

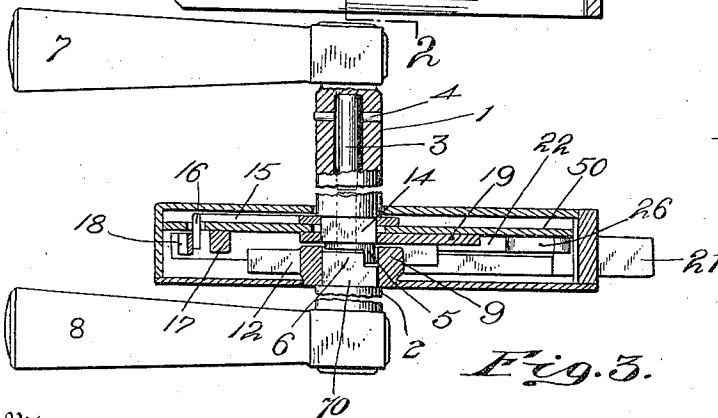
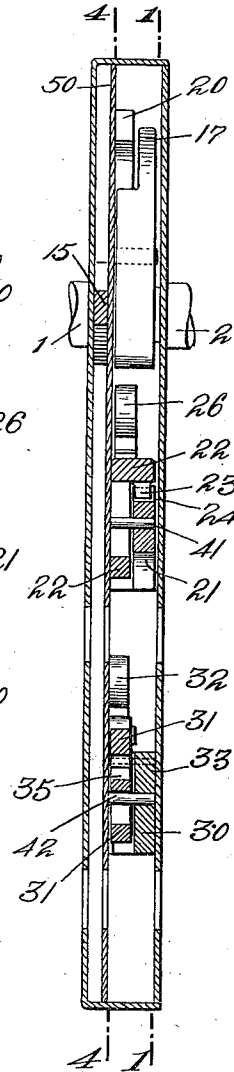
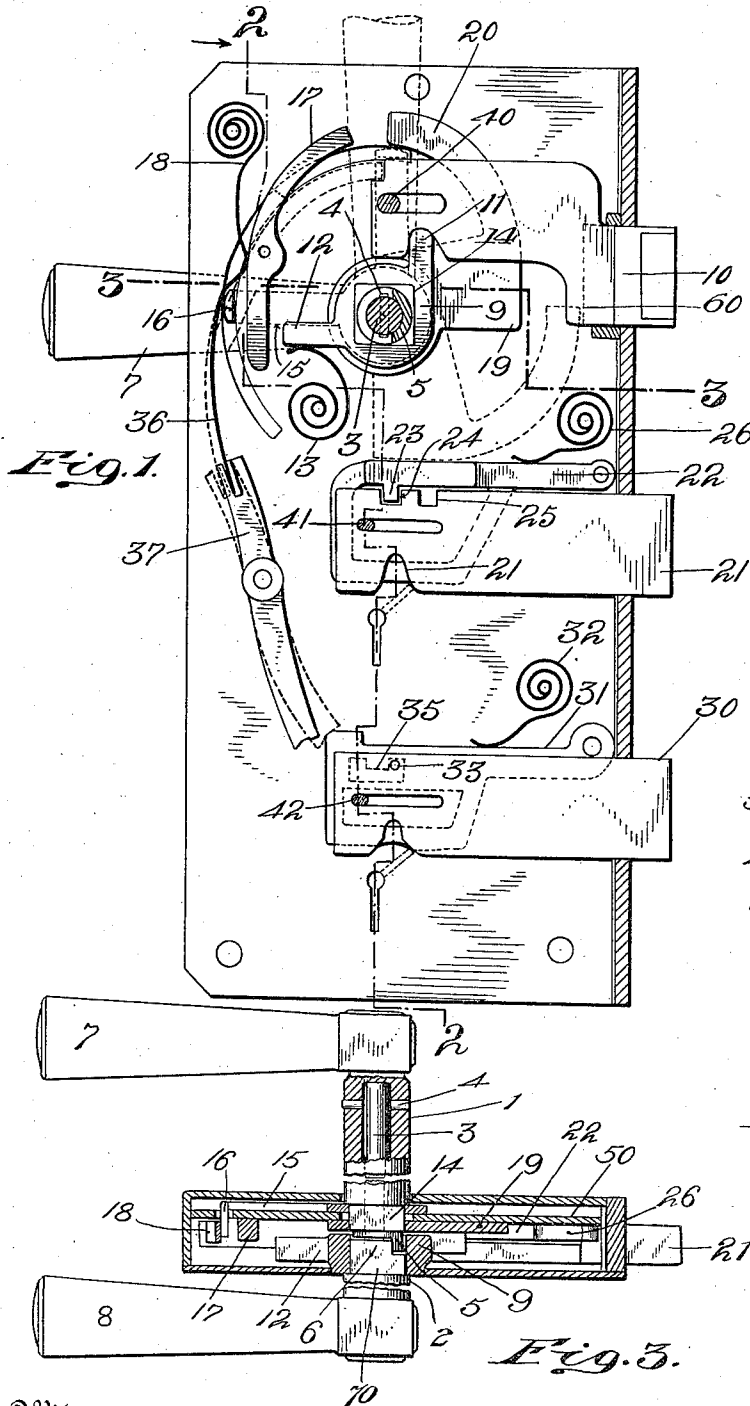
F. ASSMANN.
DOOR LOCK.

APPLICATION FILED DEC. 13, 1909.

Patented Nov. 15, 1910.

975,819.

2 SHEETS—SHEET 1.



Witnesses:
Samuel Hebig
August C. Ruse

Inventor
Friedrich Assmann
By his Attorneys
Stumm & Tork

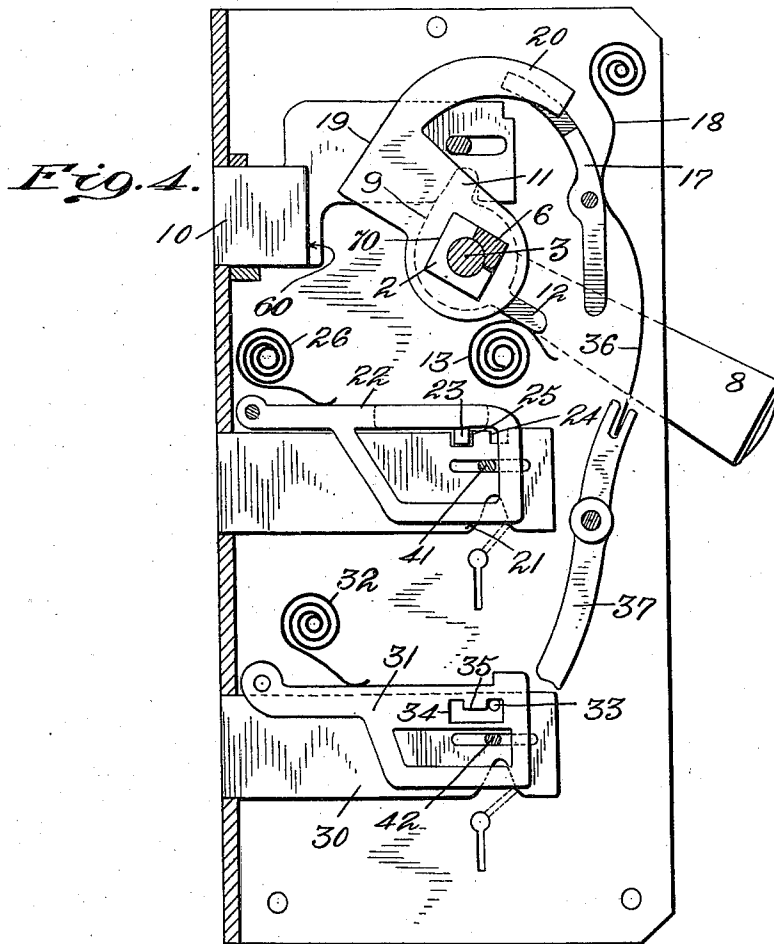
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Harry C. Hebig
Alfred C. Riney

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UNITED STATES PATENT OFFICE.

FRIEDRICH ASSMANN, OF STENGLINGSEN, GERMANY.

DOOR-LOCK.

975,819.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed December 13, 1909. Serial No. 532,787.

To all whom it may concern:

Be it known that I, FRIEDRICH ASSMANN, a subject of the Emperor of Germany, residing at Stenglinsen, Westphalia, Germany, have invented certain new and useful Improvements in Door-Locks, of which the following is a full, clear, and exact specification.

This invention relates to improvements in locks of the class inserted in a mortise in a door and is an improvement upon the lock of the same character described in my Patent No. 943,133.

The object of the invention of said patent is to provide a lock so constructed that the latch may, without the aid of a key, be locked in position so that the door cannot be opened from the outside.

The present invention is an improvement upon the said lock and is designed to improve in details the construction and mechanism therein described and to add to the said lock means whereby one or more bolts, in addition to the usual latch, may be simultaneously locked in position by the same means which lock the latch in position, so that the said bolt or bolts may not be opened from the outside with the usual key or by other means.

These and other objects which will appear as the description proceeds are accomplished by the mechanism hereinafter described, which, however, may be changed in details without departing from the principle of operation thereof.

The accompanying drawings fully illustrate one embodiment of this invention and in the said drawings Figure 1 is a plan view of a lock from which the outer cover has been removed, illustrating the inner handle in horizontal position and the latch in position to be operated by either the outer or the inner handles. Fig. 2 is a vertical section on the line 2—2 of Fig. 1, illustrating both cover-plates in position. Fig. 3 is a horizontal section of the complete lock on the line 3—3 of Fig. 1. Fig. 4 is a view, similar to Fig. 1, on the line 4—4 of Fig. 2, with the inner cover-plate removed, illustrating the opposite side of the lock from that shown in Fig. 1, and with the latch and bolts in retracted position.

The axle of the door-handle is composed of two members, an inner part 1 and an outer part 2, which are held together by an

axle-pin 3, rigidly secured in part 2 of the axle and projecting within the bore of part 1, where it is secured by pin 4, passing through a transverse aperture in the said part and engaging within a circumferential groove extending part way of the axle pin, so that the axle pin may rotate but is prevented from moving lengthwise when the locking-pin 4 is in place. The two parts of the axle 1 and 2 meet at the center in a clutch-coupling formed of overlapping members on the abutting inner ends of the two parts of the axle.

The inner axle 1 has a projecting-stop 5, formed in the arc of a circle, illustrated in end view (Fig. 1), extending less than half of its circumference. The section on which Fig. 1 is drawn is bent in at the roll-back so as to cut through the base of semi-circular stop 5 on the inner axle and to omit the outer axle 2 (see Fig. 3). The outer axle 2 has a co-acting projecting stub 6, formed by cutting away three-quarters of its end, as illustrated in Fig. 4. Here the section line is bent in so as to cut through the base of stub 6 and to omit the inner axle 1. These members pass each other, as illustrated in Fig. 3, where it will appear that the handle 7, attached to the inner axle 1, has a movement upward free of the outer axle part 2, but will carry the outer handle 8 with it on its downward movement.

The outer part 2 of the axle is squared at its inner end at 70, where it fits in a squared opening in the roll-back 9. The roll-back retracts the latch 10, through arm 11, and at its rear part has an arm 12, against which bears a coil-spring 13, secured to the plate, whereby the roll-back is maintained in position.

The inner end of the clutch-coupling attached to the inner axle 1, is rounded where it enters the roll-back, so that it may turn freely within the roll-back without operating same, except as it engages the axle 2 in the downward movement of the inner handle. Adjacent the said rounded part of axle 1, the said axle is squared at 14, where it receives the squared shank of a detent-lever 15, the outer end of which is bent over to form a detent 16, which acts upon a swinging locking-lever or detent 17, pivoted to the plate 50. As the inner handle 7 is swung upward, the upper end of the locking-lever 17 is swung down into position against

the rear of the latch 10, arresting the same and preventing its movement by the opposite handle. As the handle 7 is moved back into a horizontal position, the detent 16 will be carried to the position indicated in Fig. 1, and spring 18, which is pivoted to the plate 50, will act upon the tail of the locking lever 17, and retract the same from engagement with the latch 10. The squared part 14 of the inner axle 1, likewise passes through the squared inner end of a swinging arm 19, which has a curved finger 20, and this swinging-arm 19 is for the purpose of securing lock-bolt 21 in position to which it may be set by the key, so that it may not be operated by means of the key from the outside, and this result I accomplish by means of a tumbler 22, which is pivoted to the plate 50 and has a stop-lug 23 adapted to enter either of the notches 24, 25, formed in the upper surface of the bolt 21, and normally spring-pressed toward said bolt by a coil-spring 26 secured to the plate.

The bolt 21 is opened in the usual manner when arm 19 is not in locking position, by a key which lifts tumbler 22 and retracts the bolt. As the inner handle 7, however, is swung to its upper position, the arm 19 is turned downward, when it engages the upper surface of the tumbler, holding the same with its stop 23, in one of the recesses 24 or 25, preventing the lifting of the tumbler, and consequently preventing any movement of the said bolt.

In many cases it is desirable to employ a plurality of bolts, and I have accordingly illustrated a second bolt 30, which is also locked in position by the upward movement of the inner handle 7. This is accomplished by means of a tumbler 31, which is pivoted to the plate and spring-pressed downwardly by coil-spring 32, similarly supported. Here a pin 33 is attached to the bolt and projects inwardly therefrom and is received in a slot 34 formed in the tumbler and having a lug 35 intermediate the ends of said slot, thereby forming stop-shoulders within the tumbler. The tumbler is lifted in the ordinary manner when the bolt is not locked or arrested in position, and the bolt freely moved by the key. When, however, the inner handle 7 is moved upward, the locking-lever 17 is pressed inwardly, causing an outward movement of the extended end 36 of spring 18. This spring, through its engagement with lever 37, pivoted to the plate, causes the lower end of said lever to swing inwardly and in position over the tumbler 31, locking the same against upward movement and thereby securing the bolt 30 in its set position, from which it may not be moved until the handle 7 is again brought to a horizontal position.

Pins 40, 41, 42, are secured to the plate

and take in slots formed in latch 10 and bolts 21 and 30, for the purpose of maintaining the said bolts in position.

It will be observed that bolt 21 is provided with two notches 24 and 25, and this is for the purpose of locking the said bolt in either open or closed position. Similarly tumbler 31 is also provided with two stop-shoulders, by which bolt 30 may be locked in either open or closed position, and this is useful in that it permits a person on the inside of a house to secure said bolts so that they may not be locked from the outside, which would be desirable in case the keys entered the locks only from the outside.

In Fig. 4 the latch is shown in retracted position, which position it has been brought to by the downward movement of the inner handle 7 (not illustrated in said figure) and the bolts are likewise shown as retracted. The section is taken just inside the plate, on the line 4-4 of Fig. 2, and shows the locking-arm 19, which is swung upward by the movement of the inner handle, and here lever 17 is illustrated as being cut away sufficiently to allow finger 20 of said arm 19 to pass behind it. The locking arm 19 also acts as a lock for the latch 10, and this is accomplished by its bent finger 20 engaging behind a stop-shoulder 60 in the said latch. In Fig. 1 the latch is shown in forward position and here it will be seen that the end of the finger 20 is behind the stop-shoulder 50 and will prevent inward movement of the latch. This function of the finger 20 will permit me to dispense with lever 15, detent 16, pivoted-lever 17, and spring 18, in constructions where only a latch is employed or a latch and one bolt, as the arm 19 and finger 20 will effectually lock said latch or latch and bolt. In cases where a latch and two bolts are desired the construction of the drawings is useful. By dispensing with said parts 15, 16, 17, and 18, I am able to avoid the employment of the additional plate 50 and thereby save much expense.

I claim—

1. In a door-lock, inner and outer handles a latch and connections thereto from the said handles whereby said latch may be withdrawn by a movement of either handle, a detent for said latch and means for setting same controlled by one of the handles, a bolt normally key-operated, a stop for said bolt and means for setting same controlled by the last-mentioned handle, whereby, when the said detent and stop are set, the said latch and bolt are locked against movement until released by the said handle.

2. In a door-lock, inner and outer handles a latch and means for withdrawing same operative by a movement of either handle in one direction, a detent for locking said latch in forward position, means for setting

said detent operative by a movement of one of said handles in its opposite direction, whereby the latch may be locked against movement by the other handle, a bolt normally key-operated, a stop therefor, and means for setting said stop controlled by the same handle as the detent, whereby said bolt may be locked against movement by the key.

3. In a door-lock, a latch, a device for withdrawing same, a two-part axle, a connection between one of said parts and said latch-withdrawing device, a clutch between the two parts of said axle adapted to permit the other part of the axle to operate the latch when moved in one direction and to have a limited free movement in its opposite direction, a detent for the latch, means for inserting same in the path of the latch operated by said other part of the axle in its said limited free movement, a bolt normally key-operated, a stop therefor, means for setting said stop also operated by said other part of the axle in its said limited movement, whereby said bolt may be locked against movement.

4. In a door-lock, a latch, an axle for operating same having outer and inner members, a latch-retracting device attached to the outer member, a clutch connecting the outer and inner members operating to cause both said members to turn together in one direction and to allow the inner member to move free in the opposite direction, a detent for the latch and means for setting same operated by the said free movement of the inner axle member, a bolt normally key-operated, a stop therefor, and means for setting said stop operated by said inner member in its said free movement, whereby said bolt may be locked against movement by the key.

5. In a door-lock, a latch, a two-part hollow axle for operating same having an inner and outer member, an axle pin secured to the outer member and projecting through the inner member, a latch-retracting device connected to the outer member, a clutch connecting said inner and outer members comprising stubs attached to the inner ends of each of said members, which pass by each other, a lever attached to and turning with the inner member, a latch-detent adapted to be actuated by said lever, a bolt normally key-operated, an arm attached to and turning with the inner member, and a bolt-stop adapted to be set by said arm, the said parts so combined and operating that a movement of either of said axle members in one direction will operate to retract the latch, while a movement of the inner axle member in its opposite direction will set said latch-detent and bolt-stop.

6. In a door-lock, a latch, a two-part axle having inner and outer members, a latch-retracting device connected to the outer

member, a latch-detent and a latch-detent operating-lever connected to the inner member, a bolt normally key-operated, a bolt-stop, and a bolt-stop controlling arm likewise connected to the inner member, and a clutch connecting said inner and outer members, permitting said inner member a limited movement free of said outer member.

7. In a door-lock, a latch, a roll-back, a two-part axle having an inner and an outer member, one of said members being mounted in said roll-back so as to turn therewith, and the other member being mounted in said roll-back so as to turn freely therein, a clutch connection between said two members, permitting said member mounted to turn freely in said roll-back to have a limited turning movement free of the other axle member, a latch-detent, and a lever attached to said freely-moving axle member operating to set said detent in the path of the latch upon the limited free movement of said axle member, a bolt normally key-operated, a bolt-stop and means for setting same controlled by said freely-moving axle member, the said parts so combined and operating that a movement of either of said axle members in one direction will retract the latch, while a movement of the freely-moving axle member in its opposite direction will lock the latch against movement by the other axle member and will lock the bolt in position.

8. In a door-lock, a roll-back, a two-part axle having an inner and outer member, a connection between said roll-back and outer member whereby they may turn together, a clutch connection between said inner and outer members comprising projecting and engaging stubs, the said inner member being mounted in said roll-back so as to move freely therein, a latch-detent, a latch-detent operating-lever fixed to turn with said inner member, a bolt normally key-operated, a stop therefor, and a bolt-stop controlling arm operated by said inner member.

9. In a door-lock, latch mechanism, a two-part axle, a latch-detent, a connection between said detent and one of the parts of the axle for setting the detent actuated by a movement of the said axle part in one direction, a bolt normally key-operated, a bolt-stop and means for setting same controlled by said last-mentioned axle part actuated by the same movement of the axle which actuates the latch-detent, a connection from the opposite part of the axle to the latch mechanism, and a clutch connecting the two parts of said axle, whereby a movement of either part of the axle in the other direction will retract the latch.

10. In a door-lock having outer and inner handles, a latch, a roll-back, a fast connection between one of said handles and the roll-back whereby the latch may be retract-

ed by said handle, and a loose connection between the other handle and the roll-back, whereby the latch may be retracted by a movement of said handle in one direction, a
 5 detent for said latch, operating means between said detent and the last-mentioned handle, operated by a movement of said handle in a direction opposite to the latch-retracting movement, whereby, when
 10 said handle is moved in said opposite direction the latch is locked against movement by the first-mentioned handle, a bolt normally key-operated, a bolt-stop and setting means therefor controlled by the second-mentioned
 15 handle, whereby, when said handle is moved in the said opposite direction the bolt is locked in position, substantially as described.

11. In a door-lock having outer and inner handles, a latch, a latch-retracting roll-back,
 20 a fast connection between the outer handle and the roll-back whereby the latch may be retracted by said handle, and a loose connection between the inner handle and the roll-back whereby the latch may be retract-
 25 ed by a movement of said handle in one direction, a detent for locking said latch in forward position, means for setting said detent connected to the inner handle and operated by a movement of the inner handle in a
 30 direction opposite to the latch-retracting movement, whereby the latch may be locked against movement by the outer handle, a bolt normally key-operated, a bolt-stop, and means for setting same controlled by the in-

ner handle, whereby the bolt is locked in 35 position by said movement of the inner handle in the said opposite direction.

12. In a door-lock, a latch, a two-part axle having inner and outer members, a clutch connecting the two members, where- 40 by one member may have a limited movement without affecting the other member, a latch-retracting device attached to the other member, a stop-shoulder on the latch, an arm connected to the axle member having 45 such limited free movement and adapted to be swung to position to engage said stop-shoulder by the said free movement of said axle.

13. In a door-lock, a latch, an axle and 50 connections whereby said axle may withdraw the latch when moved in one direction, a shoulder on said latch, a locking arm connected to said axle adapted to be swung behind said shoulder and lock the latch when 55 the axle is moved in a direction opposite to its latch-withdrawing direction, a bolt, and a stop for locking said bolt in position, adapted to be set by the movement of said locking arm in the latch-locking direction. 60

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRIEDRICH ASSMANN.

Witnesses:

RICHARD HOPPE,

WILH. SCHULTE NIEDERBAUER.