

932,364.

Patented Aug. 24, 1909.
3 SHEETS—SHEET 1.

Fig. 2.

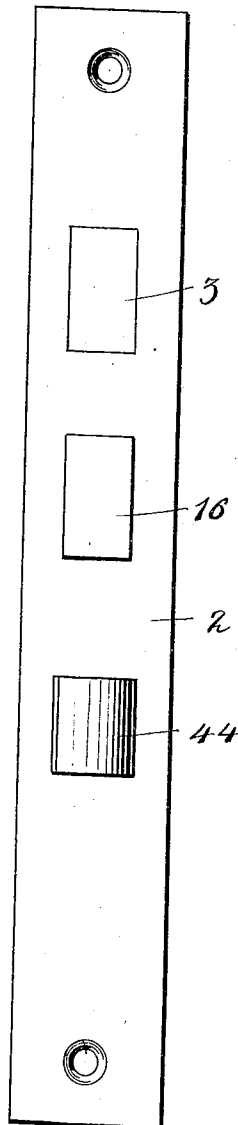
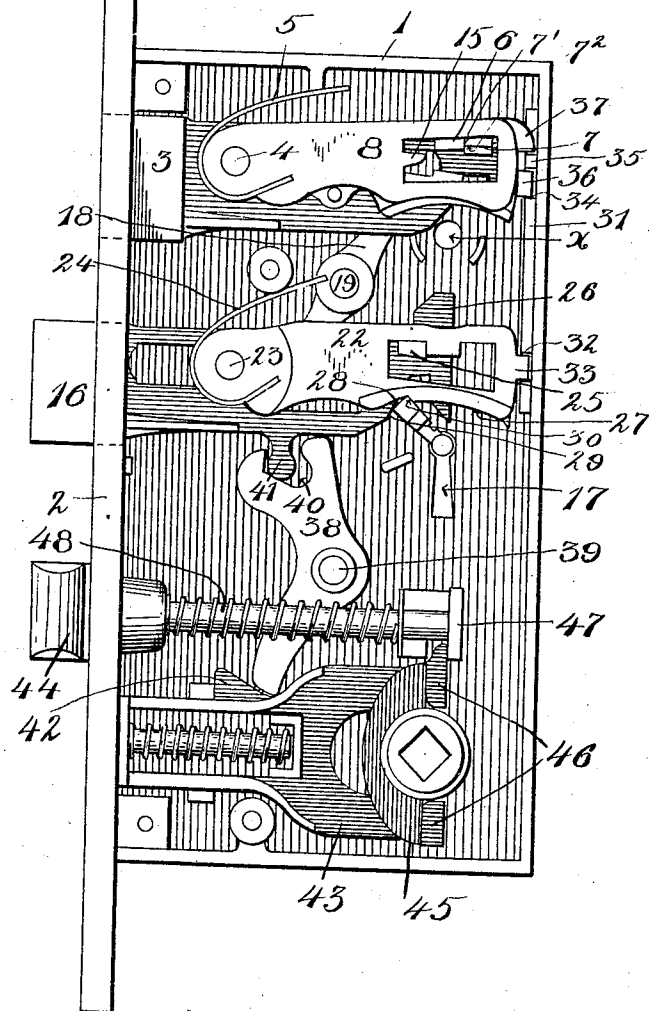


Fig. 1.



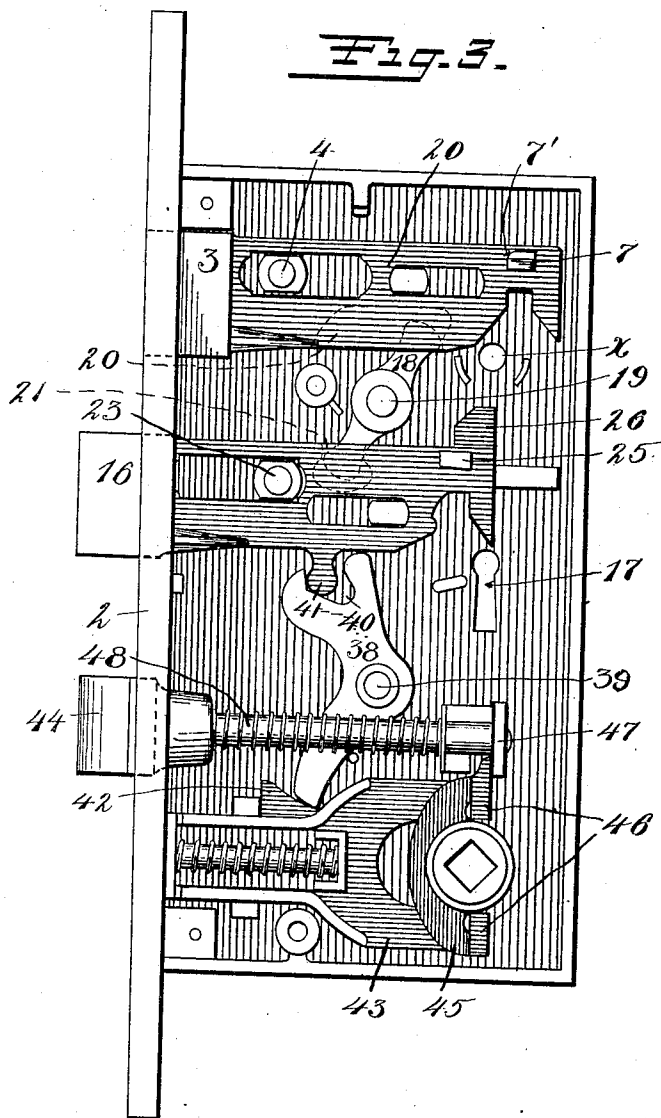
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HOTEL DOOR LOCK.
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3 SHEETS—SHEET 2.

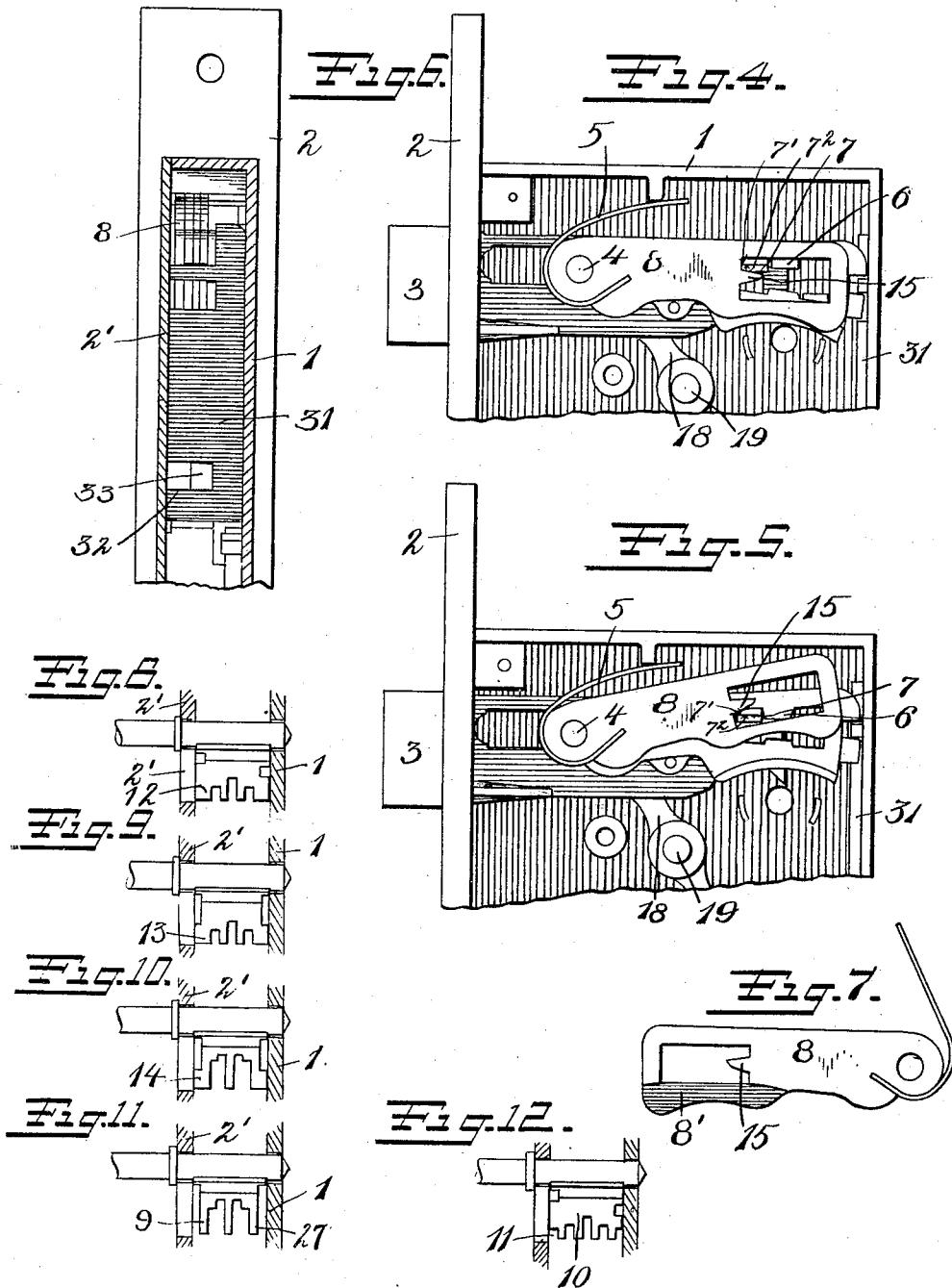


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Patented Aug. 24, 1909.
3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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HOTEL-DOOR LOCK.

932,364.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed July 15, 1908. Serial No. 443,594.

To all whom it may concern:

Be it known that I, AUGUST ARENS, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Hotel-Door Locks; of which the following is a full, clear, and exact description.

My invention relates to improvements in lock mechanism, and particularly to a lock for use on hotel doors, and the object thereof is to provide a mechanism of this character wherein the operation of the lock may be limited or extended as the exigencies of use may require. For example, it is often desirable that access to a room be limited exclusively to the tenant thereof in the case where a room is used for the display of goods; and to the proprietor of the hotel in case emergency may arise, who may open the room so employed in the absence of the tenant. At the same time, it is desirable under certain conditions that access to the room may be had by others than the tenant and proprietor, such as the chambermaid and housekeeper.

With the particular lock mechanism which forms the subject-matter of this invention, any one of five keys may be used, to wit, the pass key or guest key, ordinarily bitted so as to fit only one lock; second, a master key or servant's key, bitted to fit several locks, for example, all of the locks on one floor; third, a grand-master key for the housekeeper, by which she can lock or unlock any of the locks on the several floors; fourth, a display key, by which access to the room may be limited to the tenant, or occupant, and also the proprietor; fifth, an emergency key, which is held by the proprietor, and which is capable of operating the lock when locked by any of the other keys, including the display key.

The lock mechanism is so arranged that it may be operated interchangeably by locking and unlocking by any one of the first three keys mentioned, namely, the guest key, master key and grand-master key. When locked by the display or emergency key, however, the lock may be released only by the display or emergency keys, the same keys thus confining access to a room occupied for display purposes, to the occupant, and to the proprietor in case of emergency. The invention further provides that when

the mechanism is locked from the inside, it may be released from the outside only by the emergency key.

A further object of the invention is to provide means whereby the knob of the door will be held against rotation when the door is locked from the inside, in order to indicate to one attempting to enter the room that the room is already occupied.

With these and other objects in view, the invention consists in the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 represents the lock mechanism with the cap or cover plate removed from the case. Fig. 2 is an end view of the lock, looking toward the front plate. Fig. 3 is a view similar to Fig. 1, with certain parts of the locking mechanism removed for clearer illustration. Fig. 4 is a fragmentary view of the upper or main locking bolt, showing the position of the tumblers when the bolt is extended by certain keys. Fig. 5 is a view similar to Fig. 4, showing the position of the tumblers when operated by certain other keys. Fig. 6 is a view with the lock case in section, disclosing the rear ends of the tumblers and certain connecting mechanism. Fig. 7 is a view of the emergency tumbler removed from the lock. Figs. 8, 9 and 10 are views respectively of the ward ends of the guest, master and grand-master keys. Figs. 11 and 12 are similar views of the emergency and display keys.

In the embodiment of my invention herein selected for illustration, the lock comprises a case 1 for containing the lock mechanism proper, which is provided with the usual front plate 2 and a cap or cover plate 2' (Fig. 6) which, when the lock is secured in position within the door, is located toward the outside. Within the case a main locking bolt 3 is slidably mounted in suitable guides, upon which bolt the several tumblers are pivoted on a stud 4, which tumblers are adapted to be held in locking or unlocking position by means of springs 5 in the usual manner, certain of the tumblers being provided with the usual gates 6, which coöperate with the racking stump 7 mounted upon the bolt 3. The tumblers for this bolt may be of any usual construction, with the exception of the upper or outside tumbler 8, which I term the display and emergency tumbler, and which serves to prevent retraction of the bolt by

any but the emergency and display keys when the bolt has been projected by either of said keys. To this end, the emergency tumbler 8 is provided at the under side of its lower edge with a milled ledge 8' (Fig. 7), whereby either the emergency or display keys may travel beneath the sweep of the tumbler without changing its position. At the same time the remaining tumblers are raised to release the racking stump 7 from their gates 6 upon the projection of the bolt, after which the tumblers again drop behind the racking stump and hold it in locking position, as illustrated in Fig. 4.

Referring to Figs. 11 and 12, showing the wards of the emergency and display keys respectively, it will be seen that the ward 9 of the emergency key is narrow, to permit it to take beneath the sweep of the emergency tumbler and within the milled ledge 8' described. The ward 10 of the display key also is provided with a recess 11, which permits this ward to take beneath the sweep of the emergency tumbler and within its milled ledge. By this arrangement the bolt 3 (Fig. 4) may be projected without disturbing the position of the emergency tumbler 8, while at the same time the remaining tumblers are raised in the usual manner to release the racking stump 7. The wards 12, 13 and 14 (Figs. 8, 9 and 10) of the guest, master and grand-master keys, respectively, are so formed that they will at all times take against the sweep of the emergency tumbler. This tumbler, furthermore, is provided with a tongue 15, having a straight upper edge and a beveled lower edge, the latter being for the purpose hereinafter to be described. When the emergency tumbler is in the position indicated in Fig. 4, with the bolt 3 extended, the tongue 15 lies in range of a milled recess 7² in the end of racking stump 7, and should attempt now be made to retract the bolt by means of the guest, master or grand-master key, it will be seen that the contact of the wards of these keys against the sweep of said tumbler will serve to throw the tongue 15 against the narrowed end of the racking stump 7, whereby further movement of the keys to retract the bolt would be prevented, and hence the retraction of said bolt will be confined to the emergency and display keys.

Referring now to Fig. 5, the bolt 3 is here shown as having been extended by means of either the guest, master or grand-master keys, in which operation the wards 12, 13 and 14, respectively, of these keys, have taken against the sweep of the emergency tumbler and have so raised the tumbler that the beveled forward side 7' of the racking stump 7 in the forward movement of the bolt has engaged the lower beveled face of the tongue 15 of the emergency tumbler, so that said tongue lies above or over said racking stump when the bolt 3 is in extended position. It

will be obvious that in this position of the emergency tumbler the lock may be again readily retracted by any one of the keys, including change, master and grand-master, this operation being made possible by the keys herein mentioned by the fact that the tongue 15 of the emergency tumbler is now held above and clear of the racking stump 7 of the bolt. It is to be understood that the upper or main bolt 3 is adapted for direct operation only by a key inserted from the outside of the door, the key-hole for this bolt being located in the cap or cover plate, which is upon the outside of the case, an aperture X in the case being provided to receive the key stump.

A second bolt 16 adapted for direct operation only by a key inserted from the inner side of the door through a key-hole 17 in the case, is also provided, which bolt is operatively connected with the first or main bolt 3 by means of a lever 18 pivoted at 19 within the case, the ends of the lever taking within the recesses 20 and 21 in the first and second bolts respectively. The recesses in the bolts are so arranged (as shown in Fig. 3) that projection of the upper bolt will serve to retract the lower bolt, if the latter has been previously projected, and, conversely, the projection of the lower bolt will serve to retract the upper bolt if the latter has been previously projected. By this means the door may be unlocked from either side by the movement of the proper keys, irrespective of which of the bolts is in projected or locking position, as will hereinafter appear. The second bolt 16 is provided with a tumbler 22, pivoted at the point 23 on said bolt and provided with the usual operating spring 24 to hold the same in locking or unlocking position with reference to the racking stump 25.

In order that the occupant of the room may not be disturbed, except in case of emergency, when the door is locked from the inside, I provide means whereby the bolts may not be operated from the outside by any but the emergency key. To this end, the lower or second locking bolt is provided with an upwardly projecting lug 26, which, when the bolt is projected, lies in the path of the wards of any key inserted from the outside. An inspection of the construction of the wards of the keys shown in Figs. 8 to 12 inclusive, will indicate that the wards of each of these keys (with the exception of the emergency key) are of such thickness that they engage the bottom plate of the case and lie closely adjacent to the cap plate when in operative position in the outer key-hole. It will be evident, therefore, that if the lug 26 upon the second bolt 16 lies in the path of this key-hole, it will be impossible to insert such keys sufficiently to clear the cap or cover plate, hence operation of the bolts will be prevented. In case, however, it is desired

able or necessary to unlock the door from the outside when locked upon the inside, the same may be accomplished by the use of the emergency key, which, as shown in Fig. 11, has its ward 27 cut away sufficiently to permit the wards to be completely inserted within the lock case from the outside, notwithstanding the fact that the lug 26 of the second bolt may lie in line with the outside key-hole. The inner or second bolt may then be retracted through the intervention of the pivoted lever 18, by first projecting the main or upper bolt 3, and the latter may then be retracted in the usual manner by the same key. To permit the retraction of the lower bolt through the intervention of the lever 18, it is necessary that means be provided to free the racking stump 25 of said bolt from the gate of the tumbler 22. To this end, the sweep 27' of said tumbler is provided with a recess 28, within which the ward of a key inserted in the inner key-hole will rest when the inner bolt is in projected position, it being understood that it is impossible to remove a key from the inner key-hole when the inner bolt is projected. The ward of the key in this position also takes against a shoulder 29, upon said bolt 16, so that immediately upon retractive movement of said lower bolt the tumbler 22 thereof will immediately be raised by rotation of the key ward against the sweep of the tumbler within the recess 28, whereby the tumbler will be immediately released from the racking stump 25 and the bolt be free for complete retraction.

In order to permit of the unlocking of the door from the inner side, should the upper or outside bolt be inadvertently projected when the room is occupied, I provide connecting mechanism between the tumbler 22 of the lower or inner bolt and the tumblers of the upper bolt, whereby when said tumbler of the lower bolt is lifted for retraction of the bolt, the tumblers of the upper bolt will be simultaneously freed from the racking stump 7. To this end, I provide the connecting plate 31 having a notch 32, which takes over a projection 33 upon the rear end of the tumbler 22 of the lower bolt. The said connecting plate 31 is also provided at its upper end with suitable shoulders 34 and 35, which take against projections 36 and 37 respectively upon the rear ends of the tumblers of the upper bolt.

A further desirable feature of the invention consists in the means whereby the knob spindle and knobs may be held against rotation when the door is locked from the inside to indicate that the room is occupied. To this end, I provide a rocking lever 38 pivoted on the case at 39 (Figs. 1 and 3) having a slot 40 in its upper end adapted to receive a projection 41 on the lower side of the lower bolt 16. The opposite arm of said lever is adapted to engage a shouldered lug 42 car-

ried by the roll-back yoke 43, which operates the latch 44. Said yoke 43 is adapted to be operated by the roll-back 45 which takes against lugs 46 upon the inner end of said yoke, one of which lugs engages the headed end 47 of the latch bar 48. From an inspection of Figs. 1 and 3, it will be obvious that when the lower bolt is projected, the lower arm of lever 38 will engage behind the lug 42 of the roll-back yoke 43, thereby preventing rotation of said roll-back 45 and consequently of the knob spindle and knobs.

While I have herein described the particular construction and arrangement of parts whereby the objects of my invention may be attained, it is obvious that the same may be varied in detail without departing from the spirit and scope of the invention.

What I claim is:

1. In a lock mechanism, the combination of a bolt normally operable in either direction by any of a series of keys, including an emergency key and a display key, and a member actuated by all but the display and emergency keys to prevent the unlocking of said bolt by any other of said keys when locked by either the emergency or display key.

2. In a lock mechanism, the combination of a bolt normally operable in either direction by any of a series of keys, including an emergency key and a display key, and a member actuated by all but the display and emergency keys to prevent the unlocking of said bolt by any other of said keys when locked by either the emergency or display key, a second bolt operable from the inside, and means to prevent unlocking of the door from the outside by any but the emergency key when said second bolt is locked.

3. In a locking mechanism, the combination of a bolt normally operable in either direction from the outside by any of a series of keys, including an emergency and a display key, a second bolt operable in either direction from the inside by any of said keys, connecting means between said bolts whereby either bolt may be retracted by the projection of the other, and a member actuated by all but the display and emergency keys to prevent unlocking of said first bolt by any other of said keys when locked by either the emergency or display key, and means for preventing retraction of said second bolt from the outside by any but the emergency key.

4. In a locking mechanism, the combination of a bolt operable in either direction from the outside by any of a series of keys, including an emergency and a display key, a second bolt operable in either direction from the inside by any of said keys, connecting means between said bolts whereby either bolt may be retracted by the projection of the other, a member actuated by all but the display and emergency keys to prevent operation of said first bolt by any but said

emergency or display key when projected by either of said keys, and a lug on said second bolt adapted to prevent the operative insertion of any but the emergency key from the outside when the second bolt is projected whereby operation of the first bolt and through it retraction of the second bolt from the outside is limited to said emergency key.

5. In a locking mechanism, the combination of a bolt normally operable in either direction from the outside by any of a series of keys, including an emergency key and a display key, a second bolt operable in either direction by any of said keys, connecting means between said bolts whereby either bolt may be retracted by the projection of the other, a member actuated by all but the display and emergency keys to prevent unlocking of said first bolt by any other of said keys when locked either by the emergency or display key, and means to limit the operation of the first bolt to the emergency key when the second bolt is projected.

6. In a locking mechanism, the combination of a bolt operable in either direction from the outside by any of a series of keys, including an emergency and a display key, a second bolt operable in either direction from the inside by any of said keys, connecting means between said bolts whereby either bolt may be retracted by the projection of the other a member actuated by all but the display and emergency keys to prevent unlocking of said first bolt by any other of said keys when locked by either the display or the emergency key, and means to prevent the operative insertion of any but the emergency key from the outside when the second bolt is projected whereby operation of the first bolt and through it retraction of the second bolt from the outside is limited to said emergency key.

7. In a lock mechanism, the combination of a bolt adapted to be actuated by any of a series of keys, including a display key and an emergency key, of a tumbler adapted, when the bolt is thrown to its locked position by the display key, to prevent the operation of any other key but the display and emergency keys.

8. In a lock mechanism, the combination of a bolt, tumbler mechanism adapted to be actuated by any one of a series of keys, including a display key and an emergency key, and a member operable, when the tumbler mechanism and bolt have been actuated by the display key, to prevent the operation of the tumbler mechanism and bolt by any other but the display and emergency keys.

9. In a lock mechanism, the combination of a bolt, a main tumbler mechanism adapted to be actuated by any one of a series of keys, including a display key and an emergency key, a tumbler operable when the main tumbler mechanism and bolt have been actu-

ated by the display key or emergency key to prevent the retraction of the bolt by any but the display and emergency keys.

10. In a lock mechanism, the combination of a bolt and a series of main tumblers adapted to be actuated by a plurality of keys, including a display key and an emergency key, of a tumbler actuated by all of the keys except the display key and emergency key, and adapted, when the bolt is thrown to the locked position by the display key or emergency key, to prevent the unlocking of the bolt by any other but the display and emergency keys.

11. In a lock mechanism, the combination of a bolt normally operable in either direction by any of a series of keys including an emergency key and a display key, a racking stump on said bolt, tumbler mechanism co-operating with said stump and including a tumbler having means adapted to be positioned in certain relation to said racking stump by said emergency and display keys to prevent unlocking of the bolt by any other of said keys.

12. In a lock mechanism, the combination of a bolt normally operable in either direction by any of a series of keys including an emergency and a display key, a racking stump on said bolt, tumbler mechanism co-operating with said stump and including a tumbler having a tongue adapted to be positioned below said stump when operated by said emergency or display keys to prevent unlocking of said bolt by the others of said keys.

13. In a locking mechanism, the combination of a bolt normally operable in either direction by any of a series of keys including an emergency and a display key, a racking stump, tumbler mechanism co-operating therewith, including a tumbler adapted to be so positioned by said emergency or display keys that the bolt may be unlocked only by the emergency or display keys.

14. In a locking mechanism, the combination of a bolt operable in either direction from the outside, a second bolt operable in either direction from the inside, connecting means between said bolts whereby either of said bolts may be retracted by the projection of the other, a tumbler for the second bolt, and means on said tumbler adapted to co-operate with the ward of a key inserted from the inside to free said tumbler from its racking stump when said second bolt is retracted through said connecting means by operation of the first bolt.

15. In a locking mechanism, the combination of a bolt operable in either direction from the outside, a second bolt operable in either direction from the inside, connecting means between said bolts whereby either of said bolts may be retracted by the projection of the other, a tumbler for the second bolt

and a cam shoulder on said tumbler, and a shoulder on said second bolt adapted to cooperate with the ward of a key inserted from the inside to free said tumbler from its racking stump when said second bolt is retracted through said connecting means by operation of the first bolt.

16. In a lock mechanism, the combination of a bolt, a latch, a roll-back yoke for operat-

ing said latch, a roll-back for operating said yoke, a shoulder on said yoke, and means operated by said bolt and cooperating with said shoulder, to prevent rotation of the roll-back when the bolt is in locking position.

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