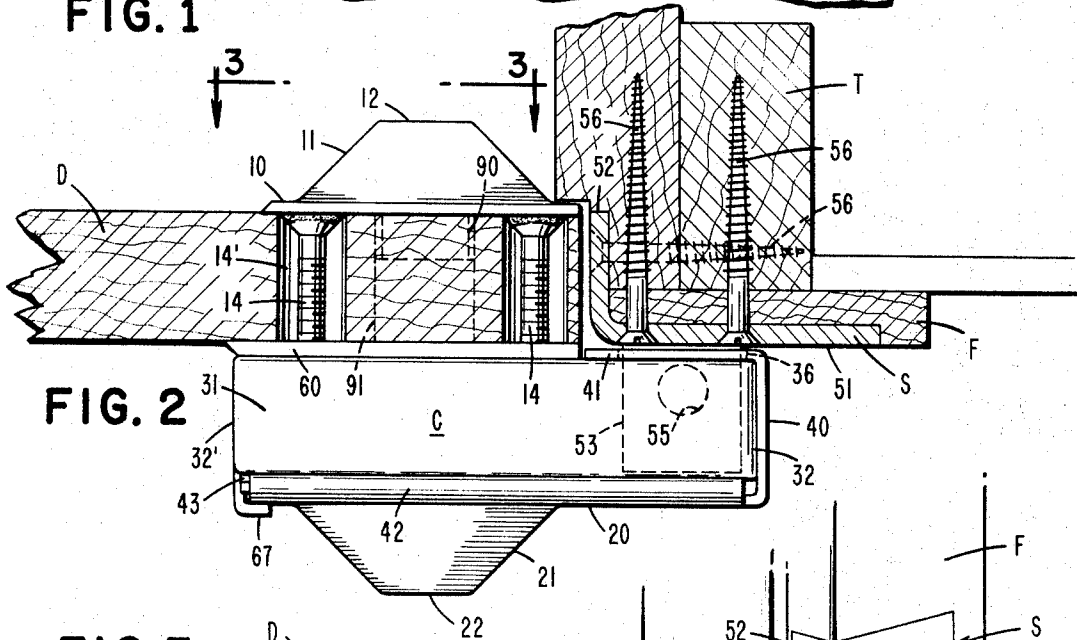


FIG. 2

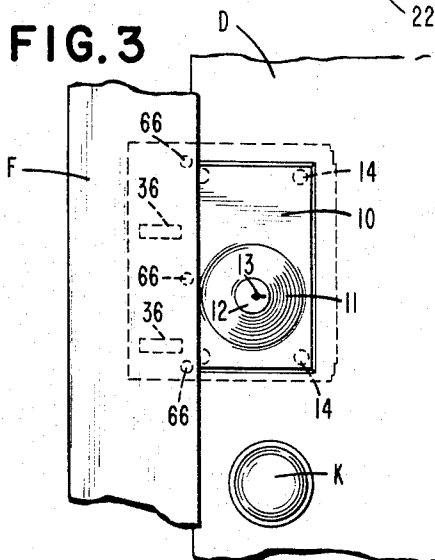


FIG. 3

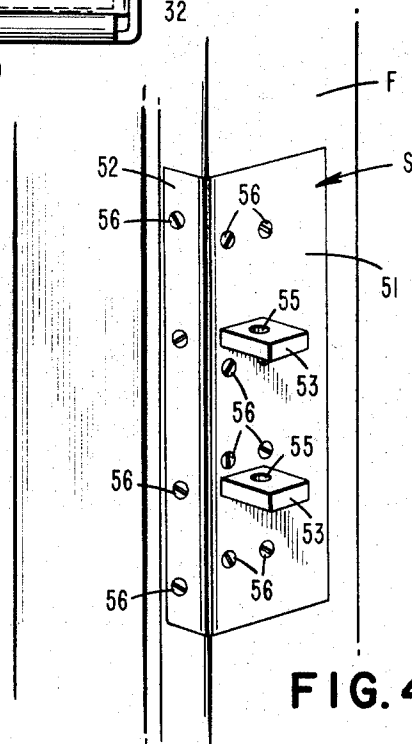
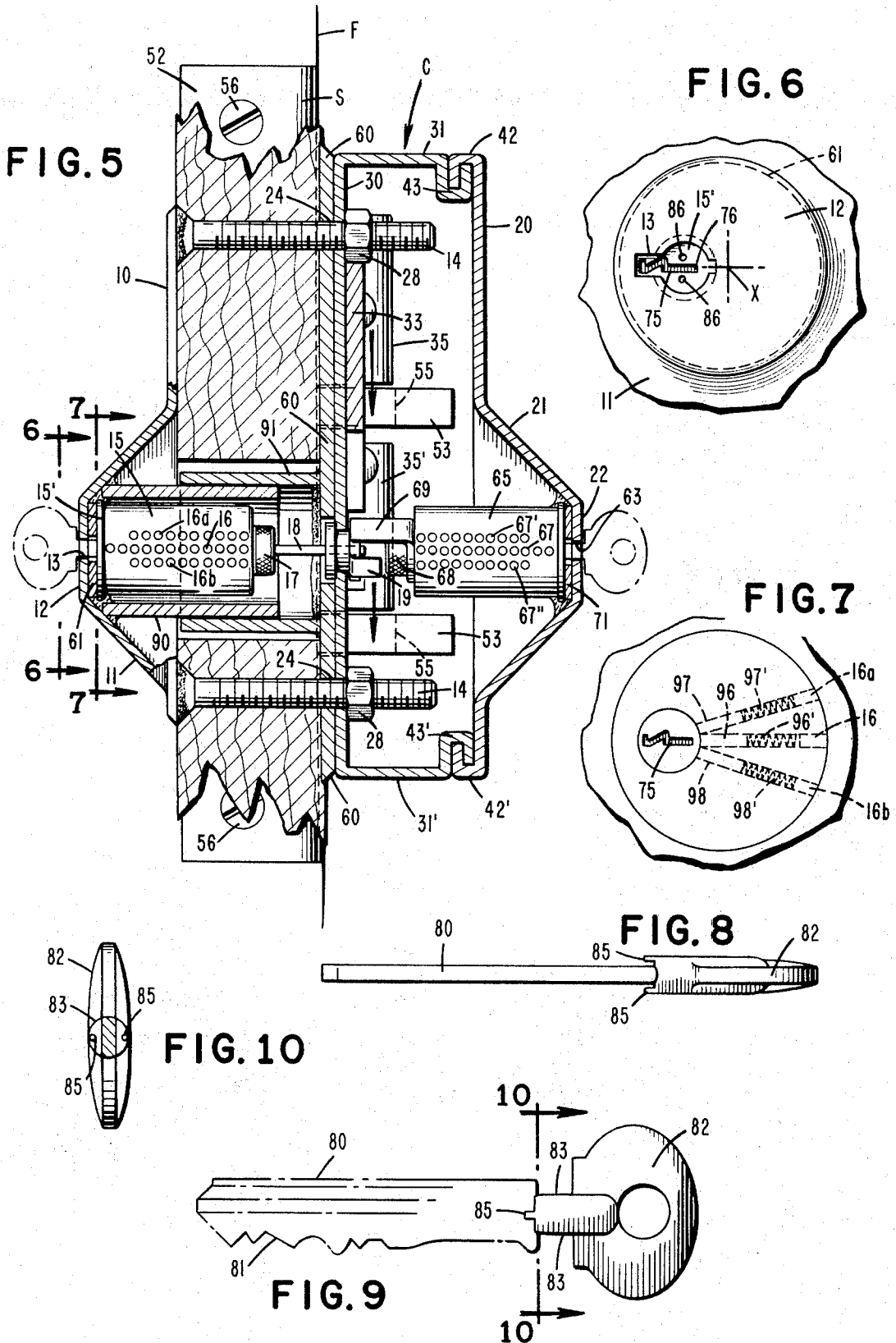


FIG. 4



MAXIMUM SECURITY LOCK ASSEMBLIES

This invention relates to a substantially burglar-proof lock assembly for mounting on the doors of residences, warehouses, industrial buildings, or any other enclosures, in order to prevent unlawful entry therethrough.

It is the object of the present invention to provide a door closure which is substantially burglar-proof by incorporating structural features in the lock assembly on the door in cooperation with a ruggedly mounted strike on the frame.

It is another object of the invention to provide lock components and to arrange for the disposition of them, which renders virtually impossible, or at least extremely difficult, for the lock to be picked, "jimmied," mutilated or destroyed with tools such as drills, wrenches, pliers, crowbars and the like, and which, upon simple inspection, would discourage a potential burglar from tampering with the lock.

It is a further object of the invention to provide for a lock assembly which may be produced economically, which is rugged in construction and easy to install, so that the wide adoption of such would have a salutary effect on the reduction of burglaries and the attendant high costs to the individual victims as well as the general public, which are occasioned thereby.

Other objects and purposes will appear from the detailed description of the invention following hereinafter, taken in conjunction with the accompanying drawings, wherein

FIG. 1 is a front elevation of the lock assembly mounted on a door hinged within a door frame viewed from the interior thereof;

FIG. 2 is a horizontal sectional view along line 2—2 of FIG. 1;

FIG. 3 is a front elevation of the lock assembly mounted on the door viewed from the exterior thereof along line 3—3 of FIG. 2;

FIG. 4 is a perspective view of the strike plate mounted on the door frame opposite the door hinges, parts of which strike plate are shown in FIGS. 1 and 2;

FIG. 5 is a vertical sectional view along line 5—5 of FIG. 1;

FIG. 6 is an enlarged view of the outer face of the lock assembly in the vicinity of the keyhole, along line 6—6 of FIG. 5;

FIG. 7 is a view of the outer face of the cylinder lock along line 7—7 of FIG. 5;

FIG. 8 is a front view of the key which is adapted to be inserted in the keyhole shown in FIG. 6;

FIG. 9 is a top view of the key shown in FIG. 8; and

FIG. 10 is an end view of FIG. 9.

In the drawings is shown a door D mounted within a frame F,F' which, for the purpose of illustration, is shown as an inside opening door mounted on hinges H on one side thereof having the lock assembly C mounted on the other side thereof cooperating with the strike S mounted on the stile F of the frame. As explained below, the lock assembly also may be applied to outside opening doors as well as to sliding doors.

The drawings illustrate a maximum security lock assembly which requires the operation by a key on both the outside and inside of a door closure. Thus, in FIG. 2 the lock assembly comprises an armor plate 10 having a frusto-conical protrusion extending outwardly therefrom and terminating in the flat external portion 12 in which is disposed the keyhole opening 13, described in greater detail below.

The armor plate 10, of any suitable tool-resistant steel alloy, is mounted on the outside face of the door by means of a plurality of bolts 14 which are affixed by welding, brazing, soldering, etc. to the internal face of the armor plate 10 and which extend through bored openings 14' in the door into the interior of lock casing C, which is mounted on the internal face of the door as shown in FIGS. 1, 2 and 5.

A cylinder lock 15, containing a plurality of longitudinally arranged pin tumbler units 16, is fastened on the interior of the frusto-conical protrusion 11 by bolting with the usual pair of bolts, welding, brazing, soldering, etc. No evidence of the mounting appears on the outer face of the protrusion. This is accomplished by affixing the usual pair of fastening bolts of the type disclosed in U.S. Pat. No. 1,579,139, Mar. 30, 1926, to the inner face of the flat external portion 12 of the frusto-conical protrusion similarly to the bolts 14 on the inner face of the armor plate. The cylinder lock with diametrically opposed bores are slid onto the fastening bolts, and thereafter locking nuts, with or without additional lock washers, are applied to the free ends of the fastening bolts to secure the cylinder lock tightly against the inner face of the armor plate and protrusion therein or against spacers 61. Lock constructions of this type are well known in the art, as exemplified by U.S. Pat. No. 1,967,042, July 17, 1934. Such locks are generally provided with a rotary plug or core 17 extending therethrough, which, upon the insertion of a properly fitted key into the keyhole slot at the outer end of the plug or core, results in the release of the latter for rotary movement. An additional measure of security may be attained by the use of cylinder locks of multiple rows of pin tumblers of the type disclosed in U.S. Pat. Nos. 1,707,922, Apr. 2, 1929, and 2,836,973, June 3, 1958. In such locks, the pin tumbler units 16 are supplemented by additional pins 16a and 16b of pin tumbler units disposed in planes at an angle of approximately 30° relative to the plane containing the main operating drivers 96 with their compression springs 96', (FIGS. 5 and 7). The back-up drivers 97 and 98, with their compression springs 97' and 98', respectively, in the rows flanking the drivers 96, render impossible a complete turning of the lock plug 17 when the lock is picked, since upon the turning of the plug 20° to 30° either way, the back-up tumblers shoot into the plug holes and re-lock the plug. Ten back-up tumblers in each back-up row are sufficient when twelve are disposed in the row of main drivers in alignment with the key slot, as shown in FIG. 5. The proper key cannot be pulled out at either of the radial points because there is no hole for the reception of the inner pair at these points. If anyone were to succeed in picking the cylinder plug, either to the left or right, the turning of the plug approximately 30° would result in the outer-tumblers dropping into the plug, thus locking the cylinder in an 11 o'clock or 1 o'clock position, and requiring that it be picked all over again to release the plug.

A tongue or tailpiece 18, generally of steel alloy of flat rectangular cross-section, is connected to the inner end of the core to impart rotary movement to an oscillating crank 19 at the outer end of the tailpiece 18 for actuating the lock mechanism described in greater detail below.

The inclination of the frusto-conical portion 11 of the armor plate 10 is such, that wrenches, pliers and similar tools are incapable of grasping the portion 11, so that

wrenching the lock from the assembly is rendered impossible. This inclination may be of the order of 45° relative to the plane of plate 10. Furthermore, the number of pin tumbler units 16 within the lock may be increased to as many as twelve, as described above, in order to render the picking thereof more difficult than is the case with conventional locks of this type which generally are provided with five or six pin tumbler units, and the security of the lock may be enhanced by using pins of drill-proof steel alloy. Also, the outer face 15' of the lock is housed within the protrusion 11 and, because of the frusto-conical formation, is displaced from the exterior thereof, so that the manipulation of a lock-picking tool is rendered difficult. The spacing of the outer face of the cylinder lock within the protrusion may be controlled easily by the provision of washers on the above-mentioned conventional pair of fastening bolts which, of course, are accessible only from the inner face of the armor plate. The gap between the end of the lock and the keyhole opening in the outer plate 12 may be filled with one or more layers 61 of tool-resistant steel or other alloys, so that the drilling of the lock and/or entry of tools thereinto are effectively blocked.

The mounting of the cylinder lock on the interior of the protrusion 11 by bolting, soldering or welding, eliminates the mounting collars which are usually used for the mounting of such and which provide a point of entry for prying and jimmy tools. Also, the absence of any mounting screws or bolts on the outer face of the armor plate 10 renders impossible the "jimmying" of the lock at these points.

The lock case C mounted on the internal side of the door is affixed thereto by means of the bolts 14 which extend through the door D and through openings 24 in the supporting plate 60 and rear wall 30 of lock case C, and which are tightly fastened together by means of nuts 28. The metallic case C may be formed of square or rectangular outline having horizontal lateral walls 31,31' projecting from the upper edges of back wall 30 and vertical lateral walls 32,32' extending from the back wall 30 and forming a continuous boundary thereon in conjunction with walls 31,31'.

The lock case contains a bolt actuating mechanism comprising plate 33 which is vertically reciprocable within the case adjacent to the back wall 30, and which mechanism terminates in coaxially disposed bolts 35,35' which are vertically movable adjacent rectangular slots 36 in the case which overlie the door frame F (FIGS. 2 and 3).

The vertical movements of the bolts 35, 35' from their alternate positions into and out of intersecting relationship with the slots, are controlled by the actuating mechanism 33 which includes camming surfaces which are responsive to the oscillating movements of the crank 19, which is rotated by the tailpiece 18 connected to the inner end of the plug 17 of the cylinder lock 15. This actuating mechanism does not constitute part of the instant invention and such may assume any desired form known in the art. U.S. Pat. Nos. 1,162,406, Nov. 30, 1915; 1,215,470, Feb. 13, 1917; 1,924,627, Aug. 29, 1933; and 2,042,026, May 26, 1936, are illustrative of many in the art which disclose such mechanisms.

A detachable cover 20 is provided for the open face of the lock case C defined by the free edges of walls 31,31', 32 and 32'. A lateral wall 40 extends rear-

wardly from one edge of cover 20 adjacent to wall 32 and is bent inwardly to form wall portion 41 against the exterior face of back wall 30 which overlies the door frame F. Rectangular slots 36 in wall portion 41 are co-incident with slots of the same dimensions in wall 30 and countersunk openings in wall 41 receive flat-headed screws 66 for fastening the cover 20 to wall 30 of the lock case. The upper and lower edges of the cover 20 are channeled at 42,42' to slide within tracks 43, 43' at the outer edges of walls 31,31', respectively. A flange 67 is bent transversely from wall 32' to seat and conceal the free edge of cover 20 in the closed position of the lock case when the screw fasteners 66 interconnect the cover and the case at the inner wall portion 41. The construction of the lock case and cover therefor prevents the destruction thereof by crowbars or other prying tools.

The slots 36 in the lock case are adapted to receive the lugs 53 which project from the face 51 of the strike S which is affixed to the stile F of the door frame. The lugs 53 are fitted with aligned apertures 55 so that when the lugs 53 enter the slots 36 in the lock case, the openings 55 are in alignment with the line of travel of bolts 35,35' when the door is in closed position. The door may be locked by reciprocating the bolts adjacent to the bolts 36 so that they engage the cylindrical apertures 55 in the lugs 53 to effect a secure locking of the door within the frame. The turning of the lock and the movement of the bolts from beyond the field of slots 36 results in a movement of the bolts from the openings 55 in the lugs 53 so that the door may be opened by knob K.

The mounting of the strike S is effected by means of screw fasteners 56 of substantial lengths of approximately two and one-half inches or longer so that the introduction of such fasteners into the two transverse plates 51 and 52 of the strike, results in the penetration of these fasteners not only into the frame, as is conventionally done, but also into the structural timbers T backing up the frame, so that a prying of the strike from the frame with a crowbar or similar tool is rendered impossible.

As may be seen from FIGS. 1 to 4, when the door is in closed position and locked, the screw and bolt fasteners of the entire assembly, namely, 14, 66 and 56, are invisible so that tampering with such, to effect an illegal opening, is rendered impossible.

In order to attain maximum security for the lock assembly, the cover 20 for the lock case, on the internal side of the door, is fabricated of tool-resistant metallic alloy material and is formed with a frusto-conical protrusion 21 in substantial alignment with the protrusion 11 on the outside of the door. A pin tumbler lock 65, similar to lock 15, containing a large number of pin tumbler units 67, with rows of backup tumbler sets 67' and 67'', is affixed to the interior of the protrusion by bolting, soldering, brazing or welding, and the inner end of the rotary plug 68 is connected with an oscillating crank 69 which is operative in the same range of movement as is the oscillating crank 19 controlled by the lock 15 to actuate the sliding plate 33 and the bolts 35,35' to effect the engagement and disengagement of the bolts with the apertures 55 in the lugs 53 of the strike S when the door is in closed position.

The flattened exterior portion 22 is provided with a restricted opening 63 which permits the insertion of the key into the keyhole at the outer end of the lock 65 and

the rotation thereof while concealing the outer face of the lock and particularly the area immediately beyond the shank of the key which effects a lifting of the pin tumblers to release the plug for rotation whereat drilling tools are introduced to effect the destruction of the lock mechanism.

In this construction as well, a space is presented between the outer face of the lock 65 and inner face of the plateau 22 of the protrusion which renders difficult the introduction of lock picking tools into the keyhole. This space may be filled by one or more layers 71 of steel alloys which are especially resistant to penetration by drilling or other destructive instruments.

This arrangement renders the disabling of the lock as difficult from the inner side of the door as it is from the outer side of the door, but the introduction of the proper key into the keyhole effects a locking and an unlocking of the door by the second oscillating crank 69 which controls the bolt actuating mechanism in the same manner as does the first oscillating crank 19.

In FIG. 6 is shown the outer face of the armor plate 11 at the flattened portion 12, on an enlarged scale. The outer face 15' is visible through the opening 13 in the armor plate for the insertion of the key into the slot 75.

In FIGS. 8 to 10 is illustrated a specially designed key for the reliable operation of the safety lock 15 which is comprised of a shank 80 ground specially along one of its edges 81 corresponding to the arrangement of the pin tumbler units in the lock. The key is recessed at the portion 83 between the handhold 82 and the shank 80, so that following the insertion of the key into the keyhole slot with the edge 81 coincident with the end 76 of the keyhole slot, the plug 17 may be rotated to effect the movement of the tailpiece 18 and the oscillating crank 19 connected thereto. In order to reenforce the key, propulsion pins 85 are provided on the inner face of the handhold 82 which engage correspondingly-shaped openings 86 in the outer face of the rotary core 17 to attain a more secure engagement between the key and the plug in the course of its rotary movement. The recessed portions 83 of the key permit the rotation of the key and the plug while the area designated X in dotted lines in FIG. 6 of the outer face 15' of the lock is concealed by the armor plate surface 12. This area is the most vulnerable part of the lock for the introduction of drilling tools, which are capable of disabling the locking effects of the pin tumbler units. The shielding of the outer face of the lock at this vulnerable area supplements the safety afforded by the use of pins of alloy steels within the lock, which are resistant to destruction by drilling tools.

The security of the locking mechanism is further enhanced by insuring against the destruction of the lock by damaging the connections between the lock mechanism and the bolt actuating mechanism, and particularly by destroying the effectiveness of the tailpiece 18 extending between the rotary core or plug 17 and the bolt actuating mechanism within the lock case C. Protection against this damage is afforded by surrounding the cylindrical lock 15 with a tool resistant metallic shield 90 which is affixed to the interior of the protrusion 11. A similar protective cylinder 91, of tool resistant material, is affixed to the inner face of attachment plate 60 onto which is affixed the lock case C. These cylinders are of slightly different diameter so that they may interfit reciprocally for the purpose of accommo-

dating doors of different thicknesses. The provision of this protective shell around the lock 15 and the connections extending therefrom precludes an approach to the lock and its connection from beyond the area of the armor plate 10 to effect its destruction.

The advantages of the invention may be realized in different degrees depending upon the measure of security sought to be attained and the character of the application of the lock assembly to the specific door closure. In the embodiment of the invention described above, a lock assembly is shown which requires the operation of the lock by a key, both from the inside as well as the outside of the door, so that even if a burglar should succeed in entering the premises unlawfully by some other mode of ingress, such as a window, a rapid point of exit would be denied him since the lock assembly, even from inside the premises, would be substantially tamper-proof. However, the advantages of the invention may be realized to lesser degrees if the lock assembly is operated from one side of the door to the exclusion of the other side, or if other means, such as a hand knob is used for controlling the lock on one side, as an adjunct to the operation of the lock from the opposite side by a key. Such arrangements are shown in the group of patents mentioned above, and in such arrangements, a flat armor face plate could be used on one side of the assembly with no keyhole therein.

Of course, if the alternate operation of the lock by a handknob is not desired, a safety lock may be attained which is operable only from the outside by providing a flat closure plate for the lock assembly beyond the bolt actuating mechanism. Such would be useful for inward opening doors as is the case with the arrangement described above. Such an arrangement with a blank flat plate may be used for operation by a key from the inside only when the lock assembly is applied to back doors, where there is no need to admit people by key from the outside.

It is understood that the lock assembly may be constructed in many different sizes to adapt the same for use in residences as well as for larger installations, in warehouses and other large enclosures.

We claim:

1. A burglar-proof lock assembly for mounting on a door within a door frame having a strike mounted thereon provided with a pair of spaced apertured lugs projecting therefrom, comprising
 - a. a lock case adapted to be mounted on said door provided with slots in alignment with said lugs for reception of said lugs in the closed condition of the door within said frame,
 - b. a reciprocable locking bolt assembly in said case comprising a pair of coaxially disposed bolts for alternative engagement with the apertures in said lugs to interlock the door with the frame or disengagement from said apertures to permit the separation of said door from said frame,
 - c. an actuating mechanism within said case connected to said bolts,
 - d. an oscillating crank for operating said last-mentioned mechanism to control the positioning of said bolts relative to said slots in said lock case,
 - e. a cylinder lock comprising an outer barrel containing a plurality of longitudinally arranged pin tumbler units, and an inner core having a keyhole at the outer end of said barrel and a tailpiece at the

inner end thereof extending between said core and said oscillating crank,

- f. a tool-resistant armor-plate displaced from said casing for supporting said cylinder lock and concealing said cylinder lock and tailpiece, and
- g. a frusto-conical protrusion on the front of said armor-plate for protecting said lock against tampering and destruction, said armor-plate and protrusion having only a single opening of restricted area constituted by a slot of restricted area, sufficient for the insertion of the shaft of the key adapted to be inserted in said keyhole and the rotation thereof in said core while covering the outer face of the cylinder lock at the points thereof vulnerable to the entry of drills or other lock-picking and tampering tools.

2. A device as set forth in claim 1, including a second armor-plate covering the side of said lock case remote from said first-mentioned armor-plate.

3. A device as set forth in claim 2, including screw fastening means for the strike on the door frame adapted to extend into the heavy timbers supporting said door frame, said fastening means being concealed by said lock case in the closed condition of the door.

4. A device as set forth in claim 3, wherein said screw fastening means comprises a plurality of wood screws ranging upwardly from two and one-half inches in length extending into the framing timbers from two transverse directions.

5. A device as set forth in claim 1, including a protective enclosure of tool-resistant metal between said armor-plate and lock case surrounding said cylinder lock and tailpiece.

6. A device as set forth in claim 5, wherein said protective enclosure comprises one cylindrical tube having one end projecting from the interior of said protrusion and a second cylindrical tube, of slightly different diameter from said first tube, having one end projecting from said lock case, with the opposite free end of each cylindrical tube disposed in overlapping telescopic relation.

7. A device as set forth in claim 1, including means for integrating said armor-plate with said lock case comprising a plurality of bolts integrally connected to the inner face of said armor-plate and extending through the door into said lock case, with fastening nuts on said bolts acting against the inner wall of said lock case.

8. A device as set forth in claim 3, including means for integrating said first-mentioned armor-plate with said lock case comprising a plurality of bolts integrally connected to the inner face of said armor-plate and extending through the door into said lock case, with fastening nuts on said bolts acting against the inner wall of said lock case, said lock case and second armor-plate extending beyond the area of attachment between said first armor-plate and lock case for engagement with the lugs of the strike in the closed condition of the door, in which position said screw fastening means are covered by said case.

9. A device as set forth in claim 8, wherein said lock case is of rectangular prismatic section defined by four rectangular walls projecting from the inner wall of said case, and said second armor-plate is detachably connected to the outer edges of said walls.

10. A device as set forth in claim 9, wherein the upper and lower walls are provided with guide tracks

at the outer edges thereof and reentrant flanges on the upper and lower edges of said second armor-plate for engaging said guide tracks for slidable movement thereon.

11. A device as set forth in claim 10, including a J-shaped extension on said second armor-plate for encasing the outer lateral wall of said case and the exterior of the inner wall of said case adjacent thereto, and fastening bolts between the latter and said extension adjacent the free extremity thereof for fixing said second armor-plate in closed position on said case, said last-mentioned fastening bolts also being concealed at said strike.

12. A device as set forth in claim 11, wherein said J-shaped extension is provided with slots complementing the slots in the lock case for receiving the lugs of the strike in the closed condition of the door within the frame.

13. A device as set forth in claim 7, wherein the displacement of the tool-resistant armor-plate from said casing corresponds to the thickness of the door through which extend said plurality of bolts interconnecting said armor-plate and said lock case.

14. A burglar-proof lock assembly for mounting on an inwardly opening door within a door frame having a strike mounted thereon provided with a pair of spaced apertured lugs projecting inwardly therefrom, comprising

- a. a lock case adapted to be mounted on the inner side of said door provided with slots in alignment with said lugs for reception of said lugs in the closed condition of the door within said frame,
- b. a reciprocable locking bolt assembly in said case comprising a pair of coaxially disposed bolts for alternative engagement with the apertures in said lugs to interlock the door with the frame or disengagement from said apertures to permit the separation of said door from said frame,
- c. an actuating mechanism within said case connected to said bolts,
- d. an oscillating crank for operating said last-mentioned mechanism to control the positioning of said bolts relative to said slots in said lock case,
- e. a cylinder lock comprising an outer barrel containing a plurality of longitudinally arranged pin tumbler units, and an inner core having a keyhole at the outer end of said barrel and a tailpiece at the inner end thereof extending between said core and said oscillating crank,
- f. a tool-resistant armor-plate displaced outwardly from said casing a distance corresponding substantially to the thickness of the door for supporting said cylinder lock and concealing said cylinder lock and tailpiece,
- g. a frusto-conical protrusion on the front of said armor-plate for protecting said lock against tampering and destruction, said armor-plate and protrusion having only a single opening of restricted area constituted by a slot of restricted area, sufficient for the insertion of the shaft of the key adapted to be inserted in said keyhole and the rotation thereof in said core while covering the outer face of the cylinder lock at the points thereof vulnerable to the entry of drills or other lock-picking and tampering tools,

- h. a second tool-resistant armor-plate covering the side of said lock case remote from said first-mentioned armor-plate, and
- i. a mechanical actuator extending through said second armor-plate and terminating within said lock case in a second rotary crank for operating said first-mentioned actuating mechanism.

15. A device as set forth in claim 1, applied to an inwardly opening door, including

- a. a second tool-resistant armor-plate covering the side of said lock case remote from said first-mentioned armor-plate,
- b. a chamber with a frusto-conical exterior in said second armor-plate on the inner face of the door in substantial alignment with said frusto-conical protrusion in said first-mentioned armor-plate,
- c. an indoor cylinder lock comprising an outer barrel containing a plurality of longitudinally arranged pin tumbler units and an inner core having a keyhole at the exposed end of said barrel and an oscillating crank connected to the inner end thereof for selective engagement with said bolt-actuating mechanism,
- d. said second armor plate having a keyhole slot of restricted area in the frusto-conical exterior of said chamber, said area being sufficient for the insertion of the shaft of the key adapted to be inserted in said keyhole on the inner face of the door, and the rotation thereof in said core, while covering the outer face of said last-mentioned cylinder lock at the points thereof vulnerable to the entry of drills or other lock-picking and tampering tools.

16. A device as set forth in claim 15, wherein the pin tumbler units in the first-mentioned cylinder lock range from six to twelve in order to render the lock less vulnerable to picking tools.

17. A device as set forth in claim 15, wherein the pin

tumbler units in both of said cylinder locks range from six to twelve in order to render the lock less vulnerable to picking tools.

18. A device as set forth in claim 1, wherein said cylinder lock is provided with a row of auxiliary pin tumbler units displaced angularly on each side of said first-mentioned longitudinally arranged pin tumbler units.

19. A device as set forth in claim 18, wherein the pin tumbler units in the first-mentioned group range from six to twelve in order to render the lock less vulnerable to picking tools, and the auxiliary pin tumbler units in the angularly displaced rows are diminished by at least one, at least at one end of each row.

20. A device as set forth in claim 1, wherein the outer end of said cylinder lock is affixed within the interior of said protrusion rearwardly of the front face of the latter to form a space therebetween, at least one apertured plate therebetween being of special alloyed metal to supplement the protection against tampering with the lock.

21. A device as set forth in claim 1, wherein the key-opening in said armor-plate is restricted substantially to the keyhole in the core of the cylinder lock, leaving unexposed the areas adjacent to the core of special vulnerability to the destruction of the pin tumbler units by drilling or prying.

22. A device as set forth in claim 21, including a key bit with undercut indentations adjacent to the hand grip of the key to accommodate the outer face of said protrusion in the course of rotating the key.

23. A device as set forth in claim 22, wherein the outer face of said core of the lock is provided with sockets for receiving propulsion pins on the handgrip of the key to reenforce the coupling therebetween and to compensate for the undercut indentations in the key.

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