

Jan. 29, 1935.

E. O. GIDLUND

1,989,137

## LOCK

Filed June 13, 1930

3 Sheets-Sheet 1

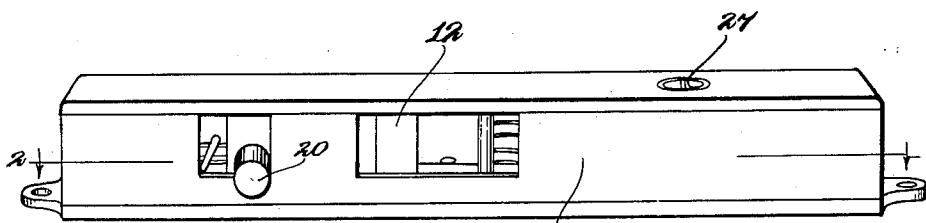
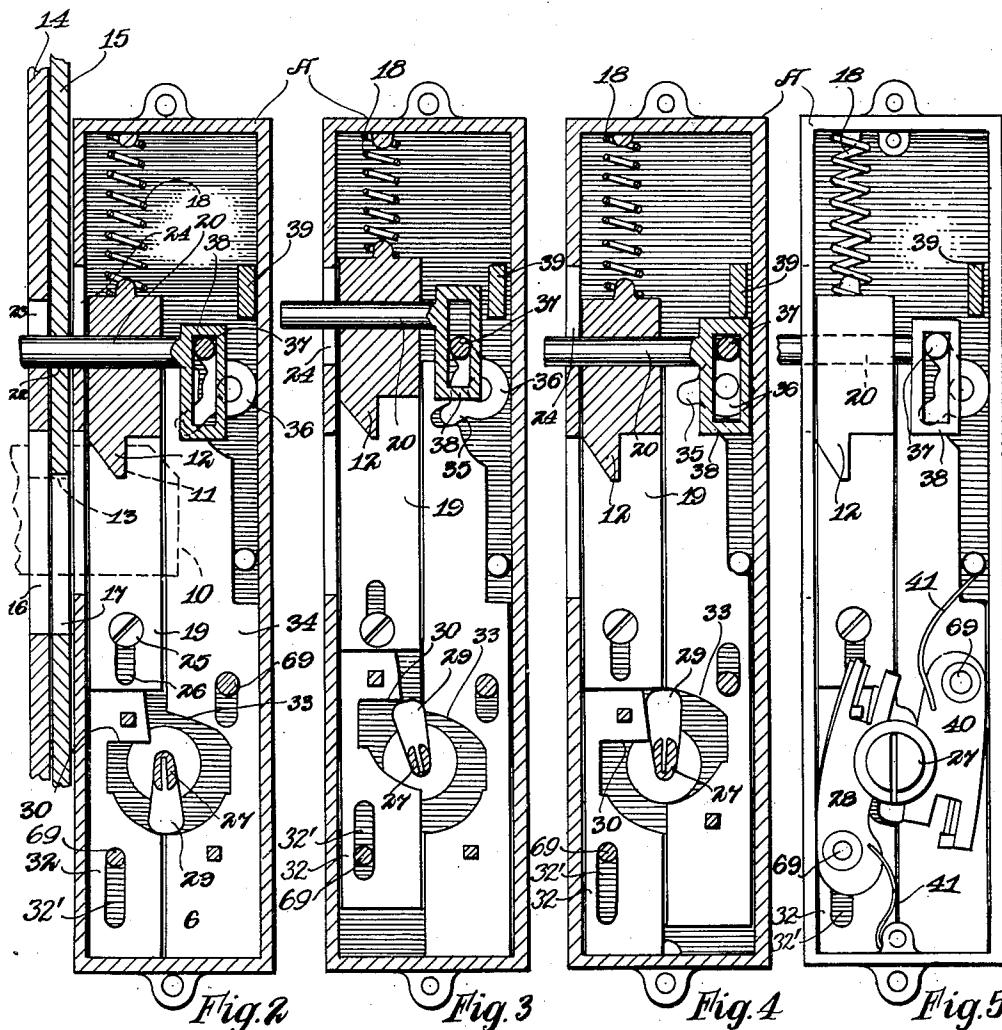


Fig. 1

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Inventor

*Eric O. Gidlund*

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Howard Pichay

Attorney

Jan. 29, 1935.

E. O. GIDLUND

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Filed June 13, 1930

3 Sheets-Sheet 2

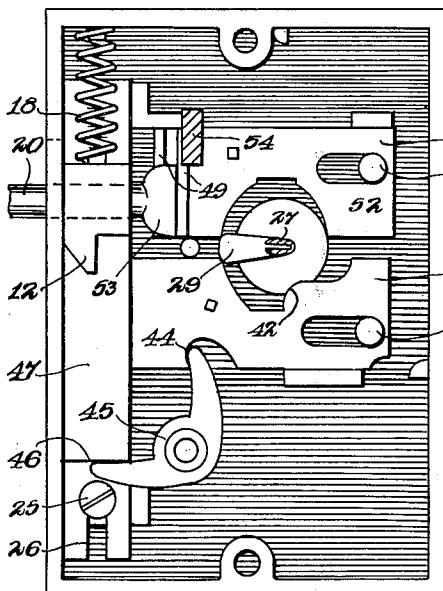


Fig. 7

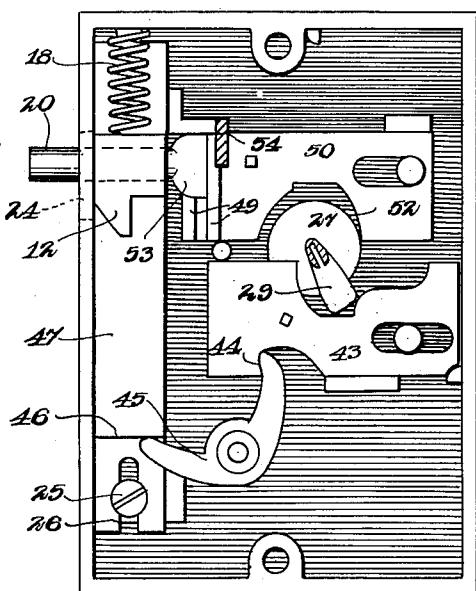


Fig. 8

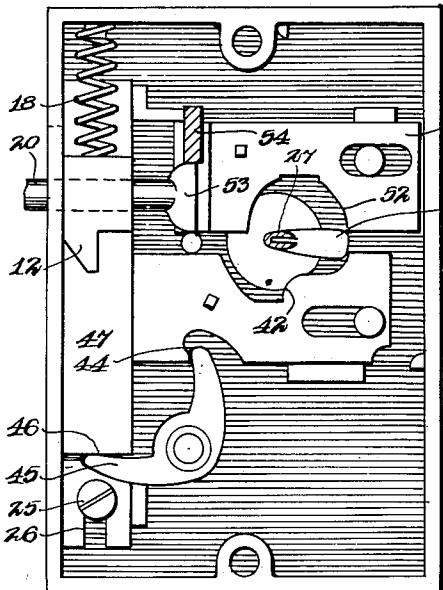


Fig. 9

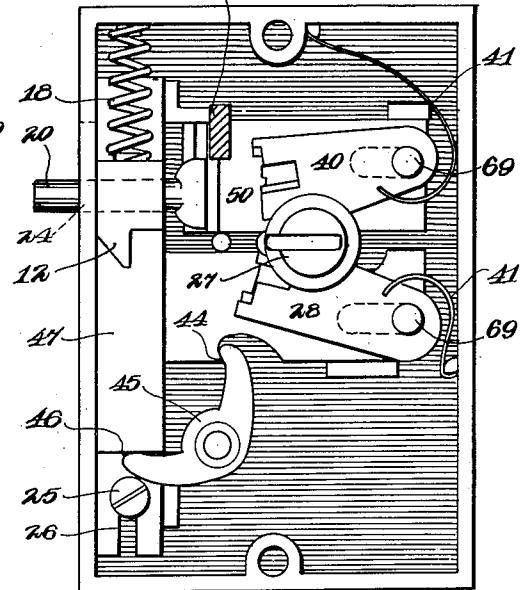


Fig. 6 Inventor  
Eric O. Gidlund

By

H. marsh Fischer

Attorney

Jan. 29, 1935.

E. O. GIDLUND

1,989,137

LOCK

Filed June 13, 1930

3 Sheets-Sheet 3

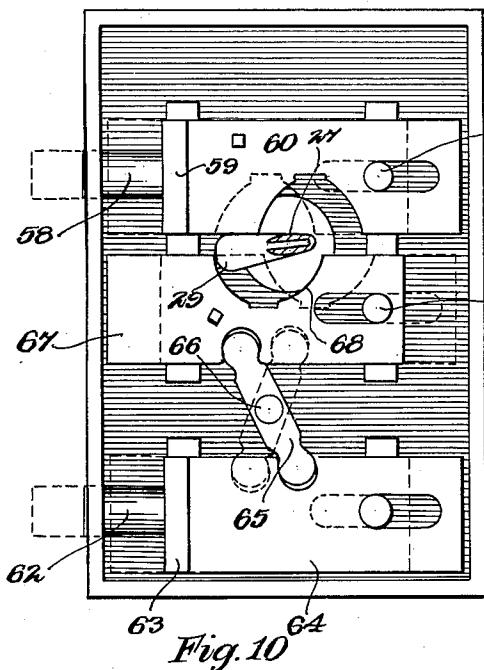


Fig. 10

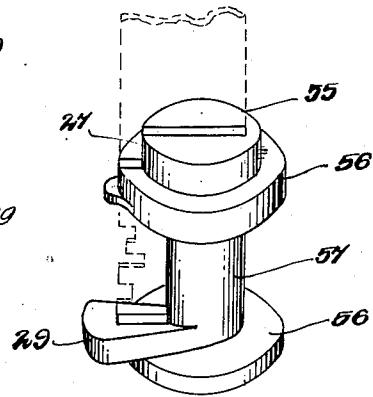


Fig. 11

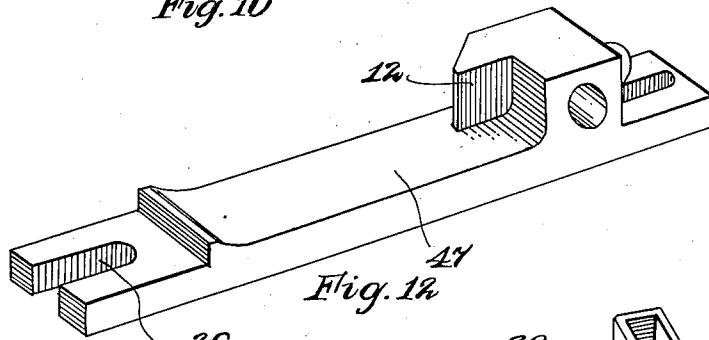


Fig. 12

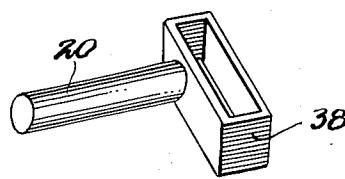


Fig. 13

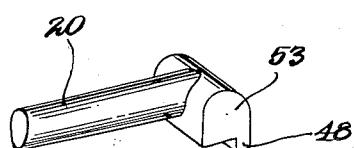


Fig. 14

Inventor  
Eric O. Gidlund

By

Howard P. Becker

Attorney

## UNITED STATES PATENT OFFICE

1,989,137

## LOCK

Eric O. Gidlund, St. Paul, Minn., assignor to St. Paul Foundry Company, St. Paul, Minn., a corporation of Minnesota

Application June 13, 1930, Serial No. 460,915

13 Claims. (Cl. 70—69)

This invention relates to locks of a particular type wherein a certain structure is employed having a materially different nature than the ordinary lock in that it is provided with a single key post which may be operated either by a single key to give one or more locking operations, or by more than one key, each operating in the same single key post.

This lock is particularly fitted for use as a jail cell lock, or the like, and also has other advantages of providing a lock such as for safety deposit vaults and the like, where two different keys are necessary to operate the same and where the two or more operations may be obtained through the single key post which operates the wards of the lock.

It is also a feature of the invention that when it is desirable the lock may be so arranged that two keys are necessary for operating two bolts, each key being adapted to operate a single bolt. In this form, one key at a time is used by reason of the single key post which is adapted to receive the several keys made in a manner to operate the different wards of the lock.

The drawings illustrate the lock as it may be operated in conjunction with gang bars and the like, which are employed in prison cells and construction where a multiplicity of cell locks are connected together by means of gang bar operating means so that a number of the locks may be operated at the same time. Such locking mechanisms as are associated with the type of lock that is illustrated in the drawings are disclosed in Patent No. 1,043,748 dated November

35 5, 1912, and Patent No. 1,542,205 dated June 16, 1925. In these former jail locking mechanisms it will be noted that two separate key posts are employed in each lock as is also true of other prior jail door locks and by means of this simple

40 structure a lock is provided having a more simple nature yet, being just as effective in accomplishing the desired results as the prior locks used heretofore.

In this form of the lock illustrated where it is provided with a single key post and bolt and with two sets of wards or tumblers, one set of wards or tumblers is adapted to operate to allow the bolt to move vertically to unlock the door, while the other set of wards operates to allow the bolt

50 to move horizontally to dead lock the individual lock.

The construction of this lock has the advantage of providing a compact construction of lock which may have a strong substantial construc-

55 tion and yet is very much smaller than prior art

locks used for the same purpose. This is accomplished owing to the peculiar nature of this lock where a single key post is employed which is positioned between two sets of wards. The wards prevent the turning of the key and post unless the proper key is used and when the key is inserted in the key post and turned, the bolt, or one of the bolts, is actuated in the desired manner.

The several features, objects and advantages, together with a fuller detail which may be more comprehensive of the invention will be more clearly defined as hereinafter set forth.

In the drawings forming part of this specification:

Figure 1 is a perspective view of my lock.

Figure 2 is a cross sectional view on the line 2—2 of Figure 1, showing the wards removed, and the lock in neutral position.

Figure 3 is a similar view of Figure 2, illustrating the lock in unlocked position.

Figure 4 is a similar view of Figure 2, illustrating the lock in dead locked position.

Figure 5 is an elevation view of the lock, the cover having been removed, with the wards in operative position.

Figure 6 is an elevation view of a slightly different modification of lock, the cover having been removed.

Figure 7 is a cross sectional view of the lock shown in Figure 6, the section being taken along the inner face of the cover, and the wards removed, showing the lock in neutral position.

Figure 8 is a similar view to Figure 7, the lock being illustrated in unlocked position.

Figure 9 is a similar view to Figure 7, illustrating the lock in dead locked position.

Figure 10 is a cross sectional view of a slightly different modification of lock, the section being taken directly below the lock cover, and the wards having been removed.

Figure 11 is a perspective view of the key post of my lock.

Figure 12 is a perspective view of one of the bolt actuating plates.

Figure 13 is a perspective view of the bolt used in one modification of my lock.

Figure 14 is a perspective view of the bolt used in another modification of my lock.

My lock A as illustrated in the first five figures of the drawings is adapted to act in conjunction with a rigid notched plate or catch 10 which is secured to the cell door. This plate member 10 is provided with a notch 11 into which the latch bolt 12 within the lock A is adapted to fit. The

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plate member 10 is also provided with a notch 13 into which the gang lock operating bar or bars 14 and 15 are adapted to fit. The bars 14 and 15 are provided with slots 16 and 17 through which the plate member or catch 10 may extend when the cell door is slid shut. If the bars 14 and 15 are extending down into the notch 13, or if the latch bolt 12 is extending down into the notch 11, the cell door cannot be opened.

- 10 There are two ways of operating the lock to allow the plate 10 to be free so that the door of the cell may be opened. If the lock A is in the neutral position illustrated in Figure 2 of the drawings, it may be seen that the latch bolt 12 is engaged in the notch 11, and that the gang lock operating bar 15 is extending down into the notch 13. Both the latch bolt 12 and the bar 15 must be removed before the door may be opened. The latch bolt 12 is held in latched position by the coil spring 18, and is formed integral with the sliding plate 19. Through the upper portion of the latch bolt 12 a locking bolt 20 is slidably positioned. This locking bolt 20 extends through the hole 22 in the bar 15, and through the slot 23 in the bar 14, passing through an opening 24 in the side of the lock A. A screw 25 extending through a slot 26 in the sliding plate 19 guides the movement of the plate 19 and latch bolt 12.
- 30 If the door is to be opened by means of the gang lock operating bars 14 and 15, the bar 14 associated with each of the locks A is raised vertically by suitable mechanism. The lower edge of the slot 23 in the bar 14 bears against the locking bolt 20, and as the bar 14 is raised, the locking bolt 20 is raised. As the bolt 20 passes through a hole 22 in the bar 15, and through the latch bolt 12, these members are raised with the bar 14 out of engagement with the plate 10, unlatching the cell doors and allowing them to be opened by means of suitable mechanism.

If the lock is to be operated by means of a key inserted in the key post 27, the lock being in the position illustrated in Figure 2, the key is inserted in the post 27, and is of proper design to fit with the wards 28 to allow the key post 27 to be turned. As the key is turned, a lug 29 upon the key post 27 strikes a shoulder 30 upon a sliding plate 32 which abuts the end of the sliding plate 19, and forces the sliding plates 32 and 19 upwardly against the tension of the spring 18, moving the latch bolt 12 out of engagement with the notch 11. A stud 69 acts in a slot 32' in the plate 32. This stud or post guides and limits the movement of the plate 32 which also is guided by sliding along a casing wall. The tumblers 28 lock the plate 32 from upward or latch bolt operating movement. The locking bolt 20, extending both through the latch bolt 12 and the bar 15, carries the bar 15 out of engagement with the notch 13. The position of the sliding plates, latch bolt, locking bolt, and lug 29 when the latch bolt 12 is retracted by means of a key is illustrated in Figure 3 of the drawings.

- 65 It is sometimes desirable to dead lock the lock mechanism A, in order that the latch bolt cannot be operated by the gang lock operating bars 14 and 15 and so that the cell which is dead locked will not be opened with the rest of the cells. 70 When it is desired to dead lock a certain cell, it is only necessary to insert a key in the post 27 and turn the post in the opposite direction to that by which the door is unlocked. When the key is turned, the lug 29 is forced against the shoulder 33 upon a sliding plate 34 and acts as a

cam to slide the plate 34 upwardly. A lug 35 or gear tooth formed upon a cam 36 fits a notch in the upper portion of the plate 34, and as the plate 34 moves upwardly, the cam 36 is turned about its axis. A pin 37 upon the cam 36 fits into the loop-like end 38 of the bolt 20, and as the cam 36 is revolved, the bolt 20 is moved horizontally by this pin 37 into the position illustrated in Figure 4 of the drawings. When the locking bolt 20 is in this position, the loop end 38 is positioned beneath the lug 39, and when in this position, the locking bolt 20 is locked against upward movement, holding the latch bolt 12 in the notch 11. The bolt 20 is at the same time withdrawn from the slot 23 in the bar 14, and as the bar 14 is raised to unlock other cell doors in unison, the lock, such as set in Figure 4, in dead locked position will not be affected.

10 It is obvious that if it is desired, the wards 40, permitting the turning of the key and post to 20 dead lock the lock may be of different pattern from the wards 28, making a different key necessary for unlocking the cell from that used to dead lock the lock. The wards 28 and 40 are held under the spring tension of the springs 41, and act in the 15 usual well known manner to prevent operation of the lock A without the proper key.

20 Each of the conditions into which the lock may be placed are illustrated in Figures 2, 3 and 4 of the drawings. When it is desired to so lock the 30 cell doors that no door may be opened individually, the bar 14 is lowered into the notch 13 and held in this position. It is then not possible to raise the locking bolt 20. The formation of the locking bolt 20, and the loop end thereon, is more 35 clearly illustrated in detail in Figure 13 of the drawings.

25 The modification of the lock A illustrated in Figures 6 to 9 inclusive, is very similar in principle to that illustrated in the first five figures, but 40 requires a casing of a different shape. In this type of lock, the latch bolt 12 may be operated by the gang lock operating bars 14 and 15 in the manner hereinbefore described. The latch bolt 12 is operated by the key in the key post 27 in a 45 somewhat different manner. The lug 29 upon the key post 27 strikes against the shoulder 42 upon the sliding plate 43, forcing the same horizontally. A notch 44 engages the end of a bell crank lever 45 which pivots on its axis, the other end of 50 the lever bearing against a shoulder 46 upon the sliding latch plate 47 formed integrally with the latch bolt 12. Thus as the plate 43 moves horizontally, the sliding latch plate 47 is forced upwardly, unlatching the lock by forcing the latch bolt 12 out of engagement with the notch 11, against spring tension of the spring 18. In this type of lock, the bolt 20 is formed with an enlarged end 53 having a downwardly extending flange 48 which is adapted to fit and slide between two flanges 49 upon a slide member 50. In this manner, any horizontal movement of the slide member 50 is transmitted to the bolt 20, and the bolt may be withdrawn from engagement with the bar 14. The slide member 50 is actuated 55 by the lug 29 upon the key post 27, the lug 29 striking the shoulder 52 thereon and forcing the member 50 in a horizontal direction. By this means the bolt 20 is withdrawn from the slot 23 in the bar 14, and the enlarged end 53 of the locking bolt 20 is positioned beneath a lug 54 projecting downwardly from the casing cover, acting in the manner which has been described to dead lock the cell. The position of the parts when the cell is dead locked is illustrated in Figure 9 of 75

the drawings, while the position of the moving parts when the cell door is unlocked by means of a key is shown in Figure 8. The sliding latch plate 47 and the locking bolt 20 are illustrated in Figures 12 and 14, respectively, of the drawings.

The key post 27 is illustrated in detail in Figure 11 of the drawings, with a key shown therein in dotted lines. The key post is formed with a cylindrical bearing cylinder 55 on the top and bottom thereof, with a circular flange 56 on these cylinders to hold the post in position within the casing. The top and bottom cylinders are joined by a guiding channel portion 57 adapted to contain the rear portion of the key and to allow the front portion of the key provided with shoulders to fit the wards to project from the same in the manner illustrated in the drawings.

If it is desired to form my lock with two bolts rather than a single bolt, the same may be formed in the manner illustrated in Figure 10 of the drawings. In this modification, one bolt 58 is secured to a flange 59 at one end of a sliding member 60, which sliding member 60 is actuated by the lug 29 of the key post 27 in the manner hereinbefore described. The other bolt 62 is secured to a flange 63 at one end of the sliding member 64. The slide 64 is connected by means of a lever 65 pivoted at 66 to a slide 67. The slide 67 is provided with a shoulder 68 against which the lug 29 may act as the key post 27 is turned to move the slide horizontally. Thus when the lock is in the unlocked position illustrated in Figure 10, the key is inserted in the proper position and turned, moving the slide 67 to the right, and operating the lever 65 to force the slide 64 and the bolt 62 to the left, locking the lower bolt. As different sets of tumblers are used, being pivoted on the posts 69, the key must be removed from the key post 27 and a second key, suitable for operating the second set of tumblers, not illustrated in the drawings, is inserted in the post. The post may then be turned to force the slide 60 to the left, locking the second bolt, or upper bolt. Unlocking the lock is the reverse of this action, one key being inserted in the post 27 to unlock the upper bolt, the key being replaced by a second key, and the lower bolt being unlocked. The locked position of the bolts is illustrated in dotted lines in Figure 10.

In accordance with the patent statutes, I have endeavored to set forth the best embodiment of my locks, particularly in a form adapted for use with jail cells and such form as may be employed to use a double locking bolt, nevertheless, it is obvious that various other adaptations may be equally suitable to my locks and the principles thereof, all of which I desire to embody in this invention within the scope of the following claims.

60 I claim:

1. In a lock, a multiplicity of sets of key tumblers, each set having a different formation to require a different key formation to operate the same, and a single key post between said tumbler sets whereby each set of tumblers is reversibly operable in a single rotative direction from the same key post by different keys.

2. A lock including, a locking bolt, movable bars for operating said bolt, an extension from said bolt adapted to engage said movable operating bars to facilitate dead locking and unlocking of said bolt by said operating bars, a key receiving post, and several sets of tumblers positioned in said lock in a manner to be operated from said 75 single key receiving post when the proper key is

placed in said post to fit with the tumblers of said sets.

3. A lock for a door having a bolt for engaging in the catch of the door, means for operating said bolt to lock and unlock the same, means for dead locking said bolt, several sets of tumblers for releasing said bolt for operation, one of said sets of tumblers being adapted to release said means for operating said bolt to unlock the same and another set being adapted to release said means for dead locking said bolt against any movement, and a single key receiving post for operating each set of said tumblers.

4. A lock including, a latch bolt having means for engaging with the catch of a door, said bolt being slidably and contained entirely within said lock, a locking bolt extending through said latch bolt and having an operating end adapted to extend out of said lock, means for operating each of said bolts, tumblers for releasing said means for operating said bolts and a single key post adapted to receive the key for operating said tumblers for the respective bolts.

5. A lock including, a casing, a slidable locking latch bolt within said casing, spring means for holding said bolt normally in one position, a slot in said casing adapted to receive a door catch plate to engage with said bolt, a second bolt extending through said first bolt and out of said casing, a slot out of which said second bolt extends in said casing, operating bars adapted to co-operate with said second bolt outside of said lock casing, cam means for operating said second bolt, a set of lock tumblers for each of said bolts and a single key receiving post interposed between said tumblers in a manner to permit said tumblers to be operated from said single post by the respective keys having notches adapted to fit said tumblers.

6. A lock including, a casing, a locking latch bolt vertically slidable within said casing, a locking bolt horizontally slidable within said casing and adapted to extend through said latch bolt, said latch bolt being contained within said casing, a set of tumblers for said latch bolt, a set of tumblers for said locking bolt, a single key post between said tumblers to operate the respective tumblers from the single key post to provide a compact lock structure and means for operating said latch bolt slidably vertically when the respective tumblers are released and said locking bolt horizontally when the respective tumblers are released for operating the same.

7. The combination of a casing, locking bolts within said casing one of which projects therefrom forming locking means for a door, the other one of said bolts operable to limit the movement of said one bolt, a movable lug on said casing operable to limit the movement of said other bolt, several sets of tumblers for locking said bolts against operation, a single key receiving post for said sets of tumblers and spring means for holding said tumblers in relation to said key post.

8. The combination of a lock casing, bolt and latch bolt means within said casing, said bolt means extending into engagement with said latch bolt means to permit said latch bolt means to be raised by said bolt means when said bolt means is operated in one direction, a shoulder for dead locking said bolt means to dead lock said latch bolt means, a set of tumblers for said latch bolt means, a set of tumblers for said bolt means and a single key post for receiving key 75

- means adapted to correspond with the respective tumblers to operate the same.
9. A lock including, a casing, a latch bolt means operable within said casing, a bolt means operable within said casing and extending therefrom, an operative connection between said latch bolt means and said bolt means whereby said latch means may be dead locked by said bolt means and operated to unlatch the same, shoulder means for engaging said bolt means to hold the same in dead locked position to dead lock said latch bolt, tumblers positioned in sets to operate said latch bolt means and said bolt means respectively independent of each other
- 10 and a single key receiving cylinder associated with said sets of tumblers.
10. A lock including, a casing, a latch bolt means, a bolt means, a shoulder means for holding said bolt means in dead locked position to dead lock said latch bolt means, slidable plate operating means for operating said latch bolt and said bolt in the respective movements to lock and unlock said locking mechanism, two sets of tumblers having different key notches formed therein and a single key post interposed between

the same adapted to be operated by different keys to operate said different sets of tumblers to operate said latch bolt and bolt means in the respective positions to provide a lock with dead locking means and latch bolt raising means.

11. A lock including, a casing, a latch bolt slideable in said casing, a key post operable to slide said bolt into unlocking position, a stationary locking lug in said casing and means engageable against said lug operable by a key in said key post to lock said bolt against movement.

12. A lock including, a casing, a latch bolt operable in said casing, a key post operable to release said bolt from latching position, a lug in said casing and secured thereto, means engageable against said lug for locking said bolt in locked position, said last named means operable from a further rotation of said key post.

13. A lock including, a slideable latch bolt, bars for operating said latch bolt, a key post operable to slide said latch bolt, a projection on said latch bolt engageable by said operating bars to operate said latch bolt, and means operable from said key post to lock said latch bolt against movement by said bars.

ERIC O. GIDLUND. 25