A. A. PAGE.

LOCK.

APPLICATION FILED JULY 20, 1912.

1,126,560.

Patented Jan. 26, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

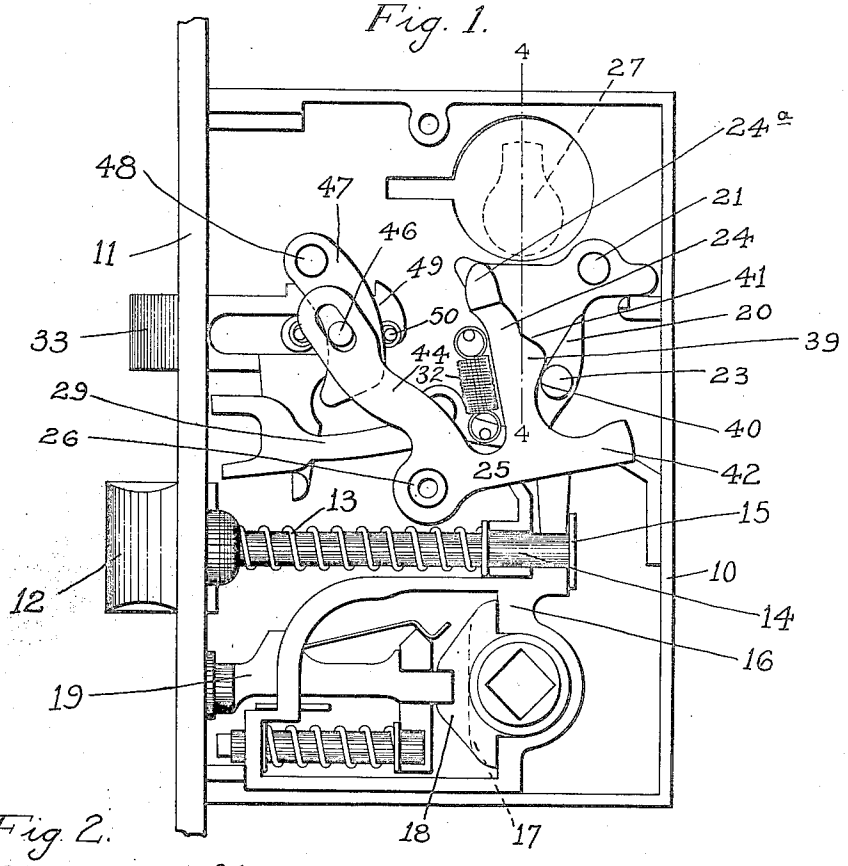


Fig. 2.

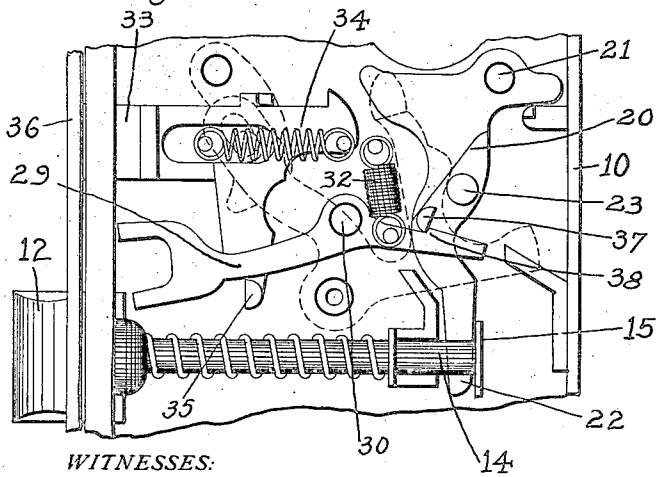
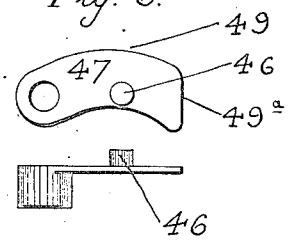


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 3.

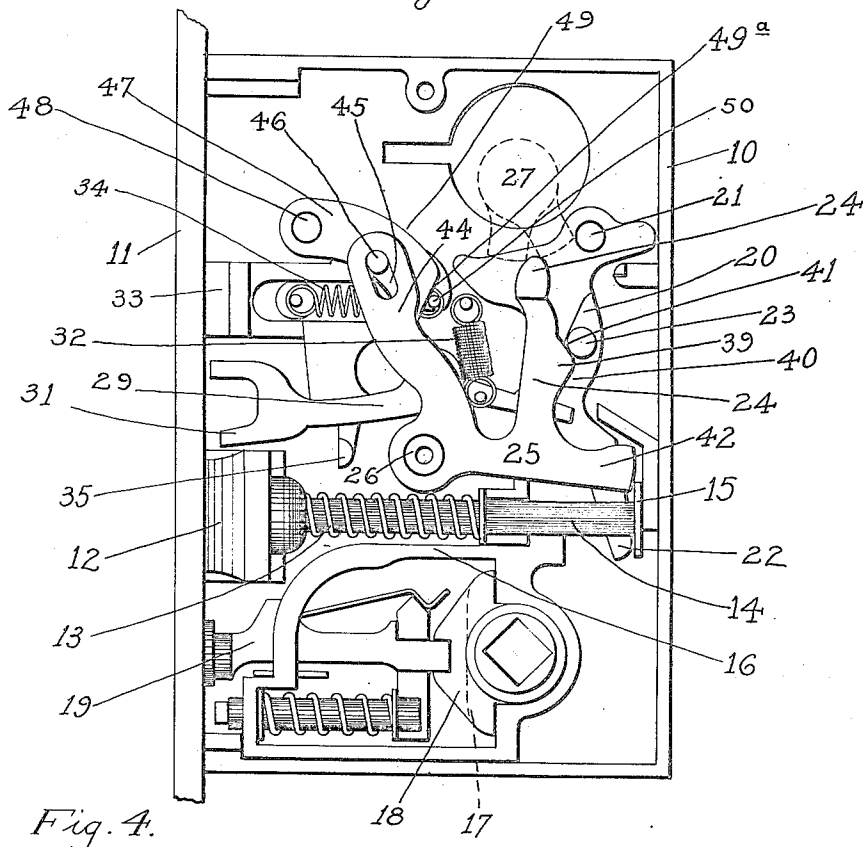


Fig. 4.

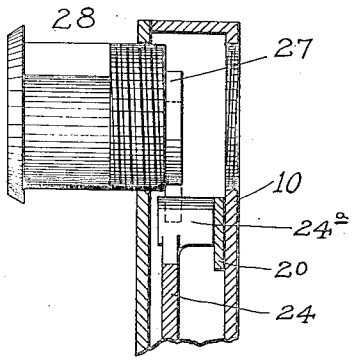
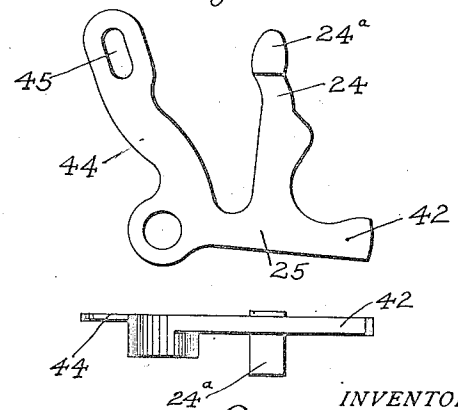


Fig. 5.



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LOCK.

1,126,560. Specification of Letters Patent. Patented Jan. 26, 1915.

Application filed July 20, 1912. Serial No. 710,570.

To all whom it may concern:

Be it known that I, ALBERT A. PAGE, residing in East Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to locks, and more particularly to locks for schoolhouses and similar institutions where it is desirable to have the doors unlocked from the inside at all times, in preparation for such contingencies as fires or panics, such locks being releasable from the outside, however, only by means of a proper key. In other words, the invention relates especially to a lock having a latch bolt retractable from the outside of the door only by means of a key, and retractable from the inside of the door by means of a knob or other manually operable latch retracting device. Nevertheless, certain features of the improved lock are applicable to locks of other types, as will be obvious from the following description.

The primary object of the invention is to provide improved means for holding the latch bolt in its retracted position, so that the door can be freely opened at certain times, if desired, by merely pushing or pulling the same, without the necessity of operating a knob or the like, or using a key.

Other objects of the invention are to furnish means whereby the latch bolt is held in its retracted position only when retracted by means of the key, it being impossible to hold it in retracted position by operation of the knob or other manually operable retracting device; to provide a lock having means for holding in retracted position the projecting controller by which the latch bolt is automatically deadlocked as the door is closed; to provide a detent for the latch bolt releasable by the key; and to furnish a single mechanism for retracting the latch bolt and controller and holding them in retracted position.

With these objects in view, and others which will be more or less obvious as the description proceeds, the invention consists in the novel features and combinations of parts hereinafter set forth and claimed.

In the accompanying drawings, in which I have illustrated a preferred embodiment of the invention Figure 1 shows the lock in elevation, with the cap plate removed, the latch bolt and the controller being in their normal protracted positions, Fig. 2 is a similar elevation of a portion of the lock, showing the position of the parts when the door is closed, the "hold-back" or detent mechanism being shown by dotted lines, Fig. 3 is a view similar to Fig. 1, but showing the latch bolt and the controller bolt held in their retracted positions by the detent mechanism, Fig. 4 is a vertical transverse section on line 4—4 of Fig. 1, illustrating the operation of the cylinder lock, Fig. 5 comprises front and edge views respectively, of the main detent lever, and Fig. 6 comprises front and edge views, respectively, of the lever for retracting the controller.

Referring to the drawings, the case 10 of the lock, having the face plate 11, contains a latch bolt 12 normally projected by means of a spring 13. The stem 14 of the latch bolt carries a head 15 engaged by a yoke 16 adapted to be actuated in the usual manner by an inner roll-back 17. An outer roll-back 18, associated with the yoke 16, is dogged permanently by means of a dogging slide 19 inaccessible at the outside of the lock, it being intended that the outside knob be permanently dogged as indicated above, although, of course, this is not essential in many of the various aspects of the invention.

The means for retracting the latch bolt by means of a key, inserted preferably only at the same side of the lock as the dogged roll-back 18, comprises a latch bolt retracting lever 20 pivoted in the case at 21, and having one extremity 22 thereof engaged with the cross-head 15 of the bolt at the side opposite the yoke 16. The retracting lever 20 is provided with a projection 23 engaged by an arm 24 of a main detent lever 25 pivoted in the case at 26. The extremity 24^a of the arm 24 extends transversely across the case in operative relation to the dog 27 of a cylinder lock 28 inserted in a suitable open-

ing in the case at the same side of the latter as the dogged roll-back 18. When the dog 27 is rotated in an anti-clockwise direction with respect to Fig. 1, the bit of the dog 27 will engage the extremity 24ª of the lever 25, thereby moving the arm 24 to the right. This arm, by engaging the projection 23, carries with it in its movement, the retracting lever 20, whereby the latch bolt is retracted.

The latch bolt 12 is automatically dead-locked when the door is closed, by means of a dead-locking lever 29 pivoted in the case at 30, and having a head 31 urged into the path of the latch bolt by means of a spring 32 acting on the tail of the dead-locking lever. When the door is open, however, the dead-locking lever is held out of its dead-locking position by means of a projecting controller 33, preferably in the form of a sliding bolt, normally projected out of the face plate by means of a spring 34, and equipped with a hook 35 which, when the parts are in the position mentioned, engages the dead-locking lever 29, and holds it in inoperative position, in opposition to the spring 32. When, however, the door is closed, the controller 33 is held in retracted position by the strike plate 36 (Fig. 2) whereby the hook 35 is shifted to a position permitting the spring 32 to move the lever 29 to dead-locking position. When the latch bolt retracting lever 20 is shifted (either by means of the key, or by means of the yoke 16, by which it is actuated in the usual way when said yoke is operated), a projection 37 on the lever 20 contacts with a shoulder 38 on the tail of the dead-locking lever in such a manner as to shift the latter slightly on its pivot into a position in which it is removed from the path of the latch bolt, so that said bolt may then be freely retracted. It is to be noted, however, that the particular means for dead-locking the latch bolt by means of a controller projecting through the face of the lock does not form, in itself, a part of the present invention.

The arm 24 of the lever 25 is made of special form, so that as said arm is actuated by the key, it may operate to hold the latch bolt in its retracted position. To this end, the edge portion of the arm 24, coacting with the projection 23 of the latch bolt lever, is formed with a shoulder 39, having inclined edges 40, 41, directed at an angle to each other to create a pointed projection, as shown. As the latch bolt is retracted by the operation of the key, the edge 40 of said shoulder or projection bears against the projection 23 as the arm 24 moves toward the right (Fig. 1). As the movement of the arm 24 continues, the shoulder 39 and projection 23 move relatively to each other in such a manner that as soon as the latch bolt has been fully retracted, the projection 23 on the latch bolt lever passes the apex of the shoulder 39 and snaps into position against the edge 41 of said shoulder, whereby the lever 25 and the latch bolt 12 are locked in retracted position, the outer end of the latch bolt being substantially flush with the face plate 11. In order to increase the security with which the latch bolt is held in this position, the detent lever 25 is provided with a rearwardly directed extension 42 which, as the projection 23 passes from one side to the other of the shoulder 39, snaps into position in front of the cross-head 15 and engages said cross-head frictionally as shown in Fig. 3. In this manner, the latch bolt is held securely in retracted position, and it will remain in such position until the key is rotated in the cylinder lock in a direction opposite to that first indicated, in order to cause the abutment of the dog 27 against the right-hand side of the arm 24 and the shifting of the lever 25 back to its original position through a reversal of the operations previously described. As soon as the operation of the key releases the projection 23 from the inclined edge 41 of the shoulder 39, the latch bolt is free to return to its normal position under the impulse of its spring, the lever 25 being returned to normal position by the engagement of the projection 23 with the edge 40 of the shoulder 39.

The lever 25 not only retracts the latch bolt, as above described, but also retracts the controller 33. This result is produced by providing the lever 25 with an arm 44 having at its free end a slot 45 taking over a pin 46 on a controller retracting lever 47. This controller retracting lever is pivoted in the case at 48, and overlies the rear portion of the controller bolt, as shown, its rear edge 49 being engaged with a pin 50 on the controller shank. As the lever 25 is swung to the right (Fig. 1), to retract the latch bolt, the slotted end of the arm 44, in carrying the lever 47 toward the right, pushes the pin 50 in the same direction, thereby retracting the controller. At the same time that the projection 23 snaps across the shoulder 39 on the arm 24, to lock the latch bolt in retracted position, the pin 50 passes out of engagement with the rear edge 49 of the lever 47 and snaps into locked position against the edge portion 49ª at the end of the lever 47. This locks the controller firmly in its retracted position and increases the security of the detent mechanism as a whole against accidental release by slamming the door or otherwise, such security being further materially increased, as previously described, by the provision of the extension 42, which blocks the latch bolt positively against protraction as it swings slightly be-

yond an imaginary line parallel with the latch bolt, and moves into engagement with the front face of the latch bolt cross-head.

It will therefore be understood that in the operation of the lock the actuation of the key in one direction will cause the latch bolt and controller to be retracted and held in retracted position, while the actuation of the key in the opposite direction will release the latch bolt and controller. With the latch bolt and controller retracted, the door may manifestly be opened freely from the inside without rotating the inside knob, and from the outside without the use of the key. The outside knob, as previously stated, is preferably dogged at all times, so that when the latch bolt is released from its retracted position, the closing of the door will lock it against entrance from the outside by any one not possessing a proper key. However, the inside knob will still be operative to retract the latch bolt, it being desired that the door be openable at all times from the inside without the use of the key, as above intimated.

It will also be understood that while the latch bolt is retractable either by the key at the outside of the door or by the knob or other retracting device at the inside of the door, the retraction of the controller and the locking of the latch bolt and controller in retracted position will only be effected by means of the key. When the latch bolt is retracted by the manually operable means at the inside of the door, the yoke 16, in retracting the latch bolt, pushes back the latch bolt lever 20, away from the lever arm 25, so that the lever 25 remains in its inoperative position, without retracting the controller. The aforesaid operation of the latch bolt lever 20, by means of the yoke, is for the purpose of moving the deadlocking lever 29 out of the path of the inwardly moving latch bolt, as above described.

In order to make the lock reversible, the latch bolt is reversible, the controller is beveled on opposite sides, the cap and bottom of the case are each provided with an opening for the cylinder lock, and the roll-backs 17 and 18 are interchangeable, the roll-back 18 being engageable in both of its positions with the dogging member 19.

As is apparent from Fig. 4, a cylinder lock may be screwed into the case from the inside of the door and operatively associated with the lever 25 in the same manner as the cylinder lock 28, so that the operation of retracting the bolts from the inside of the door by a key may be effected in the same way as when a key is inserted from the outside. Thus, where the lock is used on doors of school-houses, or similar buildings, the janitor may readily release the bolts from the inside without having to open the door.

The foregoing description is necessarily a detailed one in so far as it concerns the particular embodiment of my invention selected for illustration and description, but I desire to have it distinctly understood that numerous changes may be made in the construction of the lock without departing from the scope of my invention.

What I claim is:—

1. In a lock, the combination with a latch bolt, a lever normally tending to deadlock the same, a projecting controller normally holding said lever out of deadlocking position, but adapted to be pressed in by the strike to release said lever as the door is closed, mechanism independent of said lever for retracting said latch bolt and holding it in retracted position, and means for retracting said controller and holding it retracted; substantially as described.

2. In a lock, the combination with a latch bolt, a lever normally tending to deadlock the same, a projecting controller normally holding said lever out of dead-locking position, but adapted to be pressed in by the strike to release said lever as the door is closed, mechanism independent of said lever for retracting said latch bolt and holding it in retracted position, and a device operated by the retracting mechanism of said latch bolt for retracting said controller and holding it retracted; substantially as described.

3. In a lock, the combination of a latch bolt, a device tending to deadlock the same, a controller normally holding said device out of operative position with respect to the latch bolt, but adapted to release said device when the door is closed, key-operated mechanism for retracting said latch bolt and controller and holding them retracted, and manually operable retracting mechanism for said latch bolt inoperative to hold the same retracted; substantially as described.

4. In a lock, a latch bolt, deadlocking means therefor, comprising a projecting controller; and detent mechanism for locking said controller in retracted position, releasable only by means of a key; substantially as described.

5. In a lock, a latch bolt, deadlocking means therefor, comprising a projecting controller, and detent mechanism operable by the rotation of a key in one direction to lock said controller in retracted position, and operable by the rotation of a key in the opposite direction to release said controller from retracted position; substantially as described.

6. In a lock, a latch bolt, deadlocking means therefor, comprising a projecting controller, and means operable by a key for retracting said controller and locking it in retracted position, said means being releas-

able only by means of a key; substantially as described.

7. In a lock, a latch bolt, deadlocking means therefor, comprising a projecting controller, detent mechanism to hold said controller in retracted position, and a cylinder lock having a dog to operate said mechanism in either direction; substantially as described.

8. In a lock, a latch bolt, deadlocking means therefor, comprising a projecting controller, and retracting means for said latch bolt operable to lock said controller in retracted position; substantially as described.

9. In a lock, a latch bolt, deadlocking means therefor, comprising a projecting controller, and retracting means for said latch bolt operable to retract said controller and lock it in retracted position; substantially as described.

10. In a lock, a latch bolt, deadlocking means therefor, including a projecting controller, a cylinder lock mechanism having a dog rotatable by a key, and means operative on a turning movement of the key in one direction to retract the latch bolt and controller and dog them in retracted position; substantially as described.

11. In a lock, a latch bolt, means for automatically deadlocking the same on the closing of the door, including a controller which normally projects out of the case, a cylinder lock, mechanism actuated by said cylinder lock for retracting the latch bolt, manually operable means for retracting the latch bolt, and mechanism operative by said cylinder lock, but inoperative by said manually operable means, to dog said controller in retracted position; substantially as described.

12. In a lock, the combination of a latch bolt, having a stem and a cross-head, a retracting lever to engage the front face of the cross-head, said retracting lever carrying a pin or projection, a detent lever having a shoulder coöperating with said pin or projection, and provided with an extension 42 to engage the front face of the cross-head, and means for operating said detent lever; substantially as described.

13. In a lock, the combination of a latch bolt, having a stem and a cross-head, a retracting lever pivoted in the case and adapted to retract said bolt by engaging the front face of said cross-head, a detent lever pivoted to the case and overlapping said retracting lever, said levers having coöperating detent means at a point where they overlap each other, and means for operating said detent lever; substantially as described.

14. In a lock, a latch bolt, deadlocking means therefor including a projecting controller, key actuated means for retracting said latch bolt, manually operable means for retracting said latch bolt, and detent mechanism for said controller operable only by said key actuated retracting means; substantially as described.

15. In a lock, a latch bolt, deadlocking means therefor, comprising a projecting controller, and key actuated retracting means for said latch bolt, comprising a lever having an arm operatively connected with said controller to retract the same; substantially as described.

16. In a lock, a latch bolt having a stem and a cross-head on said stem, a retracting lever coöperating with said cross-head, and a key actuated lever coöperating with said retracting lever to form a detent for the latch bolt, and engageable with the forward face of the cross-head; substantially as described.

17. In a lock, a latch bolt, means for deadlocking the same automatically on the closing of the door, including a projecting controller bolt, a case for said bolts, a cylinder lock mechanism at one side of the case having a key-operated dog, and mechanism in the case operated by said dog to retract both the latch bolt and controller bolt when the key is turned in one direction, and to hold said bolts retracted as the key is then turned back to its initial position; substantially as described.

18. In a lock, a latch bolt, means for deadlocking the same automatically on the closing of the door, including a projecting controller bolt, means for dogging both of said bolts in retracted position, and a cylinder lock having a key-operated dog to release both of said bolts from said dogging means on rotation of the key in one direction; substantially as described.

19. In a lock, a latch bolt, deadlocking means therefor, including a projecting controller bolt, a cylinder lock having a key-operated dog, and mechanism operative on a turning movement of the key in one direction to retract both bolts and dog them in retracted position, said mechanism being also operative on a turning movement of the key in the opposite direction to release said bolts and permit the protraction thereof; substantially as described.

20. In a lock, a latch bolt, deadlocking means therefor, including a projecting controller bolt, manually operable means for retracting said latch bolt, and a cylinder lock having a dog for retracting the controller bolt; substantially as described.

21. In a lock, a latch bolt, deadlocking means including a projecting controller, manually operable retracting means for said latch bolt, key actuated retracting means for said latch bolt, and detent mechanism for said latch bolt and controller, operable only by said key actuated means; substantially as described.

22. In a lock, a case, separate members

normally projected out of the case, and a single detent mechanism for said members, operable only by means of a key; substantially as described.

23. In a lock, a case, separate members normally projected out of the case, and a common retracting and detent mechanism for said members, operable in opposite directions only by means of a key; substantially as described.

In witness whereof, I have hereunto set my hand on the 19th day of July, 1912.

ALBERT A. PAGE.

Witnesses:

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PINKUS GOLDBAUM.