June 8, 1965 M. M. CHECK 3,187,528

ANTI-TAMPER KEYLESS LOCK

Filed July 13, 1962 2 Sheets-Sheet 1

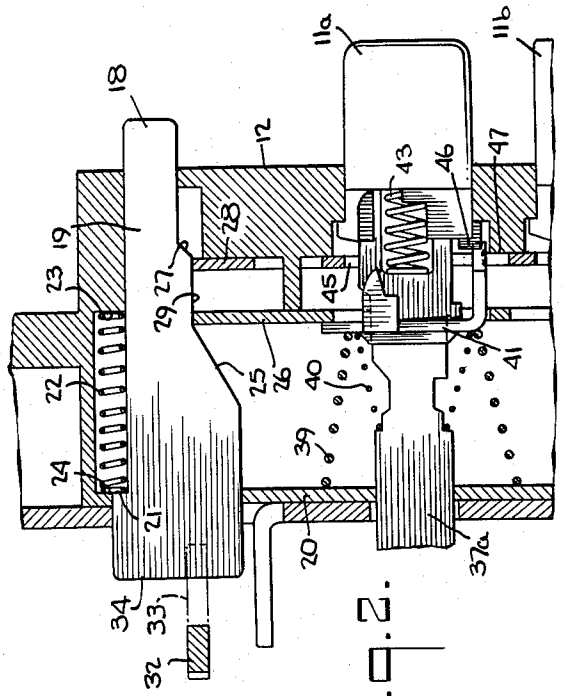


Fig. 2.

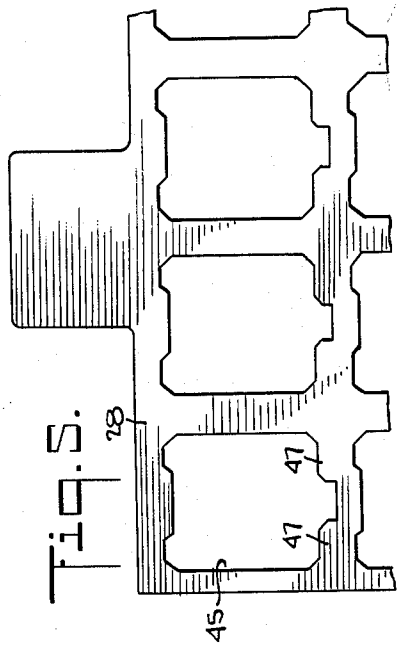


Fig. 5.

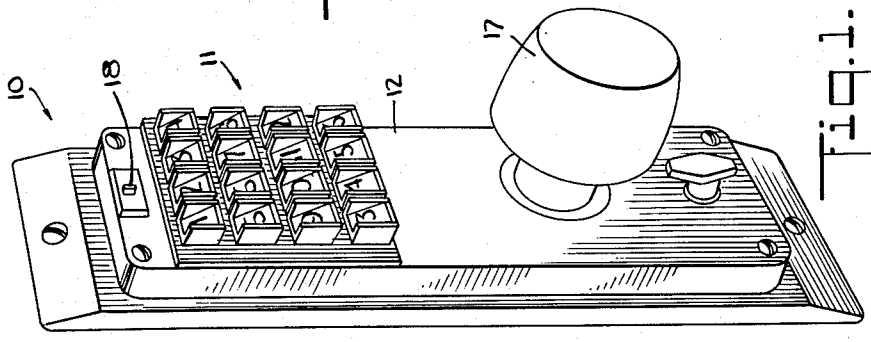
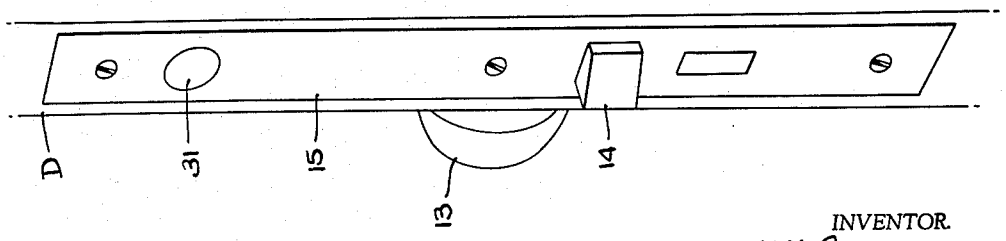


Fig. 1.



INVENTOR.
M. M. CHECK

BY

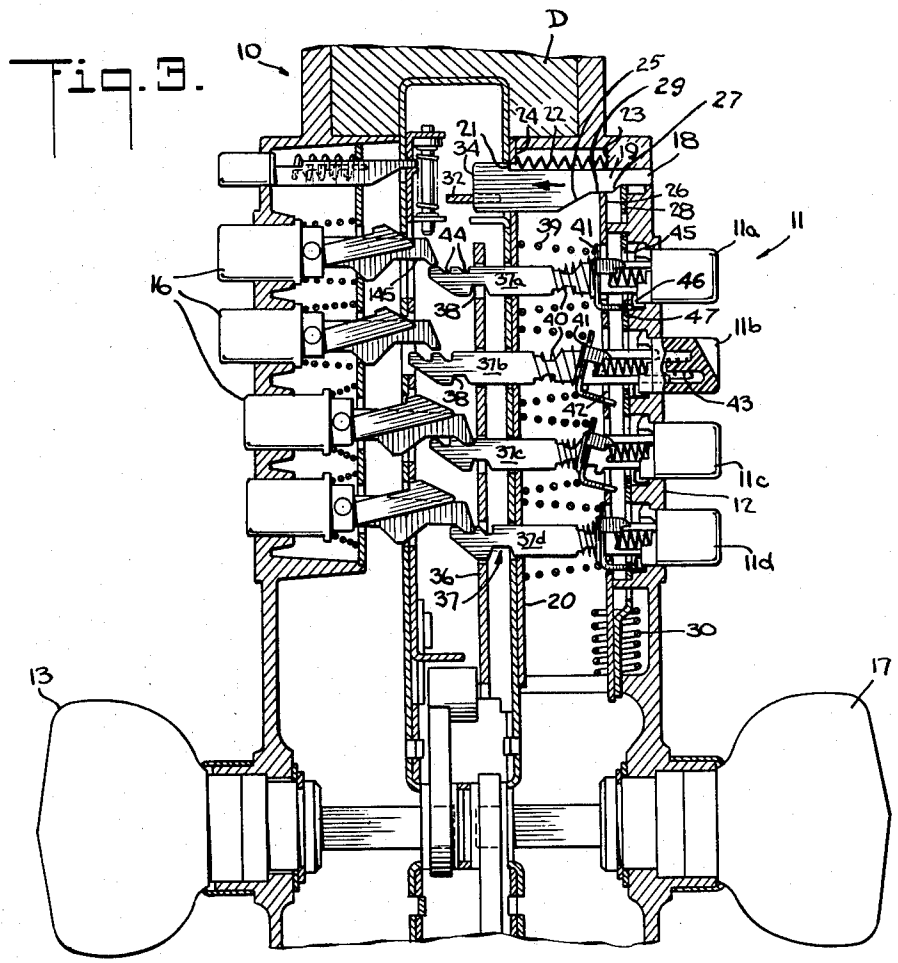
ATTORNEY

June 8, 1965 M. M. CHECK 3,187,528

ANTI-TAMPER KEYLESS LOCK

Filed July 13, 1962 2 Sheets-Sheet 2

Fig. 3.



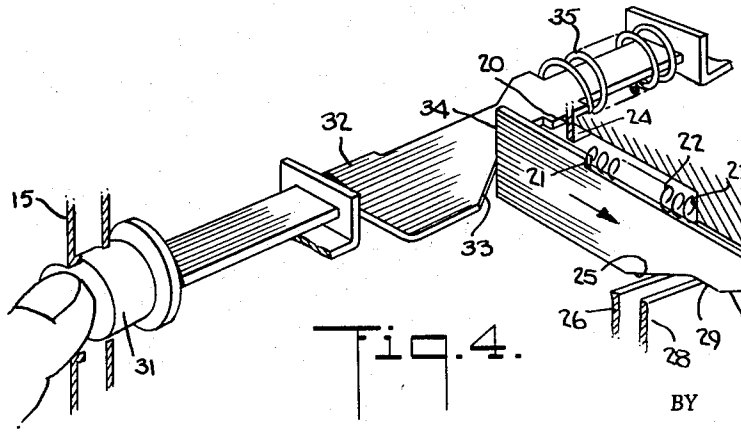


Fig. 4.

INVENTOR.
M. M. CHECK
BY
ATTORNEY

United States Patent Office 3,187,528 Patented June 8, 1965

3,187,528

ANTI-TAMPER KEYLESS LOCK

Mathias M. Check, Strafford, Pa., assignor, by mesne assignments, to Yale & Towne, Inc., New York, N.Y., a company of Ohio

Filed July 13, 1962, Ser. No. 209,647
13 Claims. (Cl. 70—299)

This invention relates to keyless locks of the kind shown in my Patent No. 3,009,346 dated November 21, 1961.

The locks of the particular kind are equipped with a combination mechanism that can be manipulated to set up different combinations that will control the operation of the lock, so that the occupant of a room may choose at will a combination that will be used to gain admittance to the room. Actually, it is a simple matter to change the combination that controls the locking and release operations, that being an important advantage of the locks.

The novel contribution of my invention is the concept of a lock having means that will be actuated, when a combination has been set up, so that the combination will not be changed through accident or through mischievous tampering with the mechanism. Nevertheless, the combination still can be easily changed or cancelled, it merely being necessary to know how to manipulate the lock in a particular manner.

Thus, as a feature of my invention, I equip a lock with a manually operated member that will be effective to dog parts of a combination mechanism in the lock. While so dogged, those parts cannot be moved to change a controlling combination that may have been set up. There is a member that can be manually operated to release the particular parts, but I mount that member in a position which is separated from the other manually operated parts of the lock.

In the lock that forms the subject of my patent, No. 3,009,346, there is a combination mechanism having a series of push buttons that are arranged at the inner side of a door. Each of those buttons moves a locking part, so that the occupant of the room may effect locking by depressing any combination of the buttons. To utilize that construction in the lock of my present invention, I equip the lock with a dogging button which also may be mounted at the inner side of the door. After setting up a combination through depression of the push buttons, the occupant merely need depress the dogging buttons to prevent a change in the combination, the dogging button being effective to dog the locking parts against further movement by the push buttons.

I further equip the lock with a reset button that will be effective to undog the locking parts of the combination mechanism. As a feature of this part of my invention, I prefer to mount the reset button in position at the front plate of the lock, or in other words, on the edge surface of the door. Should the occupant of the room wish at any time to change the controlling combination of the lock, he may very readily do so if he opens the door partially, so that he may first depress the reset button.

My invention will very effectively resist a condition in which a person may be locked out of the room due to accidental changing of the controlling combination. Thus, when the dogging button has been depressed, the combination setting parts will be locked so that accidental pressure on one or more push buttons will have no effect on the combination, and the same combination still may be used to gain admittance. Moreover, the combination mechanism will resist the efforts of a person who may happen to be in the room, and who may try to set a new combination that will enable him to enter surreptitiously at a later time.

I have thus outlined rather broadly the more important features of my invention in order that the detailed description thereof that follows may be better understood, and in order that my contribution to the art may be better appreciated. There are, of course, additional features of my invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception on which my disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of my invention. It is important, therefore, that the claims be regarded as including such equivalent constructions as do not depart from the spirit and scope of my invention, in order to prevent the appropriation of my invention by those skilled in the art.

In the drawings:

FIG. 1 shows a perspective view of my lock;

FIG. 2 is a vertical section showing parts of my lock in a normal position allowing a combination to be set up;

FIG. 3 illustrates the operation of my lock while dogged so that the combination cannot be changed;

FIG. 4 is a perspective view illustrating the reset operation of my lock;

FIG. 5 shows a portion of the dogging plate that I utilize in my novel lock.

Referring now more particularly to FIG. 1 of the drawings, I indicate my novel lock generally by the numeral **10**. In the form that I prefer, the lock **10** utilizes a construction much like that in my patent, to which I have alluded, with a series of push buttons **11** that are arranged on a panel **12** at the inner side of a door D, and that may be depressed to set up different controlling combinations in the lock **10**. Any combination that is set up through buttons **11** will effect locking which makes an outside knob **13** ineffective to retract a latch bolt **14** on a front plate **15** of the lock. Further push buttons **16**, not seen in FIG. 1 but indicated in FIG. 3, are arranged at the outer side of the door D. If depressed in a combination like that which was set up through inside buttons **11**, the outside buttons **16** will enable a person to use the outside knob **13** to retract the latch bolt **14**. Merely in passing I may indicate that the lock **10** may have a bolt retracting inside knob **17** like that in my patent, knob **17** not being locked or affected by the button operation.

In my present invention, I equip the lock **10** with a dogging button **18** that I prefer to arrange in juxtaposed relation to the combination setting buttons **11** at the inner side of the lock. As shown in FIGS. 2 and 3, the dogging button **18** comprises a stem **19** that slides in openings in the panel **12** and in an inner wall **20** of lock **10**. The upper edge of stem **19** has a shoulder **21** so formed as to be aligned with a surface **24** on the wall **20** when the stem **19** is in a normal position, which is shown in FIG. 2. A coil spring **22** is arranged in position between the shoulder **21** and a surface **23** on the lock for pressing stem **19** in a direction inwardly of the lock, that is, toward the left in FIG. 2, but the spring **22** will not act in the normal position of stem **19** because the inner end of the spring then is against the wall surface **24**. That arrangement will hold spring **22** inactive when the stem **19** is in its normal position or is depressed from that position, while causing spring **22** to act when stem **19** is moved outwardly beyond its normal position, as I shall presently described.

A lower portion of the stem **19** is formed with a cam surface **25** that is adapted to coact with a reset plate **26**, and a cam surface **27** for coacting with a dogging plate **28**. Extending between the two cam surfaces **25** and **27** is a dwell **29** against which both reset and dogging plates **26**, **28** will rest when the stem **19** is in its normal FIG. 2 position, those plates being pressed in an upward direction as by a spring **30**, FIG. 3. The arrangement is such that dogging plate **28** will move upwardly along

cam surface 27 when dogging button 18 is depressed, as in FIG. 3. Also, reset plate 26 will move downwardly along cam surface 25 when stem 19 is moved outwardly beyond its normal position, as in FIG. 4.

As shown in FIG. 1, I further equip my lock 10 with a reset button 31 that is mounted at the front plate 15. The button 31 comprises a reset cam 32 best shown in FIG. 4, but also seen in FIGS. 2 and 3. Reset cam 32 is mounted to move in a direction transverse to the dogging stem 19, and has a cam surface 33 in opposed relation to an end portion 34 on stem 19. When reset button 31 is depressed so as to move cam 32 against the pressure of a spring 35, as shown in FIG. 4, cam surface 33 will move stem 19 past its normal FIG. 2 position to an outward reset position, FIG. 4. When reset button 31 is relieved of pressure, the coil spring 22 will act on the stem 19 in the way that I have described, returning stem 19 and button 18 merely to the normal position shown in FIG. 2. Then, the reset and dogging plates 26, 28 again will rest against the dwell 29 on stem 19.

So that the action of the reset and dogging plates 26, 28 may be fully understood, I shall outline the combination locking construction of the lock 10. Actually, that construction is substantially the same as that which I show in my earlier patent, No. 3,009,346. Thus, referring to FIG. 3 of the drawings, there is a fence 36 that is shown in a dogging position, and that must be free to move upwardly to a release position in order to allow knob 13 to retract the latch bolt 14 seen in FIG. 1. A series of locking parts 37 extend in openings in the fence 36, there being one locking part 37 for each inside push button 11. Four of the locking parts 37 can be seen in FIG. 3, and for convenience of description, I have indicated those parts by the numerals 37*a*, 37*b*, 37*c* and 37*d* and the corresponding inside push buttons by the numerals 11*a*, 11*b*, 11*c* and 11*d*.

Each locking part 37*a*, 37*b*, 37*c* and 37*d* has a gating 38 that will be aligned with the fence when the part is in a release position, as is the part 37*a* in FIG. 3. Should inside push button 11*a* be depressed, it will move locking part 37*a* toward the left against the pressure of a spring 39, to a position like that of the part 37*b* in FIG. 3. Thus, part 37*b* is in a locking position, its gating no longer being aligned with fence 36. Part 37*b* is yieldingly held in that locking position through a corresponding spring 40 and detent 41, that detent having been moved by the push button 11*b* to a tilted position in which it latches relatively to an opening 42 in reset plate 26. Push button 11*b* actually has returned to a normal undepressed position due to the pressure of a coil spring 43, there being such a spring acting between each locking part 37*a*, 37*b*, 37*c* and 37*d* and button 11*a*, 11*b*, 11*c* and 11*d*.

Each locking part 37*a*, 37*b*, 37*c* and 37*d* has a pair of notches 44 adapted to be engaged by a push lever 145 that is actuated by a corresponding outside push button 16. Thereby the button 16 may move the locking part in a direction toward the right, as viewed in FIG. 3, against the pressure of its spring 40. If the part has been set in locking position, as at 37*b* in FIG. 3, the particular movement will place the part in a release position as shown at 37*c*. If the part has not been set and already is in release position, as is part 37*a*, the outside button actuation will place the part in the locking position that is shown at 37*d*. It will be appreciated that the outside push buttons 16 must be depressed in a combination which is like that which was set through the inside buttons 11, if all of the gatings 38 are to be aligned so as to allow the upward release movement of the fence 36. However, it is possible to reset all of the locking parts 37 in release position, that being done through a downward movement of reset plate 26 so as to unlatch the detents 41. I believe it will be unnecessary to go into further detail as to the combination operation of the lock 10, because that operation is well set forth in my earlier patent.

I wish now to describe the manner in which I utilize the dogging plate 28 in my invention. That plate 28 somewhat resembles the reset plate 26, but is formed with a series of openings 45, FIGS. 3 and 5, for accepting the inside push buttons 11. Each opening 45 is so arranged that the corresponding inside button 11 may move freely in that opening when dogging plate 28 is in its normal position, as will be understood when considering the opening 45 that is shown in FIG. 2. Each button 11 has a lower portion 46 that can move in the corresponding opening 45, but that will be in opposed relation to a stop surface 47 on dogging plate 28 when the plate moves from its normal FIG. 2 position in an upward direction, as shown in FIG. 3. Thereby, the plate 28 will dog the series of inside push buttons 11 so that they cannot be depressed, making them ineffective to move the locking parts 37.

From the description that I have made, it will be appreciated that the inside push buttons 11 at first may be depressed in any desired combination, as in my earlier patent, so as to set up a controlling combination in the lock 10. After a combination has been set up, the dogging button 18 will be depressed from the position shown in FIG. 2 to the FIG. 3 position. That depression of button 18 will have no effect upon the reset plate 26, which will remain in position holding those latching detents 41 that may have been set. However, the depression of dogging button 18 will cause plate 28 to move upwardly to position dogging the inside buttons 11, FIG. 3. The controlling combination cannot now be changed or cancelled through the operation of the series of inside push buttons 11, or through any means at the inner panel 12 on lock 10.

Now, should it be desired to set up a new combination or merely to cancel the combination, it will be necessary first to depress the reset button 31 at the front plate 15. To allow that, it will be necessary to open the door at least partially in order to make button 31 accessible. When reset button 31 is depressed, as in FIG. 4, it will act through the cam 32 to move the dogging stem 19 past normal position to a reset position. Incidental to that movement of stem 19, both reset and dogging plates 26, 28 will be moved downwardly, simultaneously unlatching the detents 41 and undogging the inside push buttons 11. When the reset button 31 is relieved of pressure, the dogging stem 19 will move back to normal position due to the pressure of spring 22, as in FIG. 2, the reset plate 26 then returning to position to coact with the detents 41, so that the detents will again be effective for latching the locking parts 37 when they are set. Dogging plate 28 will remain in undogging position due to its position against the dwell 29 on stem 19. Then, the inside push buttons 11 again will be effective when depressed to set up a controlling combination that may be desired.

It will be appreciated that the reset button 31 will be scarcely noticeable while mounted at the front plate of the lock, and actually will not be seen when the door is closed. That reduces to a very considerable extent the possibility that the controlling combination of the lock may be changed through tampering.

I believe it will now be understood that I contribute an extremely novel lock construction that will enable a controlling combination to be easily set up or changed, but that will very effectively resist changing of the combination through accident or mischief. Therefore, the very considerable merits of my invention will be appreciated by those persons skilled in the art.

I now claim:

1. In a lock adapted to be mounted on a door, said lock having a front plate on the front edge of the door,

a series of locking parts individually movable to locking and release positions for controlling the operation of the lock,

a series of push buttons mounted at the inner side of the

door and adapted each to move a locking part to locking position so that an occupant of a room can set up a locking combination through depression of said buttons,

outside push buttons mounted at the outer side of the door and effective when depressed in a combination like the locking combination to move said locking parts to release position,

dogging means adapted to coact with the inside combination setting push buttons,

a further push button mounted in juxtaposed relation to the push buttons at the inner side of the door and controlling said dogging means to dog said inside push buttons so that they cannot be depressed to change the locking combination,

and reset means having a part mounted at the front plate of the lock and effective to move the further push button to release the dogging means to undog the combination setting inside buttons, whereby to allow the locking combination to be changed after the door is opened at least partially to allow manual operation of said reset means.

2. In a combination lock,

manually operated means for setting up a controlling combination in the lock,

a reset member movable to effect resetting of said manually operated means whereby to cancel a combination that may have been set up,

a control member coacting with said means and movable to a controlling position rendering those means ineffective to set up a combination,

a push button comprising a stem coacting with said reset and control members,

a cam surface on said stem controlling the movement of the control member to controlling position when the button and stem are depressed from a normal position,

a reset button and cam means for moving said stem back to its normal undepressed position and beyond to an outward position,

a further cam surface on said stem acting when said stem is so moved to place the reset member in resetting position,

and a spring acting against said stem and effective to return the stem and push button from outward to normal undepressed position, so that the reset and control members will allow a combination again to be set up through the manually operated means.

3. In a combination lock,

combination mechanism including push buttons for setting up a controlling combination in the lock,

a reset plate movable to position resetting said combination mechanism whereby to cancel a combination that may have been set up,

a dogging plate movable to a position dogging said push buttons so as to prevent changing of the combination,

a push button comprising a stem coacting with said reset and dogging plates,

a cam surface on said stem controlling the movement of the dogging plate to dogging position when the stem button is depressed from a normal position,

a reset button and cam means for moving said stem back to its normal undepressed position and beyond to an outward position,

a further cam surface on said stem acting when said stem is so moved to place the reset plate in resetting position,

a spring pressing said stem from outward position toward depressed position,

and means limiting the action of the spring when said spring has returned the stem to its normal undepressed position, the reset and control plates then being in position to allow a combination to be set up through the manually operated means.

4. In a combination lock,

a series of locking parts,

a series of push buttons for moving said locking parts as said push buttons are depressed,

spring means returning said push buttons to an outward position from a depressed position,

and detent means for locking all of said push buttons against depression.

5. In a combination lock,

a series of locking parts,

a series of push buttons for moving said locking parts to locking positions as said push buttons are depressed,

means for holding said locking parts in locking position when so positioned by said push buttons,

spring means returning said push buttons from depressed position to an outward position,

detent means for locking all of said push buttons against depression,

and means for releasing said locking parts from said holding means and said push buttons from said detent means.

6. In a combination lock,

a series of locking parts,

a series of push buttons for moving said locking parts to locking positions as said push buttons are depressed,

means for holding said locking parts in locking position when so positioned by said push buttons,

detent means for locking all of said push buttons against movement,

and means for releasing said locking parts from said holding means and said push buttons from said detent means.

7. In a combination lock,

a series of locking parts,

a series of push buttons for moving said locking parts to locking positions as said push buttons are depressed,

means actuated through movement of said locking parts to hold those parts in locking position when so positioned by said push buttons,

manually controlled detent means for locking all of said push buttons against movement,

and manually actuated means for simultaneously releasing said locking parts from said holding means and said push buttons from said detent means.

8. In a lock,

a combination mechanism having means operable in a controlling combination for controlling release movements of the lock,

parts of said combination mechanism adapted to be manipulated to set up different controlling combinations in said mechanism,

dogging means movable to a position dogging said parts of the combination mechanism to prevent changing of a combination that may be set up,

control means controlling movements of said dogging means, a portion of said control means mounted at a surface of the lock and manually operable for placing the dogging means in dogging position,

and said control means including a manual release member mounted at a further surface of the lock and through which said control means are operated to move the dogging means to an undogging position, whereby to allow a controlling combination to be set up when that is desired.

9. In a lock, a combination mechanism for controlling movements of the lock, said mechanism having means operable in a controlling combination to allow a release movement of the lock,

parts of said mechanism determining by their positions the controlling combination of said mechanism,

manual means for moving said parts of the mechanism to set up different controlling combinations,

dogging means movable to a position for dogging said manual means so that the manual means will be ineffective to change a combination that may have been set up,

control means controlling movements of said dogging means,

a portion of said control means mounted in juxtaposed relation to said manual means and manually operable for placing the dogging means in dogging position,

and said control means including a manual release member mounted in a position separate from the manual combination setting means and through which the control means are operated to move the dogging means to an undogging position, so that a combination again may be set up.

10. In a lock adapted to be mounted on a door, a combination mechanism for controlling movements of the lock, said mechanism having means mounted at the outer side of the door and operable in a controlling combination to allow a release movement of the lock,

parts of the combination mechanism determining by their positions the controlling combination of said mechanism,

manual means mounted at the inner side of the door for moving said parts of the mechanism to set up different controlling combinations,

dogging means movable to a position dogging said manual means so that the manual means will be ineffective to change a combination that may have been set up,

control means controlling movements of said dogging means,

a portion of said control means manually operable for placing the dogging means in dogging position,

and said control means including a manual release member mounted at the front surface of the door and through which the control means are operated to move the dogging means to an undogging position, enabling the combination to be changed through said manual means after the door is opened at least partially to allow operation of said release member.

11. In a lock,

a series of locking parts individually movable to locking and release poistions for controlling the operation of the lock,

a series of push buttons adapted each to move a locking part to locking position so that a locking combination can be set up through depression of said buttons,

means effective when operated in a combination like the locking combination to move said locking parts to release position,

dogging means movable to a position dogging said series of push buttons so that they cannot be depressed to change the locking combination,

control means controlling the movements of said dogging means,

a further push button forming a part of said control means and operable for placing the dogging means in dogging position,

and said control means including a still further push button mounted in a position separate from said series of push buttons and said further button and through which said control means are operated to move the dogging means to undog the series of buttons, whereby to allow the locking combinations to be changed.

12. In a lock, a combination mechanism for controlling movements of the lock, said mechanism having means operable in a controlling combination to allow a release movement of the lock,

parts of said mechanism determining by their positions the controlling combination of said mechanism,

manual means for moving said parts of the mechanism to set up different controlling combinations,

dogging means movable to a position for dogging said manual means so that the manual means will be ineffective to change a combination that may have been set up,

control means controlling movements of said dogging means,

a portion of said control means manually operable for placing the dogging means in dogging position,

a manual release member forming a part of said control means and through which said control means are operated to move the dogging means to an undogging position,

and reset means actuated by said control means when so operated through the release member whereby to move said parts of the combination mechanism to cancel the combination.

13. In a locked adapted to be mounted on a door, said lock having a front plate on the front edge of the door,

a combination mechanism including a series of locking parts individually movable to locking and release positions for controlling the operation of the lock,

a series of push buttons mounted at the inner side of the door and adapted each to move a locking part to locking position so that an occupant of a room can set up a locking combination through depression of said buttons,

outside push buttons mounted at the outer side of the door and effective when depressed in a combination like the locking combination to move said locking parts to release position,

a dogging part movable into dogging relation to the series of inside push buttons,

a further push button acting when depressed to an inward position to control a movement of said dogging part to dogging position so that the inside buttons cannot be depressed to change the locking combination,

said further push button when moved toward an outward position controlling a movement of the dogging part to undog the combination setting inside buttons,

a reset button for moving said further push button to said outward position,

means actuated by said further push button when moved outwardly by the reset button to reset all of the locking parts in release position so that a new locking combination may be set up,

and said reset button being mounted at the front plate of the lock so that the door must be at least partially opened before the combination can be changed or cancelled.

No references cited.

ALBERT H. KAMPE, *Primary Examiner.*