Aug. 28, 1934. W. R. SCHLAGE 1,971,580

DOORLOCK

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Fig. 1.

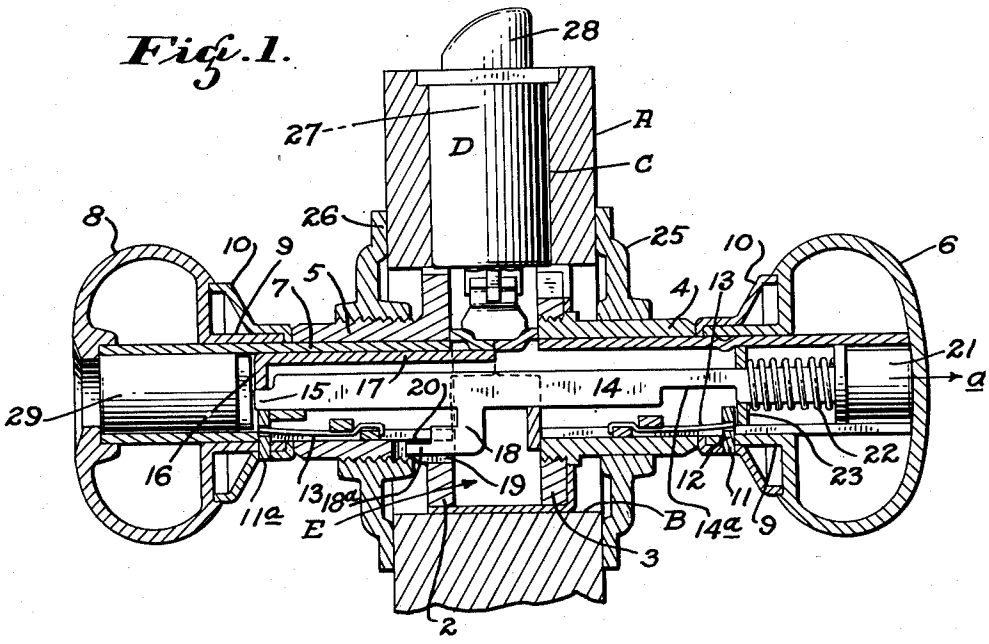
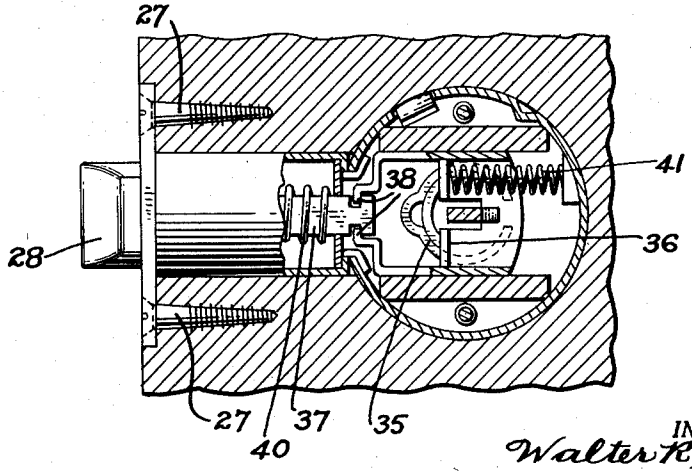


Fig. 2.



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DOORLOCK

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12 Claims. (Cl. 70—91)

This invention relates to door locks, and especially to means for dogging or securing the outer knob and spindle against rotation and the knob against removal from the spindle.

In the installation and operation of door locks, particularly the type which is applied to a front or main entrance door, it is desirable to provide a lock having an outer knob and a key actuated mechanism in the knob whereby the door may be unlocked and opened. In a door lock of this character it is furthermore desirable to secure the knob and the key actuated mechanism against removal from the spindle, for instance by thieves, or other unauthorized persons, and also to secure the knob and spindle against rotation so that the door can not be opened from the exterior except by authorized persons possessing the proper key.

A door lock of this general character is disclosed in my co-pending application entitled "Door lock indicator" filed July 1st, 1929, Serial Number 374,985, and also in my co-pending application entitled "Door lock" filed November 10th, 1928, Serial Number 318,519. Both of the structures shown in these applications show means for temporarily securing the outer knob and spindle against rotation but they show no means for permanently obtaining this result, nor do they show means for locking the outer knob and the key actuated mechanism carried thereby against removal from the spindle.

The object of the present invention is to generally improve and simplify the construction and operation of door locks of the character described and particularly to provide means whereby the outer knob and spindle are permanently secured against rotation; and, further, to provide other means whereby the outer knob and the key actuated mechanism carried thereby is locked against removal from the outer spindle.

The invention is shown by way of illustration in the accompanying drawing, in which—

Fig. 1 is a central, longitudinal, horizontal section of the door lock,

Fig. 2 is a vertical cross section of the same.

Referring to the drawing in detail and particularly Fig. 1, A indicates in general a door in which are formed two openings, one extending through the door from face to face as indicated at B and a second opening disposed at right angles thereto and entering through the edge of the door as indicated at C. Suitably mounted and secured in the opening C is a latch unit D and suitably secured and mounted in the opening B is a latch actuating unit generally indicated at E. The latch actuating unit comprises a housing generally indicated at 2 and 3 on which is formed outwardly extending spindle bearings 4 and 5. Extending through the bearing 4 is a spindle 4^a on which is secured an inner knob 6 and mounted in the opposite bearing 5 is a spindle 7 on which is secured an outer knob 8. Both knobs are provided with hub sections 9 and inner cover plates 10, and both knobs are secured to their respective spindles by means of detent members 11 and 11^a which extend through slotted portions formed in the hub and cover plates and generally indicated at 12. The detents are normally held in an outward or projected position by means of springs 13 and, if it is desired to remove either knob, it is accomplished by depressing or pushing the detents 11 inwardly, for instance by means of a screw driver or the like and when the detents are thus depressed the knobs can be removed in an endwise direction from the respective spindles.

The present invention is particularly concerned with a provision of means for dogging or securing the detent 11^a, which secures the outer knob on the spindle, against depression except by an authorized person. This is accomplished as follows: Mounted in the inner spindle 4^a is a locking or dogging bar 14. One end of the dogging bar projects through the outer spindle 7 and the outer end of the bar is provided with an offset portion or dog 15 which is adapted to be interposed between the inner end of the detent 11^a and an inturned shoulder 16 formed on a key actuated spindle 17 hereinafter to be described.

The locking bar is also provided with a dogging plate such as shown at 18 and this enters a slot 19 formed in the housing 2, and furthermore, enters a slot 20 formed on the inner end of the outer spindle and when the dogging plate 18 assumes the position shown in Fig. 1 it forms an interlock between the outer spindle 7 and the housing 2 which secures the outer spindle and knob against rotation. A push button 21 is mounted on the dogging bar and a spring 22 is interposed between this button and a stationary plate 23 secured within the spindle 4^a, this spring serving the function of imparting movement to the dogging bar in the direction of arrow *a* when the inner knob is removed as will hereinafter be described.

In actual operation the latch actuating unit E is secured in a door by means of a pair of escutcheon plates such as shown at 25 and 26, respectively, and the latch unit E is secured by

means of screws such as indicated by dotted lines at 27. When the lock as a whole is installed and secured in a door, latch 28 is retracted by merely rotating the inner knob 6. Such rotary motion is transmitted to the spindle 4^a and as the spindle carries a roll-back member motion is transmitted from the roll-back member to retract the latch, thus permitting opening of the door from the inner side. The outer knob is provided with a key actuated mechanism generally indicated at 29 and as the outer knob is normally secured against rotation by means of the dogging plate 18 the door can only be opened from the exterior by insertion of the proper key. The key, when inserted, transmits motion through an ordinary cam plate to the auxiliary spindle shown at 17. This carries a roll-back member and the roll-back member transmits motion to retract the latch 28, hence the door is opened from the inner side by rotation of the inner knob and it is opened from the exterior side by insertion of the proper key.

Where a door lock of this character is employed in an apartment house, or like dwelling, it sometimes happens that the tenant will move away and neglect to turn in the keys. Sometimes such neglect is intentional, but be that as it may, under such conditions before a new tenant moves in it is necessary to change the combination of the key actuated lock so that the new tenant may be provided with new keys, thus eliminating any chance of the old tenant gaining admission. Where such a change in the key combination is required it is of course essential to remove the outer knob so as to permit removal of the key actuated mechanism to change the combination.

In the present instance this can not be accomplished until the dogging member 15 has been released and this cannot be released until the inner knob 6 is removed, hence the person authorized to make the change must first of all be in possession of the proper or master key so as to open the door as dog 15 cannot be released until the inner knob 6 is removed. Hence it is essential that the person who is authorized to change the combination of the lock must first open the door with the proper key and then remove the inner knob. The inner knob is removed by merely depressing the detent 11 by means of a screw driver or the like. When this is depressed knob 6 may be removed endwise from its spindle and when it is removed dogging bar 14 will move outwardly in the inner spindle due to the tension of the spring 22 and its movement will be stopped when the dogging plate 18 engages the inner face of the lock housing. When this position is reached dog 15 has moved out of alignment of the detent 11^a and the shoulder 16 and the dogging plate 18 has moved out of the slots 19 and 20, thus leaving the outer knob and spindle free to rotate and at the same time leaving the detent 11^a free to be depressed so that the outer knob may be removed and then the key actuated mechanism indicated at 29. After a key mechanism with a different combination has been inserted the outer knob is placed in position and secured by the detent 11^a. The inner knob is then applied and as it moves inwardly it engages the button 21 and thereby forces the dogging bar inwardly whereby the dog 15 becomes interposed between the detent 11^a and the shoulder 16 and the dogging plate 18 enters the slots 19 and 20. The inner knob is then secured by outward movement of the detent 11 and the outer knob is now secured both against removal and against rotation.

One edge of the dogging bar is provided with a recess such as shown at 14^a, this recess being provided for the purpose of permitting inward movement or depression of the detent 11 when the inner knob has been removed and the dogging bar assumes its outer position. It will also be noted that the dogging plate 18 is provided with a small projection such as shown at 18^a. This extension is sufficiently long to remain in the slot 19 of the lock housing when the dogging bar is retracted and as such merely functions as a guide to insure entrance and removal of the dogging plate from the slots 19 and 20.

The type of roll-back member formed on the inner end of each spindle is shown at 35, see Fig. 2. This engages a plate 36 formed on the retractor 37. This retractor is provided with fingers 38 which engage slots formed in the inner end of a bar 39. This bar is connected with the latch 28 and as either spindle is rotated motion is transmitted through one or another of the roll-back members 35 to reciprocate the retractor 37 and as this is engaged with the latch bar 39, latch 28 will be retracted, reverse motion being transmitted by means of a pair of springs 40 and 41. This mechanism forms no part of the present invention and it is for this reason that a brief description is being submitted.

While certain features of the dogging mechanism have been more or less specifically described and illustrated, I wish it understood that various changes may be resorted to within the scope of the appended claims. Similarly, that the materials and finishes of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In a door lock of the character described a housing adapted to be mounted in a door, an inner and an outer spindle in said housing, an inner and an outer knob mountable one on each spindle, means for retaining the outer knob against removal from its spindle, and means actuated by movement of the inner knob on its spindle for securing against or releasing for operation the outer knob retaining means.

2. In a door lock of the character described a housing adapted to be mounted in a door, an inner and an outer spindle in said housing, an inner and an outer knob mountable one on each spindle, means for retaining the outer knob against removal from its spindle, and means actuated by longitudinal movement of the inner knob on its spindle for securing against or releasing for operation the outer knob retaining means.

3. In a door lock of the character described a housing adapted to be mounted in a door, an inner and an outer spindle in said housing, an inner and an outer knob mountable one on each spindle, means for securing each knob on its spindle, and means actuated by attaching the inner knob to its spindle for securing the outer knob securing means against release.

4. In a door lock of the character described a housing adapted to be mounted in a door, an inner and an outer spindle in said housing, an inner and an outer knob mountable one on each spindle, means for securing each knob on its spindle, and means actuated by attaching the inner knob to secure the outer knob against removal.

5. In a door lock of the character described a

housing adapted to be mounted in a door, an inner and an outer spindle in said housing, an inner and an outer knob mountable one on each spindle, and means actuated by attaching the inner knob to its spindle for securing the outer knob against rotation.

6. In a door lock of the character described a housing, an inner and an outer spindle in said housing, a latch actuating mechanism carried by the outer spindle, a latch actuating mechanism carried by the inner spindle, means retaining the outer latch actuating mechanism against removal from the spindle, and means actuated by the latch actuating mechanism on the interior end of the spindle for securing against or releasing for operation the retaining means whereby the latch actuating mechanism on the outer spindle is retained.

7. In a door lock of the character described a housing, an inner and an outer spindle in the housing, a key actuated mechanism in the outer spindle, a knob on the inner spindle, retaining means securing the key actuated mechanism against endwise removal from its spindle, and means actuated by movement of the knob on its spindle for securing against or releasing for operation the retaining means whereby the key actuated mechanism is secured.

8. In a door lock of the character described a housing, an inner and an outer spindle in the housing, an inner and an outer knob mountable one on each spindle, key actuated means in the exterior knob, retaining means securing the exterior knob and the key actuated mechanism carried thereby against endwise removal from its spindle, and means actuated by longitudinal movement of the inner knob on its spindle for dogging or releasing the retaining means for operation whereby the exterior knob and key actuated mechanism is secured.

9. In a door lock of the character described a housing, an inner and an outer spindle in the housing, an inner and an outer knob mountable one on each spindle, key actuated means in the exterior knob, a detent member extending through the spindle and knob and normally securing the exterior knob and the key actuated mechanism carried thereby against endwise removal from the spindle, a dogging bar extending through the spindle, a dog on said bar normally engaging the detent member and securing it against release, said dogging bar adapted to move longitudinally in the spindle as the inner knob is applied or removed so as to move the dogging member into or out of engagement with the detent member.

10. In a door lock of the character described a housing, an inner and an outer spindle in the housing, an inner and an outer knob one for each spindle, key actuated means in the exterior knob, a detent member extending through the spindle and knob and normally securing the exterior knob and the key actuated mechanism carried thereby against endwise removal from the spindle, a dogging bar extending through the spindle, a dog on said bar normally engaging the detent member and securing it against release, said dogging bar adapted to move longitudinally in the spindle as the inner knob is applied or removed so as to move the dogging member into or out of engagement with the detent member, and a dogging plate on the dogging bar adapted to secure the exterior knob and spindle against rotation.

11. In a door lock a hollow spindle, a removable knob on the spindle, a knob securing member disposed interiorly of the spindle and movable outwardly into engagement with the knob to secure the knob against endwise removal from the spindle, and means disposed interiorly of the spindle and longitudinally movable with relation to the knob spindle to prevent inward movement of the knob securing member and release of the knob.

12. In a door lock a tubular spindle, a removable knob on the spindle, a knob securing member disposed interiorly of the spindle and radially movable into engagement with the knob to secure it against endwise removal, and a dogging member disposed interiorly of the tubular spindle and adapted to be adjusted longitudinally to assume a position where it will obstruct inward radial movement of the knob securing member to prevent release of the knob.

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