W. A. LURIE.

DOOR LOCK.

APPLICATION FILED APR. 26, 1921.

1,401,166.

Patented Dec. 27, 1921.

2 SHEETS—SHEET 1.

Fig. 1

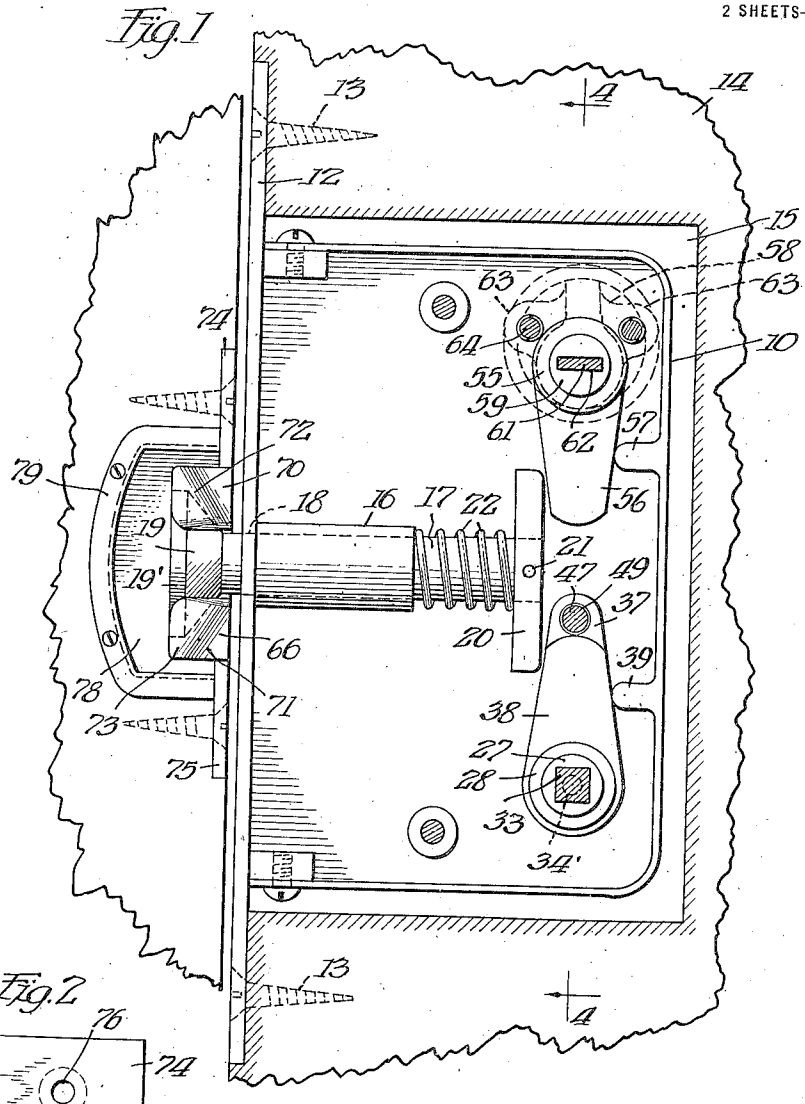


Fig. 2

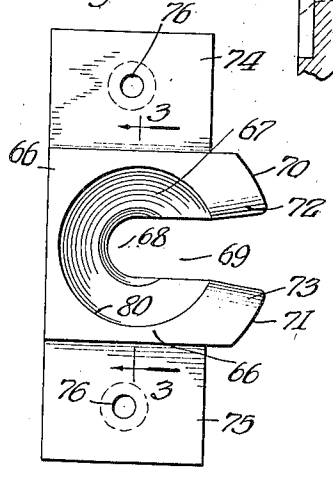
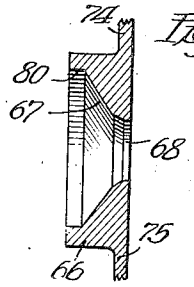


Fig. 3



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2 SHEETS—SHEET 2.

Fig. 4

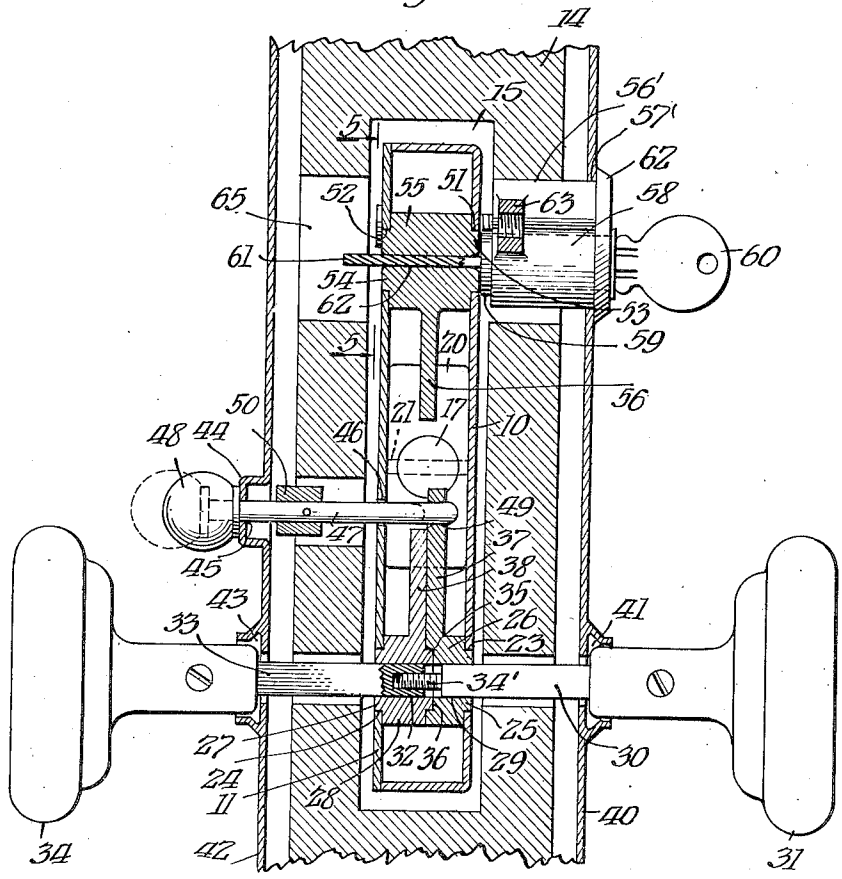
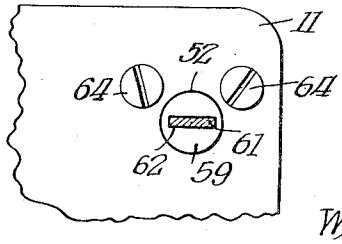


Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM A. LURIE, OF NEW ORLEANS, LOUISIANA.

DOOR-LOCK.

1,401,166. Specification of Letters Patent. **Patented Dec. 27, 1921.**

Application filed April 26, 1921. Serial No. 464,546.

To all whom it may concern:

Be it known that I, WILLIAM A. LURIE, a citizen of the United States, and a resident of New Orleans, in the parish of Orleans, State of Louisiana, have invented certain new and useful Improvements in Door-Locks, of which the following is a specification.

My invention relates to door locks and may be considered as covering improvements on the structure and arrangement disclosed in my Patent No. 1,352,010 of September 7th, 1920.

One of the important objects is to dispense with some of the parts and to revise others so as to greatly simplify the assembling of the lock and the installation thereof and also to reduce the cost. Another important object is to provide means adjustable on the inner escutcheon plate for locking the outer door knob against turning. Another object is to provide simplified construction of the keeper or socket member which receives the conical head of the locking bolt. In general, the object of the invention is to produce a strong, reliable and efficient lock comprising a minimum number of parts so arranged that they will not readily get out of order and so that the lock can be readily manipulated and adjusted.

The various features of my invention are disclosed in the structure appearing on the accompanying drawings, in which drawings—

Figure 1 is a side elevational view of the lock mechanism with one of the side plates removed and the door partly in section,

Fig. 2 is a rear elevational view of the keeper or socket member,

Fig. 3 is a sectional view on plane 3—3, Fig. 2,

Fig. 4 is a sectional view on plane 4—4, Fig. 1 and

Fig. 5 is a view on plane 5—5, Fig. 4.

The lock shown comprises the rectangular metallic box 10 for which the cover plate 11 is provided, the front plate 12 closing the front end of the box and being adapted by screws 13 to be secured against the front edge of a door 14 in which is provided the pocket 15 for the box. Extending transversely a distance from the front of the box near the center thereof is the sleeve 16 which may be integral with the box 10 and in which the lock bolt 17 is slidable. The bolt extends outwardly through the hole 18 provided in the plate 12 and at its outer end terminates in the conical head 19. At its inner end the lock bolt receives the cross bar 20 which is secured thereto in any suitable manner as for example, by means of the pin 21, and between this cross bar and the inner end of the sleeve is the compression spring 22 which resists outward movement of the lock bar.

Near the lower inner corner of the box its side wall has the opening 23 and the cover 11 has the registering opening 24. The opening 23 receives the neck 25 of the hub 26 and the opening 24 receives the neck 27 of the hub 28. The hub 26 has the square opening 29 therethrough for receiving the stem 30 of the outer door knob 31, while the hub 28 has the square opening 32 therethrough for receiving the stem 33 of the inner door knob 34. A screw 34′ extending from the stem 30 threads into the stem 33 and thus connects the stems together but permits relative rotation thereof. The hub 28 has the neck 35 engaging in the pocket 36 of the hub 26, this neck together with the necks 25 and 27 holding the hubs in alinement during relative rotation thereof.

Extending from the hub 26 is the arm 37 and extending from the hub 28 is the arm 38, the arms extending upwardly between the lower end of the cross bar 20 and the stop lug 39 on the inner wall of the box 10, the force of the spring 22 normally holding the arms in vertical position against the stop lug. Upon turning of the door knob 31 the arm 37 will be swung against the cross bar 20 to effect outward shift of the locking bar 17 against the force of the spring 22, and upon turning of the inner door knob 34 the arm 38 is swung to cause outward shift of the locking bolt.

Secured against the outside of the door 14 is the escutcheon plate 40 which has the opening 41 for the stem 30 and knob 31. Secured against the inner face of the door is the estcutcheon plate 42 which has the opening 43 for the stem 33 and the knob 34.

The inner door knob 34 is free at all times to be turned, but provision is made to lock the outer door knob against turning. The escutcheon plate 42 has the inward deflection 44 provided at its center with the hole 45, and in register with this hole the cover 11 of the lock has the hole 46. Extending through these holes is the pin 47 which at its outer end terminates in the knob 48. The lock bar 37 connected with the outer

door knob is longer than the arm 38 of the inner door knob and at its end has the hole 49 for receiving the inner end of the locking pin 47. When the pin is shifted into the hole from the inside of the door it will be impossible to turn the outer door knob 31. A collar 50 secured to the pin 47 limits the outward movement thereof and the knob 48 limits the inward movement of the pin. When the collar abuts against the outer wall of the enlargement 44 the pin will be out of the hole 49 and the arm 37 will be free to be turned by the outer door knob. Thus, a very simple mechanism serves to lock the outer door knob from the inside of the door.

At the upper inner corner of the lock the side wall of the box 10 has the opening 51 and the cover 11 has the registering opening 52, these openings receiving the bearing necks 53 and 54 at the ends of the hub 55, from which the arm 56 extends downwardly between the upper end of the cross-bar 20 and the stop lug 57, the arm being normally held against the stop lug by the force of the spring 22.

The door 14 has the opening 56′ and the outer escutcheon plate 40 has the opening 57′, through which openings is extended the tumbler frame 58 in which is journaled the key cylinder 59 for the key 60. Extending inwardly from the cylinder is the bar 61 which passes through the rectangular opening 62 in the hub 55 so that upon turning of the key 60 the hub 55 will be turned and the arm 56 swung against the cross bar 20 to shift the locking bolt 17 outwardly against the force of spring 22. The frame 58 has the escutcheon flange 62 which engages against the escutcheon plate 40 and at its inner end has the laterally extending lugs 63 which are threaded to receive the screws 64 which extend through openings provided in the side walls of the lock box 10. To permit application of the tumbler frame the door 14 has the space 65 cut therein so that the screws 64 can be turned from the inside of the door before application of the escutcheon plate 42. It is therefore impossible to remove the tumbler frame from the door from the outside thereof and the arm 56 can be swung only when the proper key is inserted in the key cylinder. When the arm 37 of the outer door knob is locked by the pin 47 it will be impossible to open the door except by use of the proper key in the key cylinder.

In Figs. 1, 2 and 3 the construction of my improved keeper member is clearly shown. The body 66 of the keeper member is rectangular and has the conical pocket 67 corresponding in shape with the head 19 of the locking bolt, the opening 68 being of a size to receive the bolt stem, the passageway 69 leading to the opening. The body 66 has the guide projections 70 and 71 at the outer end of the guide passageway 69, these projections being beveled on their inner faces to provide the inclined surfaces 72 and 73 for guiding the bolt head into the socket 67. Extending from the body 66 are the wings 74 and 75 having screw holes 76 whereby the keeper member may be readily secured on the framework 77 surrounding the door, the framework having the pocket 78 for receiving the body 66, the opening being large enough to permit sufficient inward movement of the locking bolt head to clear the keeper member. To afford a finished appearance an escutcheon frame 79 is secured around the edge of the opening 78 as clearly shown in Fig. 1.

When the door is closed the parts are in the position indicated in Fig. 1, the spring 22 holding the locking bolt 17 inwardly with the head 19 within the socket 67 and the cross bar 20 against the arms 37, 38 and 56. The cylindrical outer section 19′ on the bolt head is within the cylindrical section 80 at the outer edge of the socket 67 and thus it will be impossible to open the door merely by pressing against it. To open the door it will be necessary to positively shift the bolt 17 outwardly to positively release the head 19 from the keeper member. When the key 47 is out this can be accomplished by turning either of the door knobs 31, 34 or, by turning the key 60. If the key 47 is in the hole 49 then the outer door knob is locked against rotation and the bolt 17 can be released from the keeper only by means of the inner knob 34 or by turning of the proper key 60. After opening of the door and release of the door knobs or key the parts will be returned to their normal positions by the spring 22. When the door is swung to closed position the bolt 17 at the base of its head will enter the passageway 69 and the beveled surfaces 72 and 73 will receive the conical side of the head and as the door closes the head will be drawn outwardly until it drops into the socket 67, in which position it is held by the spring 22 with the cylindrical surfaces 19′ and 80 in register and the door is again locked.

My improved lock is of simple and durable construction. The few parts are readily assembled and the arrangement is such that they cannot readily get out of order. The long sleeve 16 accurately guides the locking bolt 17 so that it can always accurately operate the keeper member. The pin 47 affords a very simple, convenient and efficient means for locking the outer door knob from the inside of the door. The securing of the tumbler frame from the inside of the door will prevent removal of such frame from the outside of the door and when the outer door knob is locked it will be impossible to open the door except with the proper key 60, it being almost impossible to pick the lock

from the outside. When the door is closed the spring 22 will hold the locking bolt head firmly in the keeper socket and rattling of the door will be prevented.

I do not desire to be limited to the exact construction, arrangement and operation shown and described as changes and modifications may be made which would still come within the scope of the appended claims.

I claim as follows:

1. In locking mechanism of the class described, the combination of a lock frame, a locking bolt extending into said frame from the exterior thereof, a sleeve forming part of the lock frame for receiving and guiding said bolt, a cross bar on the inner end of said bolt, a compression spring encircling the bolt between said cross bar and the inner end of said sleeve and tending to hold said bolt inwardly, a door knob, a stem extending from the door knob into said lock frame, and an arm extending from said stem behind said cross bar, turning of said door knob causing swing of said arm against said cross bar and outward shift of the locking bolt.

2. In locking mechanism of the class described, the combination of a lock frame, a locking bolt extending into said frame from the exterior thereof, a sleeve forming part of the lock frame for receiving and guiding said bolt, an abutment at the inner end of said bolt, a spring between said abutment and the inner end of said sleeve tending to hold said bolt inwardly, a stem extending into said lock frame, an arm extending from said stem behind said bolt abutment, turning of said stem causing swing of said arm against said abutment and outward shift of said bolt against the force of said spring, and a pin adapted to be shifted into the path of said arm for preventing rotation thereof.

3. In locking mechanism of the class described, the combination of a lock frame, a locking bolt extending into said frame from the outside thereof, a sleeve in said lock frame for receiving and guiding said bolt, an abutment at the inner end of said bolt, a compression spring between said abutment and the inner end of said spring for resisting outward shift of said bolt, a stem extending into said frame, an arm on said stem behind said abutment, turning of said stem tending to swing said arm against said abutment to shift said bolt outwardly, said arm having a hole, and a pin adapted to be shifted into said hole to prevent swing of said arm.

4. In locking mechanism of the class described, the combination of a door, a lock frame secured within the door, a locking bolt extending into said frame from the exterior thereof, a sleeve within the lock frame for receiving and guiding said bolt, an abutment on the inner end of said bolt, a spring between said abutment and inner end of said sleeve for resisting outward shift of said bolt, a stem extending into said lock frame, an arm on said stem extending behind said abutment, turning of said stem tending to swing said arm to shift said locking bolt outwardly, said arm having a hole, and a lock pin operable from the inside of the door to be extended into said hole to thereby lock said arm against swing.

5. In lock mechanism of the class described, the combination of a lock frame, a locking bolt extending into said frame from the exterior thereof and having a locking head at its outer end, a sleeve within said frame for receiving and guiding said locking bolt, an abutment at the inner end of said bolt, a spring between said abutment and the inner end of said sleeve for resisting outward movement of said bolt, an inner door knob and an outer door knob, stems extending from said door knobs into said frame and connected together for relative rotation, an arm extending from one of said stems within said frame behind said locking bolt abutment, an arm extending from the other stem behind said abutment, turning of said knobs tending to swing said arms against said abutment to shift said lock bolt outwardly, and a locking pin adapted to be engaged with one of said arms to prevent swing thereof.

6. In locking mechanism of the class described, the combination with a door, of a locking frame, the door having a pocket for receiving said frame, a locking bolt extending into said frame from the outside thereof and having a locking head at its outer end, a sleeve within said frame for receiving and guiding said bolt, an abutment at the inner end of said bolt, a spring interposed between said abutment and the inner end of said sleeve for resisting outward shift of said bolt, an inner door knob, an outer door knob, a stem extending from each of said knobs through said door into said lock frame, said stems being relatively rotatable, an arm extending from the stem of the inner door knob upwardly and behind said locking bolt abutment, and arm extending from the stem of the outer door knob upwardly and behind said abutment, turning of said knobs tending to swing said arms to shift said locking bolt outwardly, the arm on said outer door knob stem having a hole, and a pin shiftable from the inside of the door to engage in said hole to lock said arm against swing.

7. In locking mechanism of the class described, the combination of a locking frame, a locking bolt extending into said frame from the exterior thereof, a sleeve forming part of the locking frame for receiving and guiding said bolt, an abutment at the rear end of said bolt, a compression spring inter-

posed between said abutment and the inner end of said spring, a stem extending into said frame, an arm on said stem projecting upwardly behind said abutment, an abutment lug on said frame, said spring pressing said locking bolt abutment against said abutment lug normally, and means for preventing swing of said arm.

8. In locking mechanism of the class described, the combination of a locking frame, a locking bolt projecting into said frame from the exterior thereof and reciprocable in said frame, an abutment at the inner end of said bolt, means for resisting outward shift of said bolt, a stem extending into said lock frame, an arm on said stem extending behind said abutment, turning of said stem tending to shift said locking bolt outwardly, said arm having a hole, and a locking pin shiftable into said hole to prevent swing of said arm.

9. In locking mechanism, the combination of a door, a lock frame seated in the door, a locking bolt extending into said frame from the exterior, means for resisting outward shift of said bolt, an inner door knob and an outer door knob, a stem extending from each door knob into said frame, an arm on each stem extending up behind said locking bolt whereby turning of either knob will tend to swing the respective arm against said bolt to cause outward shift thereof, an inner escutcheon plate and an outer escutcheon plate for said door, one of said arms having a hole, a locking pin extended through the inner escutcheon plate into said lock frame, said locking pin when in its inner position engaging in said hole to prevent swing of said arm, a knob on the outer end of said pin, and a sleeve on said pin inside of said escutcheon plate, said knob and sleeve limiting respectively the inward and outward shift of said pin.

In witness whereof, I hereunto subscribe my name this 18th day of April, A. D. 1921.

WILLIAM A. LURIE.