

March 24, 1925.

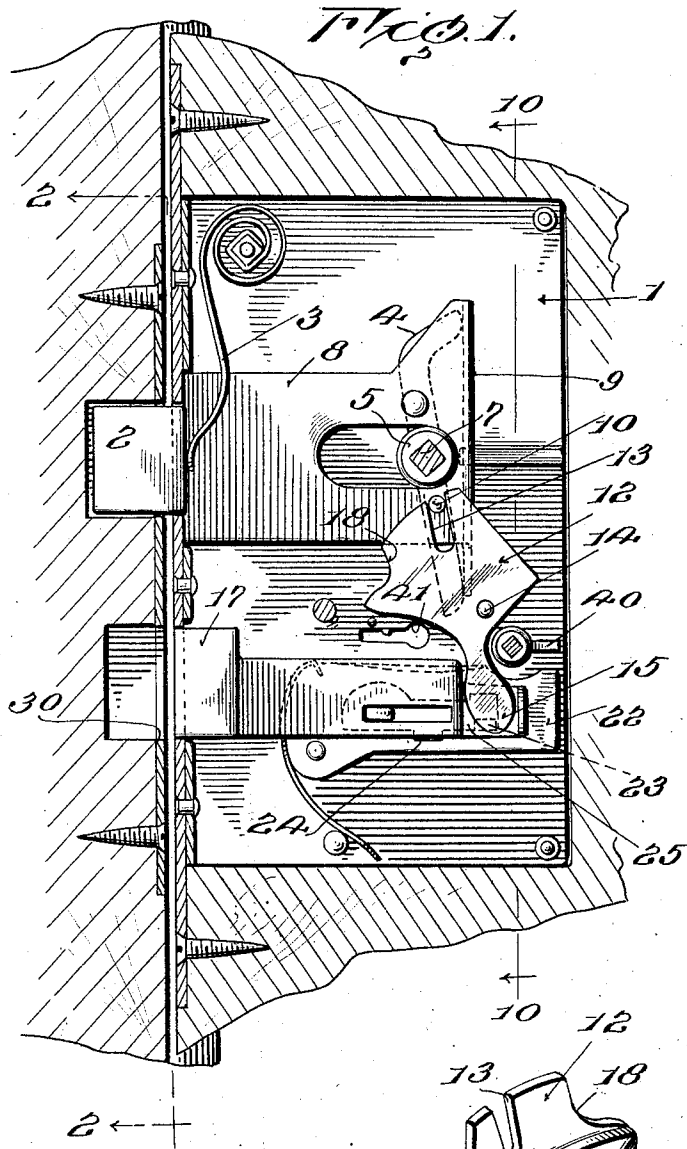
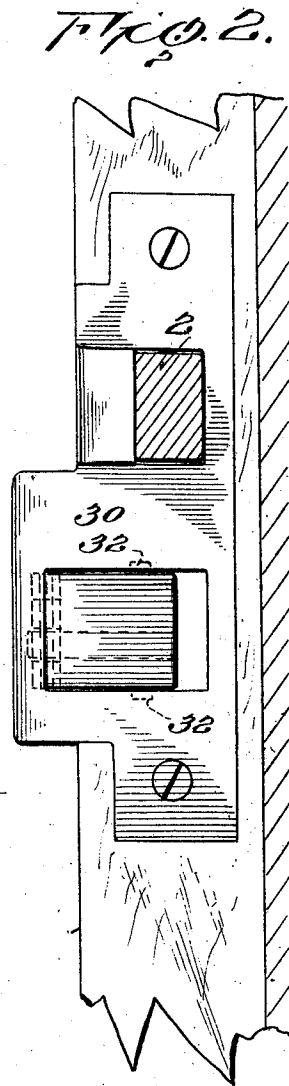
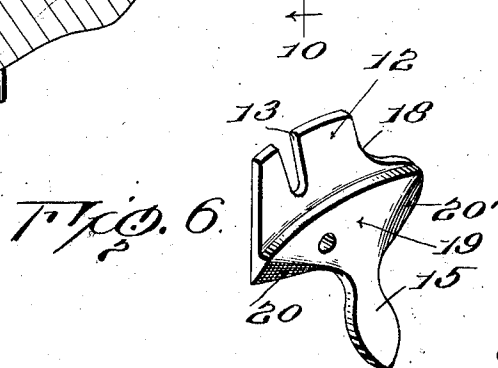
C. HOFFMAN

1,530,672

LOCK

Filed Oct. 9, 1922

4 Sheets-Sheet 1



Inventor
Carl Hoffman

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Attorney

March 24, 1925.

1,530,672

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Fig. 3.

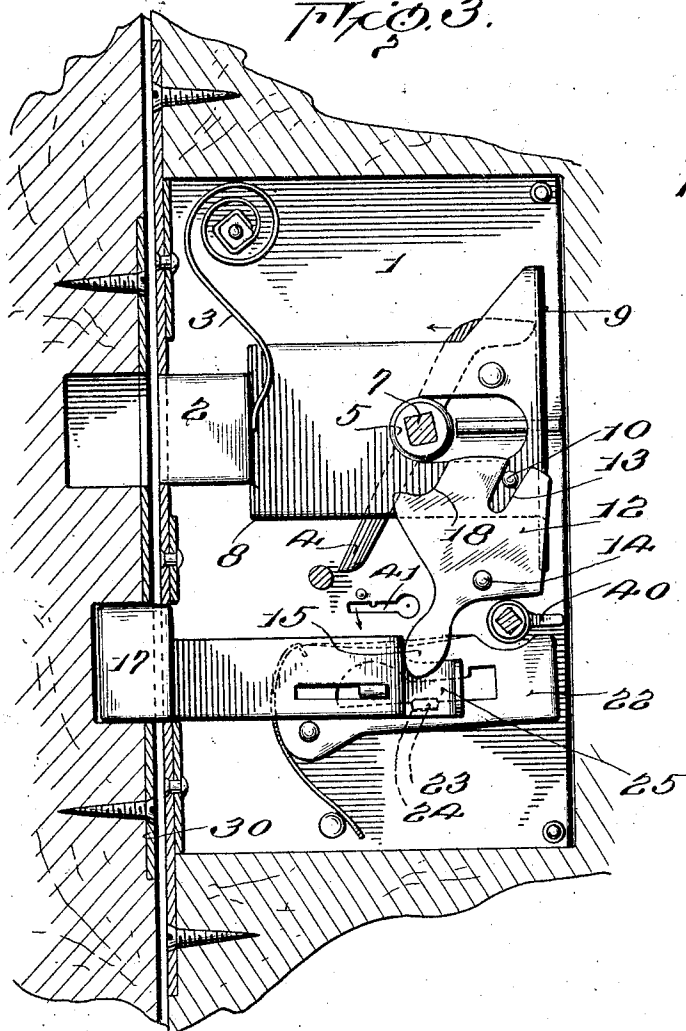


Fig. 4.

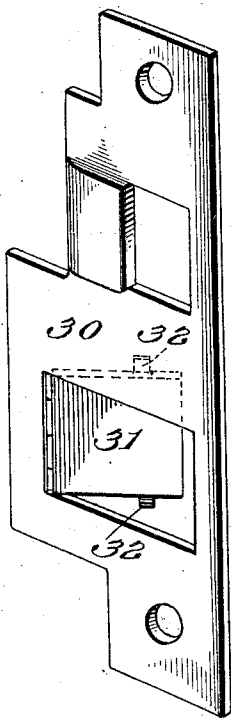
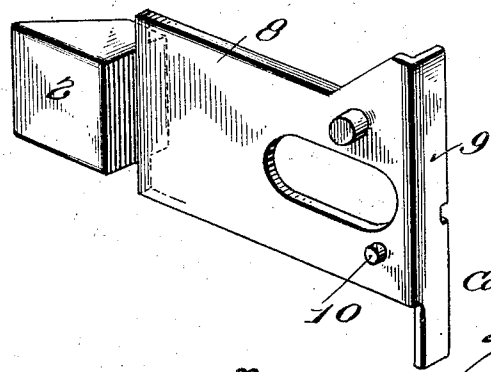


Fig. 5.



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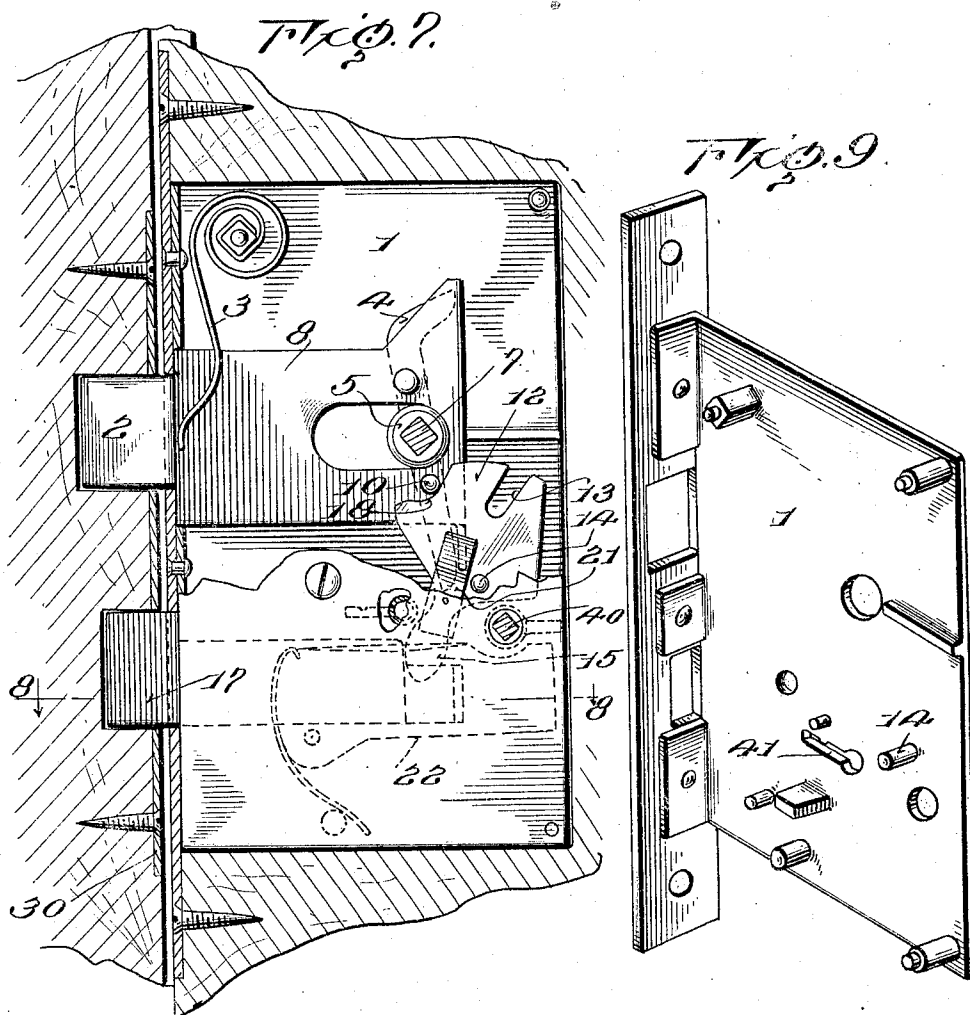
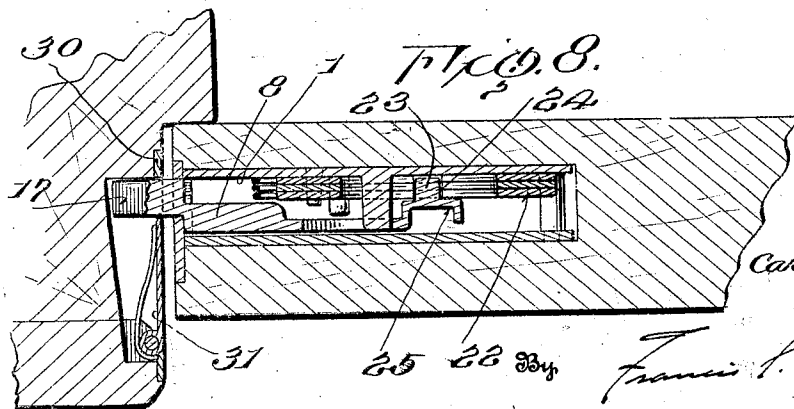
1,530,672

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LOCK

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4 Sheets-Sheet 3



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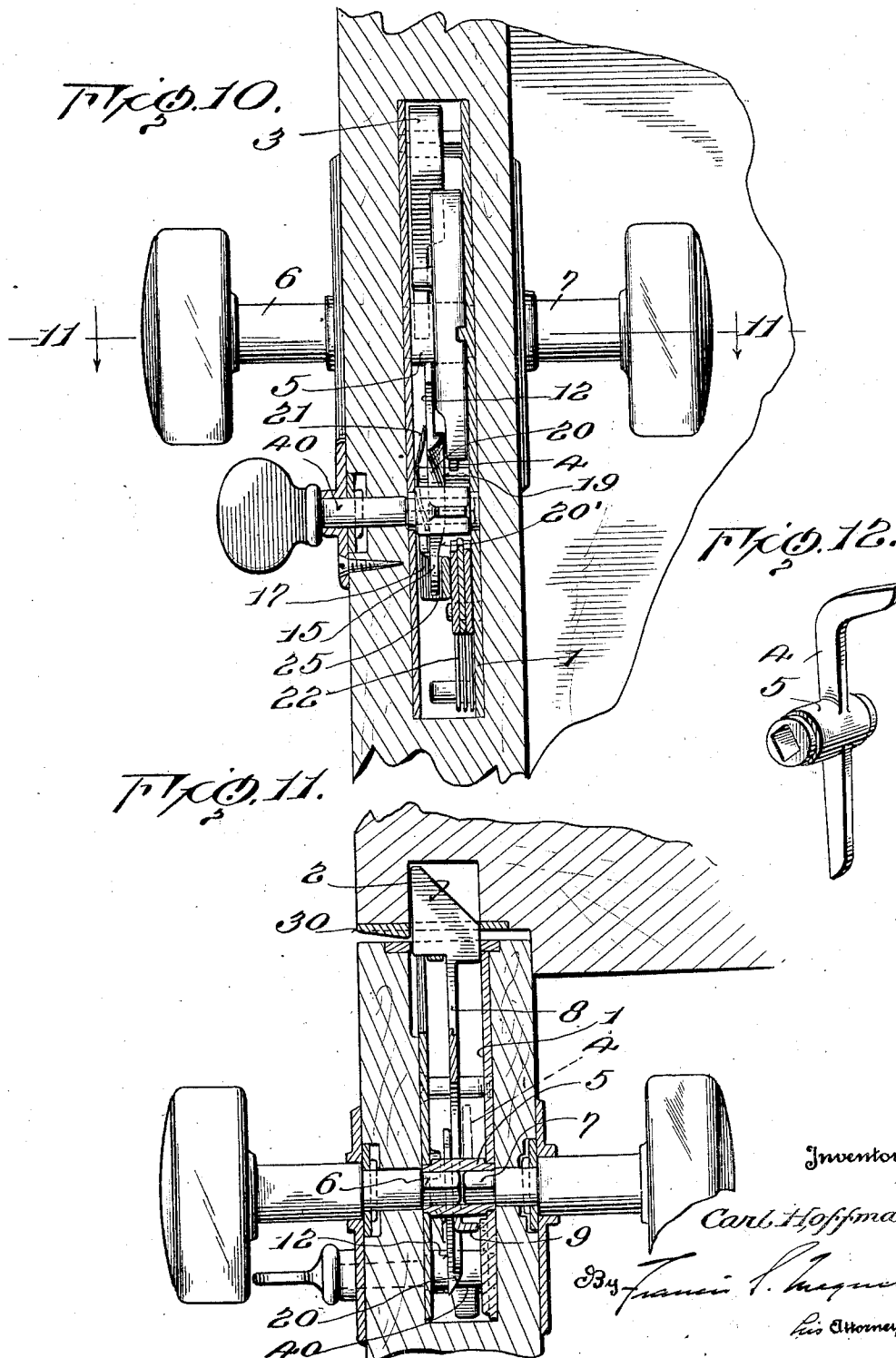
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1,530,672.

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Filed Oct. 9, 1922

4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE.

CARL HOFFMAN, OF ALLENTOWN, PENNSYLVANIA.

LOCK.

Application filed October 9, 1922. Serial No. 593,282.

To all whom it may concern:

Be it known that I, CARL HOFFMAN, a citizen of the United States, residing at Allentown, in the county of Lehigh, and State of Pennsylvania, have invented certain new and useful Improvements in Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to locks for doors and more particularly to one wherein a latch is employed in conjunction with a bolt, the primary object of my invention being to provide a simple and effective means for latching and locking a door, such means including improved elements so arranged as to be operable for latching a door to enable manipulation of the latch to be effected by the usual knob both from the inside and outside.

The invention also contemplates a door fastening device of this character whereby the door may be automatically locked by its bolt when the latch is moved from latching engagement with the striker plate.

Another object of the invention is the provision in connection with a lock of this character of an improved striker plate whereby the door may be slammed closed and locked even though the dead bolt be in protracted position.

The invention further comprehends a fastening device of this kind wherein the dead bolt may be set in a manner to prevent manipulation by a key from the outside of the door or in a manner to permit such key operation, the construction of the device being such that operation of the bolt from the inside must necessarily be preceded by the turning of a fixed key.

In the drawings, Figure 1 is a view, partly in section, showing my improved lock with the parts in position for protracting the bolt by withdrawal of the latch. Figure 2 is a sectional view on line 2—2, Figure 1. Figure 3 is a view similar to Figure 1 showing the latch retracted and the bolt protracted. Figure 4 is a perspective of a preferred form of striker plate. Figure 5 is a detail perspective view of the latch. Figure 6 is a detail perspective view of the con-

trol plate. Figure 7 is a view similar to Figure 1 showing the control plate disengaged from the latch and the bolt set as against key manipulation from the outside. Figure 8 is a sectional view on line 8—8, Figure 7. Figure 9 is a perspective view of the lock housing with the inner plate removed. Figure 10 is a sectional view on line 10—10, Figure 1. Figure 11 is a cross sectional view on line 11—11, Figure 10. Figure 12 is a detail of the operating lever.

1 designates the lock housing including the edge plate with the usual lock and latch apertures, front and back plates and necessary spacing posts, together with key holes, and at 2 I have shown a latch normally protracted by a spring 3 and operable against the tension of the spring by a two arm lever 4, the hub 5 of the lever being arranged to receive the squared ends of the inner and outer knob spindles 6 and 7, respectively. The supporting plate 8 of the latch is bent at right angles along its inner edge to form a flange 9 with which the lever arm 4 engages. Projecting laterally from the plate 8 is a stud 10 which forms a connection between the latch and the control plate 12 through slot 13 of the latter. This control plate 12 is loosely pivoted on the lock casing, as at 14 and has a downwardly extending tongue 15 adapted to engage with the dead bolt 17, and a cut away portion 18 with the pin 10 acts as a stop to prevent manipulation of the parts when the latch and bolt are both protracted. The outer face of the control plate 12 has a thickened portion 19 which is tapered off at its edges as at 20 and 20' for a purpose to be hereinafter explained. A spring 21 on the inner face of the removable plate of the lock housing bears on the control plate 12 and tends to hold it in position to engage the stud 10.

The dead bolt 17 is held in its protracted position, as shown in Figure 8, by spring actuated tumblers 22, a lateral extension 23 of the bolt taking in aligned cut outs 24 of the tumblers. The inner end of the bolt has a recess 25 in which the tongue 15 of the control plate is designed to fit.

At 30 I have shown a striker plate fitted to the outer casing of the doorway and having openings to receive the latch and bolt.

The bolt opening is provided with a filler plate 31, hinged at one end to the outer edge of said opening, and being under spring tension as clearly shown in Figs. 2, 4 and 8, this filler plate 31 being adapted to nearly fill the bolt opening as shown in Figs. 2 and 8 from which views it will also be observed that the bolt opening of the striker plate is extended to a point in proximity to the outer edge of the plate. On the other hand the opening for receiving the latch 2 in the upper part of said striker plate 30 is relatively narrow, a thickened portion being provided adjacent said last-mentioned opening toward the outer edge of said plate against which the latch 2 is adapted to wipe in moving toward its opening, it being noted that the outer edge of this thickened portion is beveled as shown in Fig. 4 so as to retract the latch and permit it to slide into said opening. The inner edge of this thickened portion serves to provide a greater bearing surface for the latch 2 when in its opening and also renders picking of the latch more difficult.

The purpose of this filler plate 31 is to prevent injury to the bolt 17 or striker plate 30 and to assure locking of the door should it be shut with the bolt 17 protracted, the plate giving as the bolt strikes against it in the closing movement. It will be understood that the end of dead bolt 17 will encounter no obstructions before striking the filler plate 31. This is due to the fact that the bolt opening of the striker plate 30 is extended outwardly to meet the bolt and that the bolt end (as clearly shown in Fig. 7) is narrower than the latch end. No thickened portion is provided in front of this opening as illustrated and described in connection with the latch opening. Additional clearance is thus provided.

Upon reference to Fig. 8 it will be evident that the bolt 17, upon being located in its striker plate opening as above described, will be effectually retained against lateral outward movement by the spring pressed filler plate 31.

In the position of the parts as shown in Figure 1 the latch and bolt are coupled by the control plate 12 and turning of the lever 4 by manipulation of the spindle from either inside or outside will cause retraction of the latch 2 and at the same time protraction of the dead bolt 17. This is accomplished by the control plate 12 turning on its pivot 14 through the action of the stud 10 working in the slot 13 of the plate and the tongue 15 engaging the left hand wall of the recess of the dead bolt which forces the latter outwardly, the bolt being free to be shot. When so protracted the tumblers 22 will lock the bolt in this position by the engagement of the extension 23 with the cut outs 24. So locked, the

latch is held in its retracted position, as shown in Figure 3. To withdraw the bolt it is necessary to first disengage the tumblers from the dead bolt and this is done by turning downwardly the inside fixed key 40, or an outside removable key inserted through the key hole 41, to engage the tumblers and force them from the position where the lateral extension 23 of the bolt is in the cut outs 24. This allows the springs 3 to act on the latch and force it outwardly which causes the control plate to turn on its pivot and retract the bolt. The parts are now back in the position of Figure 1, and in order to withdraw the latch without again protracting the bolt, either key is given a turn in the opposite direction from the first movement which causes it to engage one or the other of the tapered edges 20 or 20' according to which key is used, of the control plate 12 and then the thickened portion 19 with the result that the control plate 12 will be forced laterally against the tension of spring 21 and disengaged from the stud 10. Turning of the removable key in the direction opposite to its movement to lift the control plate 12 will cause it to engage and move the lower arm of the lever to retract the latch. Or, with the parts in the position stated, turning of one or the other of the spindles will then retract the latch. Reverse movement of the key allows the spring to force the control plate back to its original position where the stud will engage the slot when the latch is released and returned to its normal position by its spring 3. It is manifest that the fixed key 40 may be left in position to keep the control plate out of engagement with the latch so that the door may be opened and closed in the usual manner from inside or outside by merely turning the knob.

If it be desired to have both the latch and the bolt in engagement with the door casing, through the striker plate, it is only necessary to protract the bolt as before described by the movement of the latch from the position shown in Figure 1 to that shown in Figure 3 and to then turn the key 40 upwardly so as to move the control plate 12 from the position where stud 10 is in the slot 13 which will allow the spring 3 to act on the latch and force it into the position where both the latch and bolt are protracted, as shown in Figure 7. In this position the stud 10 cooperates with the cut away portion 18 of the control plate to lock the latch against retraction other than by key action. To open the door from the outside with the parts as shown in Figure 7 it is first necessary to turn the outside key into engagement with the thickened portion of the control plate so as to disengage it from its locking cooperation with the latch

and to then turn the knob. If the inside key has been turned down releasing the plate 12 the latter will be forced by its spring into a position where its slot 13 will engage the pin 10 of the latch and upon release of the knob the latch will again move outward, forcing the bolt out of the locking position. Manifestly, if the key 40 be turned up into engagement with the control plate when the outside key is operated there can be no retraction of the bolt 17, notwithstanding the latch may be moved. If the person entering the house wishes to set both latch and lock for manipulation by another outside it is necessary that he again turn the key 40 so as to disengage the plate 12 from the pin to allow the latch to be protracted since when it has become coupled with the plate 12 and the door closed it is forced into the position shown in Figure 3.

It is to be noted that when the latch and bolt are coupled, with the stud 10 in the slot 13 of the control plate, the movements of the latch and bolt are in opposite directions.

It is manifest that if the parts are in the position shown in Figures 3 and 7 before the door is closed, any slamming of the door will effect a locking, the bolt 17 engaging the filler plate 31 as it moves to closing position and forcing such plate against the tension of the spring, the plate assuming its normal position after the door is fully closed.

I claim as my invention:

1. A lock including a case, a spring held latch, a lever for retracting said latch, a tumbler controlled bolt, means coupling said latch and said bolt whereby the bolt will be moved in an opposite direction to that of the latch, and means rendering said last mentioned means ineffective.

2. A lock including a case, a spring held latch, a lever for retracting said latch, a tumbler controlled bolt, a control plate having a portion engaging said latch and another portion engaging said bolt whereby the latter will be moved in an opposite direction to that of the latch, and means for disengaging said control plate from said latch to permit actuation of said latch without moving said bolt.

3. A lock including a case, a spring held latch having a stud, a lever for retracting said latch, a tumbler controlled bolt, a control plate having a slot to receive the stud of said latch and also having a portion engaging said bolt whereby the latter will be moved in an opposite direction to that of the latch, and means cooperating with said control plate to disengage it from said latch to permit actuation of the latter without moving said bolt.

4. A lock including a case, a spring held

latch having a stud, a lever for retracting said latch, a tumbler controlled bolt having a recess, a control plate having a slot to receive the stud of said latch and also having a tongue engaging the recess of said bolt whereby the latter will be moved in an opposite direction to that of the latch and means cooperating with said control plate to disengage it from said latch to permit actuation of the latter without moving said bolt.

5. A lock including a case, a spring held latch, a lever for retracting said latch, a tumbler controlled bolt, a control plate having a portion engaging said latch and another portion engaging said bolt whereby the latter will be moved in an opposite direction to that of the latch, said control plate having a thickened portion, and means engaging said thickened portion of said control plate to move it from engagement with said latch to prevent movement of said bolt by actuation of said latch.

6. A lock including a case, a spring held latch, a lever for retracting said latch, a tumbler controlled bolt, a control plate coupled with said latch and said bolt whereby the latter is protracted when said latch is retracted, means for disengaging said control plate from said latch to permit protraction of the latch, and means cooperating with said latch for locking it and said bolt protracted.

7. A lock including a case, a spring held latch having a stud, a lever for retracting said latch, a tumbler controlled bolt, a control plate having a slot to receive the stud of said latch and a cut away portion, said control plate being coupled with said bolt whereby the latter will be moved in an opposite direction to that of the latch, and means cooperating with said control plate to disengage its slotted portion from said stud to allow said latch to be protracted without moving said bolt and causing the stud of said latch to engage the cut away portion of said plate to lock said latch and bolt in protracted position.

8. A lock including a case, a spring held latch having a stud, a lever for retracting said latch, a tumbler controlled bolt, a control plate having a slot to receive the stud of said latch and a cut away portion, said control plate being coupled with said bolt whereby the latter will be moved in an opposite direction to that of the latch, and means with which a key is designed to cooperate to disengage said control plate from its different positions of engagement with the stud of said latch to permit said latch to be protracted or retracted without moving said bolt.

9. A lock including a case, a spring held latch having a stud, a lever for retracting said latch, a tumbler controlled bolt, a control plate having a slot to receive the stud of said latch and a cut away portion, said

control plate being coupled with said bolt whereby the latter will be moved in an opposite direction to that of the latch, a spring acting on said control plate, and means with
5 which a key is designed to cooperate to force said control plate against the tension of its spring from the different positions of en-

gagement with the stud of said latch to permit said latch to be protracted or retracted without moving said bolt. 10

In testimony whereof I have signed this specification.

CARL HOFFMAN.