A. ARENS & E. L. TEICH.

DOOR LOCK.

APPLICATION FILED APR. 27, 1910.

983,667.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

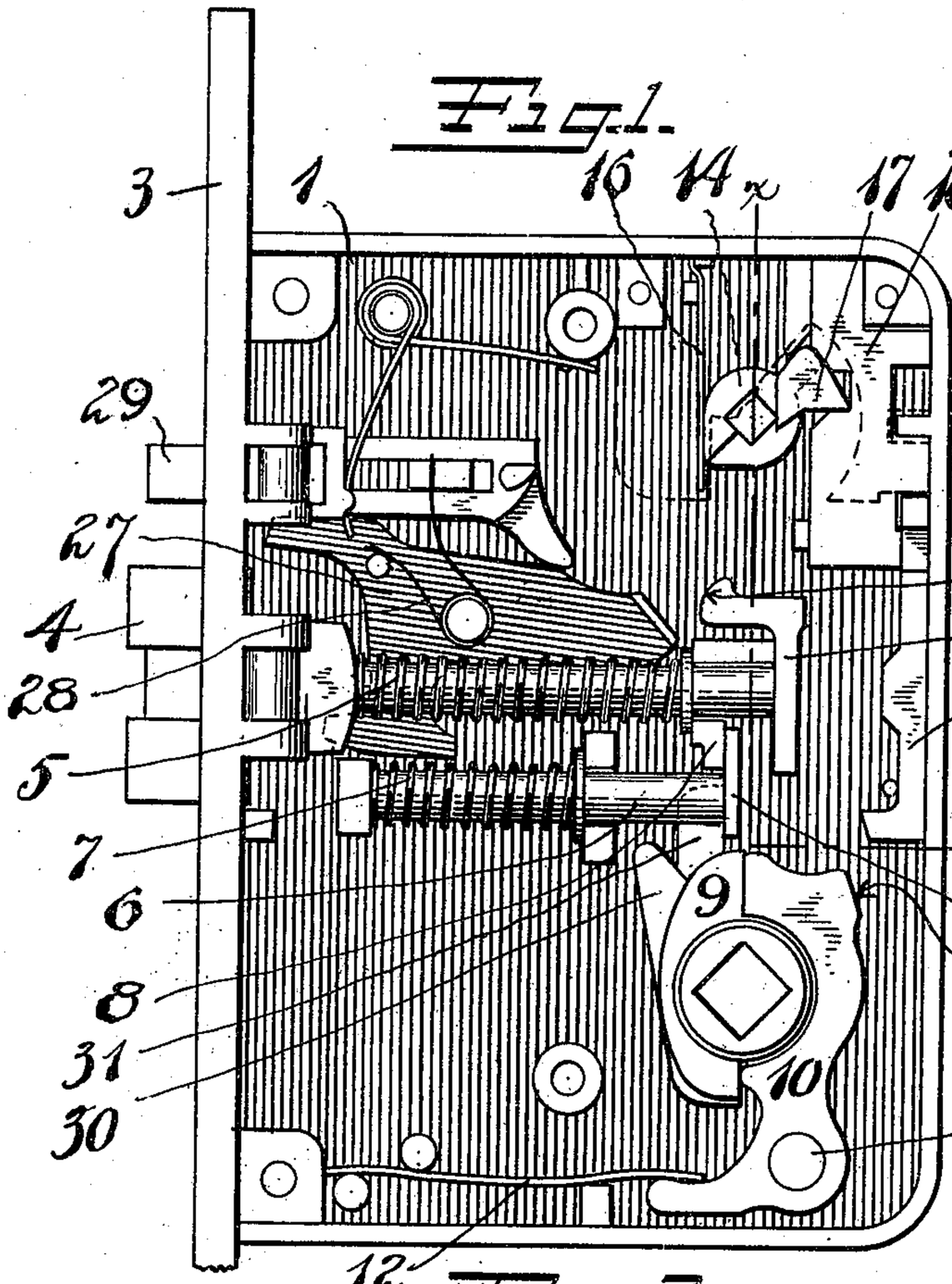


Fig. 2.

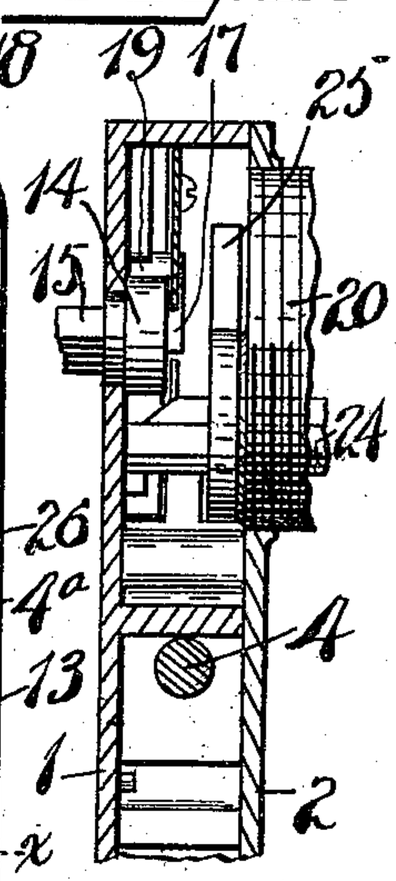
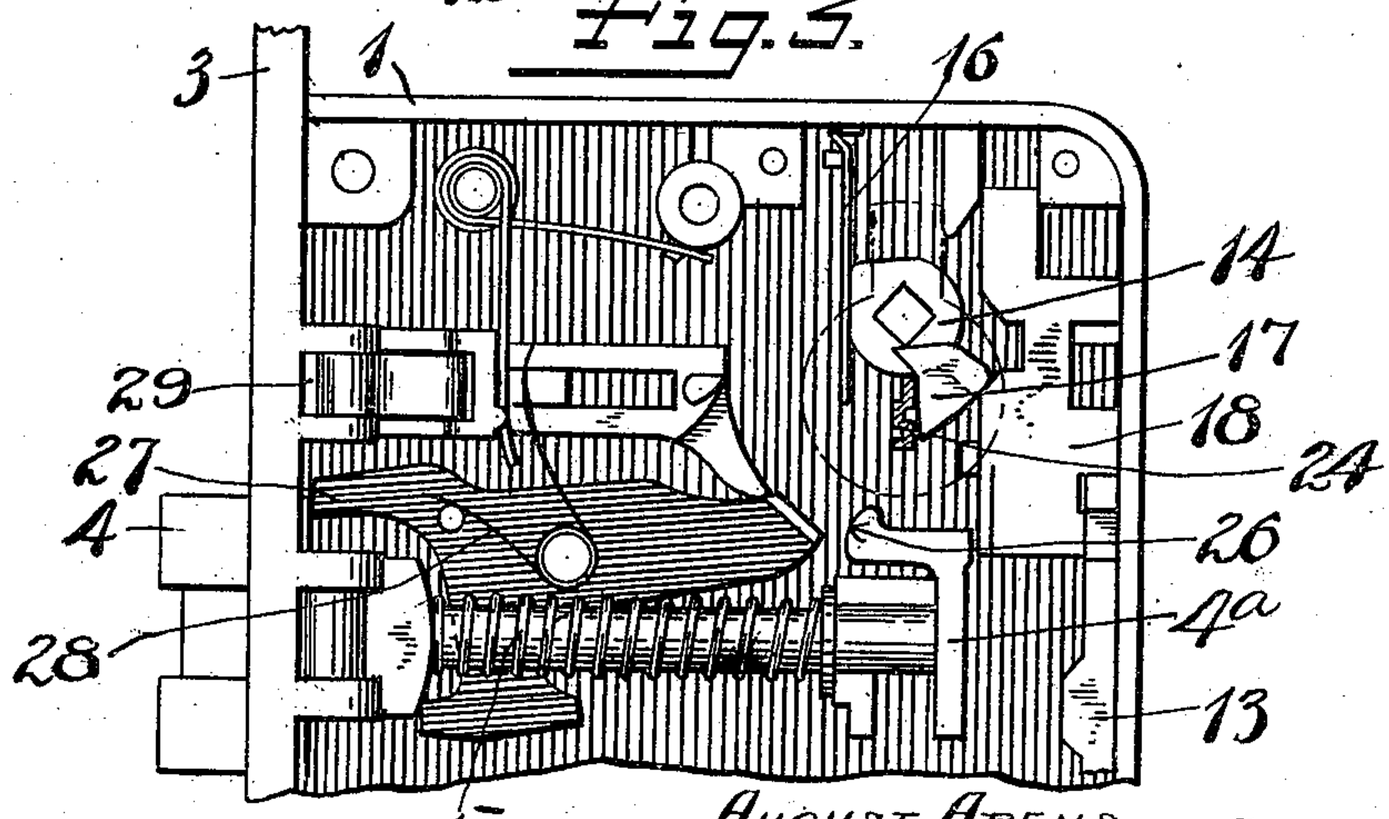


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

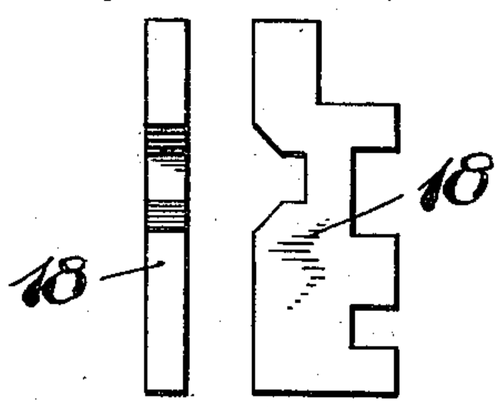


Fig. 5.

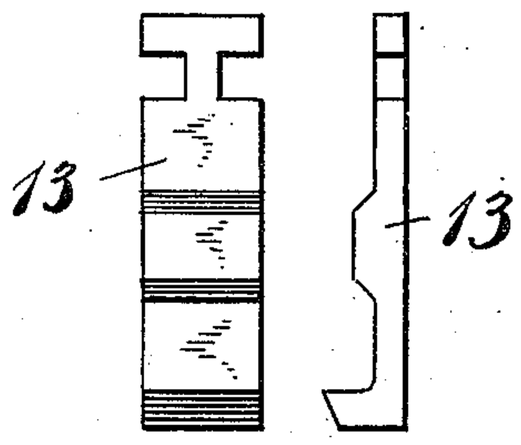


Fig. 6.

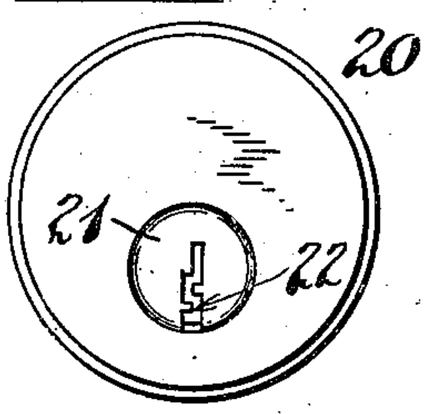


Fig. 7.

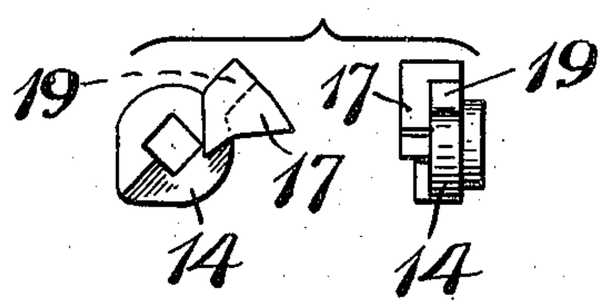


Fig. 8.

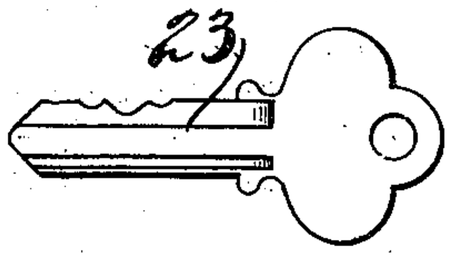


Fig. 9.

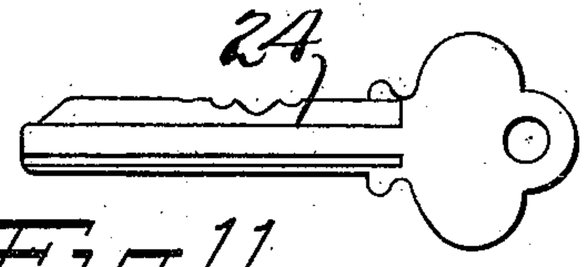


Fig. 10.

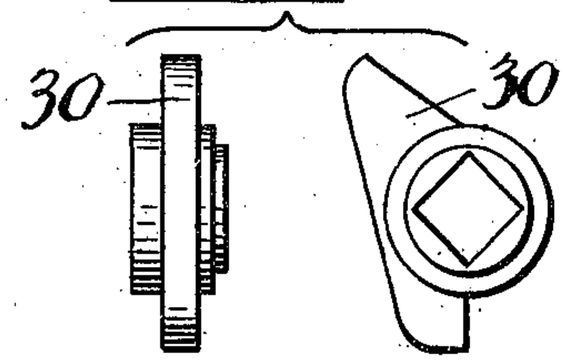
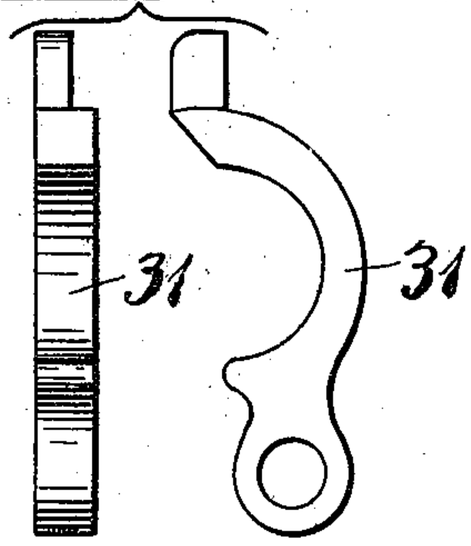


Fig. 11.



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UNITED STATES PATENT OFFICE.

AUGUST ARENS AND ERNEST L. TEICH, OF NEW BRITAIN, CONNECTICUT, ASSIGNORS TO P. & F. CORBIN, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

DOOR-LOCK.

983,667. Specification of Letters Patent. Patented Feb. 7, 1911.

Application filed April 27, 1910. Serial No. 558,027.

To all whom it may concern:

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

Our invention relates to improvements in locks, and is particularly useful as applied to locks for hotel corridor doors.

Among the main objects of the invention is the provision of means whereby when the door is locked from the inside by a so-called dead-locking device the said lock cannot be opened excepting by an emergency key such as controlled by the proprietor. Further, when the door is locked from the inside, the outer knob is held against rotation, thereby indicating that the room is occupied and locked. In this particular construction, entrance from the outside of the room is always effected by means of a key, the knob operating merely as handle and not being connected with the latch. In this particular combination certain advantages are attained, which will be hereinafter more fully described, and obvious to the mechanic skilled in the art.

In the drawings Figure 1 is a side elevation of our improved lock with the cap removed. Fig. 2 is a section on the line *x*—*x*. Fig. 3 is a view similar to Fig. 1, showing the upper part of the lock and showing certain parts in a different position. Figs. 4 to 11 inclusive, are detail views.

1 represents a lock case, 2 is the cap, 3 is a face plate.

4 is a latch bolt normally projected by a spring 5.

6 is a slide provided with a spring 7, which normally holds the same against an abutment 8 as shown in Fig. 1. The end of the slide 6 has a tail piece 6ª arranged normally slightly in advance of the tail piece 4ª of the latch bolt. The view of the lock shown in Fig. 1 is taken from the outer side.

9 is a blind roll-back for the outer knob (not shown), but incapable of coöperating with the latch bolt as shown, the center of the roll-back being provided with a squared opening to receive the knob spindle.

10 is a centering device in the form of a bell crank lever pivoted at 11 and controlled by the spring 12, said centering device normally bearing against the roll-back 9.

13 is a blocking slide, which, when it stands in the position shown in Fig. 1, is free of the centering device 10. When, however, this blocking slide 13 is shifted downward, it stands behind the shoulder 10ª, preventing said centering device from being moved back, thereby locking said roll-back 9 and outer knob against rotation. This blocking device 13 is coöperatively associated with a dead-locking mechanism, so that when the dead-locking mechanism is "off", the roll-back 9 is free to be operated. When, however, the dead-lock is "on", the blocking device shifts to the position where it prevents the roll-back 9 (and hence the outer knob) from being rotated thereby, indicating to any one outside of the room that the door is dead-locked from the inside and that any effort to enter without the use of a suitable key will be unsuccessful. By this means the outer knob performs the function of an indicator as well as a handle, and may be employed by the maid or attendant to determine whether the room is occupied, thereby avoiding the necessity of disturbing the occupant by the insertion of a key.

14 is a roll-back hub controlled by a thumb turn spindle 15, the thumb turn (not shown) being arranged at the inside of the door, where it may be operated when the door is closed to dead-lock the latch. This thumb turn roll-back 14 has an "on" and "off" position, and is frictionally held in either of said positions by a spring 16, the "off" position being indicated in Fig. 1, the "on" position being indicated in Fig. 3. The roll-back 14 is provided with an eccentric 17, the function of which will be later explained.

18 is a dead-locking slide connected with the blocking device 13, said slide having a notch arranged to be engaged by a roll-back arm 19 carried by roll-back 14 back of the eccentric 17, so as to be shifted up or down by said roll-back 14.

20 represents the body of a cylinder lock having the usual rotatable key-controlled plug or hub 21. 22 is the key-hole slot arranged eccentrically in said plug 21.

23 may represent the change key or guest key, while 24 may represent the emergency

or proprietor's key. It will be observed that these two keys are of different over-all lengths, but are otherwise both capable of unlocking the plug 21 in the cylinder lock 20.

25 is a roll-back on the inner end of the plug 21, said roll-back being arranged to engage a shoulder 26 on the tail piece 4ª of the latch bolt 4 in such a manner that when continued rotation occurs, the latch 4 will be retracted. Any key, therefore, suitable for freeing the plug 21 in the cylinder lock, may be employed to turn the roll-back 25 to open the door.

In the particular form shown the latch 4 is provided with a tilting dog 27 moved in one direction by a spring 28 and in an opposite direction by an actuator 29. For example, when the door is closed and the actuator is repressed, as shown in Fig. 2, the dog 27 moves to the rear of the head of the latch bolt to block the same against being pushed in. This method of dogging the latch is well understood, and hence will not be described in further detail. Obviously the roll-back arm 25 should first free the dog 27 before it encounters the shoulder 26 of the latch bolt tail for the purpose of retracting the same. To dead-lock the latch from the inside of the door, the operator merely rotates the thumb-turn spindle 15 in a direction to cause the arm 19 to shift the slide 18 downwardly, whereupon it assumes a position immediately to the rear of the tail-piece 4ª, as shown in Fig. 3, whereupon it is obvious that the latch bolt cannot be retracted by the rotation of the roll-back 25. To release the dogging device from the outside requires the use of a key such as 24, in which the forward end is abnormally lengthened to project inwardly, as shown in Figs. 2 and 3, to stand to one side of the eccentric 17. Then by turning the plug in which the key is located, said key will be given a rotary movement in a direction to first swing the roll-back 14 from the position shown in Fig. 3 to that shown in Fig. 1. This movement through the roll-back arm 19 withdraws the dogging slide 18 from behind the tail-piece of the latch bolt, so that a continued rotation of the plug and key in the same direction will cause the roll-back arm 25 to engage the rear end of the latch bolt dog 27 to release it and then engage the shoulder 26 for the purpose of retracting the latch bolt.

The lock may be operated by the usual knob from the inner side of the door, said knob being connected with the usual roll-back 30, which bears against the lever 31, the upper end of which engages the tail 6ª of the latch slide, whereby when said roll-back 30 is turned it will, through the medium of the lever 31, latch slide 6 and the coacting tail-pieces 6ª and 4ª, withdraw the latch.

It will be observed that it requires but a single complete revolution of the key (emergency) to withdraw the deadlocking slide and retract the latch bolt, also that the thumb turn hub or roll-back 14 performs the function of blocking the deadlocking slide, thereby dispensing with the necessity of an auxiliary tumbler therefor.

We are aware that it is not new with us to employ an emergency key of greater over-all length than the over-all length of a change key for the purpose of actuating a roll-back hub but in our improvement it will be seen that the key makes a peculiar swinging engagement with the hub to actuate the latter. This by reason of the fact that the axis of the key is eccentric to the axis of rotation of the key plug. It is this sweeping movement of the key rather than the mere rotation thereof which is employed in actuating the thumb turn hub or roll-back. This is advantageous in that the key engages the hub farther away from its center and therefore may more easily turn the same by reason of additional leverage thereby afforded. It should further be noted that the axis of the cylinder lock plug and the axis of the thumb turn hub or roll-back are substantially out of line although parallel (see Figs. 2 and 3). This is advantageous in that it permits the eccentric 17 to be of substantial length whereby the desired leverage is afforded. Furthermore, it permits said eccentric to retire to a point where it becomes free of the key (see Fig. 1) so that said key may be employed to continue the turning of the plug to a degree sufficient to bring the arm 25 against the shoulder 26 for the purpose of depressing the end of dog 28 and retracting the latch.

What we claim is:

1. In a latch mechanism, a latch bolt, a deadlocking device therefor, a key-controllable hub, a rotatable member for retracting the latch, a second key-controllable rotatable member independent of the first for retracting the deadlocking device, means for manually operating said second rotatable member independently of the first, a key-passage through the first member, said key-passage being eccentric to the axis of rotation thereof and an eccentric projection upon said key-controllable member whereby when a key of sufficient length is passed through the first member it will engage said eccentric projection to swing the latter as said key is turned.

2. In a latch mechanism, a latch bolt, a deadlocking device therefor, a key-controlled hub for retracting the latch, a second hub for actuating the deadlocking device, said hubs being independent and out of line, the former being outside of the latter, an eccentric on the inside hub, a key-passage through the outside hub and a key of sufficient over-all length to pass entirely through the outer

hub and project into position for operation with said eccentric, whereby both of said hubs may be simultaneously operated and a second key shorter than the first for operating only the outside hub.

3. In a latch mechanism, two independent hubs to be operated, two separate means for operating said devices respectively, said hubs being rotatable with their axes out of line but in substantial parallel planes, a single key arranged to coöperate with and couple both of said devices by passing through one and into operative engagement with the other, one of said devices being capable of independent operation by the use of a key of shorter over-all length than the length of the first mentioned key.

4. In a lock, a latch bolt or head, a deadlocking device therefor, a knob operable roll-back operatively connected with said latch for operating the latter from the in-door side of the lock, a latch deadlocking member and a roll-back hub independent of the first for operating said latch deadlocking member, said roll-back hub being also operable from the in-door side of the lock, a pin cylinder lock associated with said parts and arranged on the out-door side of the lock, latch retracting means independent of the latch deadlocking member and controllable by a key adapted to said pin cylinder lock, said cylinder lock having a rotatable plug, the axis of which is out of line with but substantially parallel to the previously mentioned hub for actuating the latch deadlocking device, and a laterally extending arm on said last mentioned hub arranged for operation by a key of sufficient over-all length to pass entirely through and project beyond the inner end of said plug.

5. In a lock, a latch, a movable member arranged to be operated by a knob located on the in-door side of the lock for retracting the latch, another movable member arranged to be operated by a handle located on the out-door side of the lock but having no connection with said latch, a deadlocking device for said latch, means for manually operating said deadlocking device, and means to block said second movable member operable when said latch is dead-locked for the purpose of indicating on the outside of a door to which the lock is applied when said latch is dead-locked.

6. In a lock, a latch bolt, knob operable means for retracting the latch from the in-door side of the lock, key-operable means for retracting the latch from the out-door side of the lock, movable means operable by a handle on the out-door side of the lock but independent of any connection with said latch, a deadlocking device for the latch bolt operable from the in-door side of the lock, and means for holding said movable means against movement operable when said latch is deadlocked for the purpose of indicating the same at the out-door side thereof.

7. In a lock, a latch bolt, knob operable means for retracting the latch from the in-door side of the lock, key-operable means for retracting the latch from the out-door side of the lock, a rotatable member rotatable by a handle on the out-door side of the lock but independent of any connection with said latch, a deadlocking device for the latch bolt operable from the in-door side of the lock, and means for holding said rotatable member against rotation operable when said latch is deadlocked for the purpose of indicating the same at the out-door side thereof.

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