Jan. 15 , 1924. **1,480,643**

W. R. THOMPSON

PLURAL DOOR LOCK

Filed Nov. 2, 1922 **2 Sheets-Sheet 1**

FIG. 1

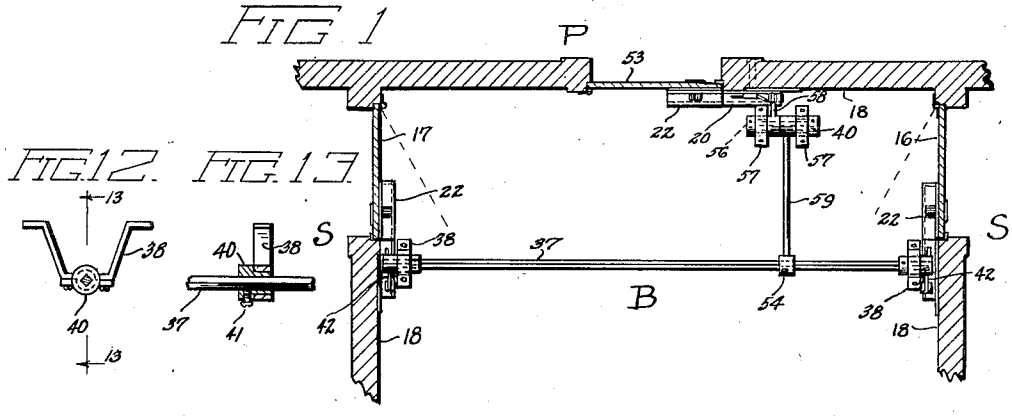


FIG. 12. FIG. 13.

FIG. 2

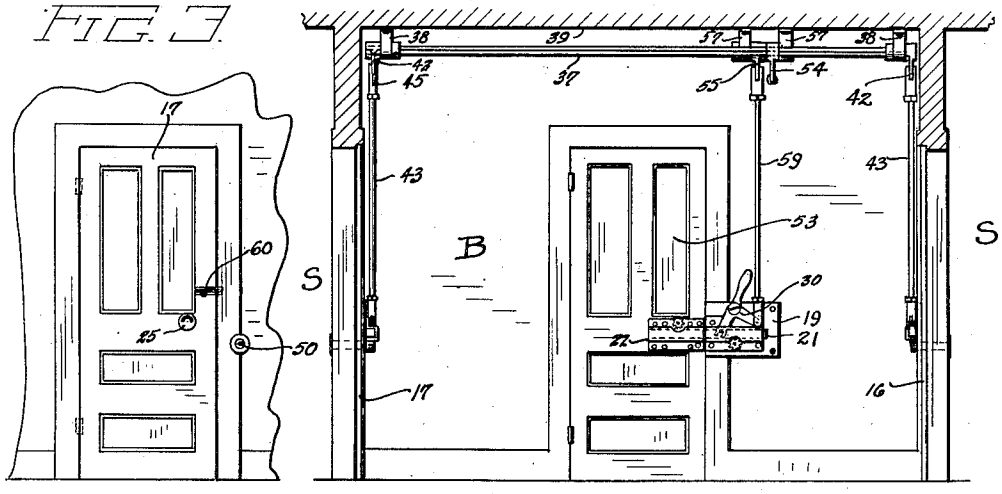


FIG. 3

FIG. 10.

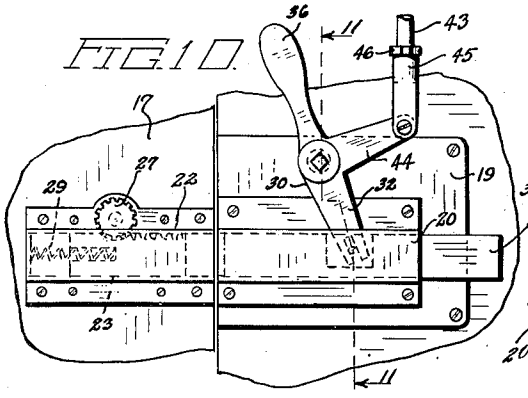
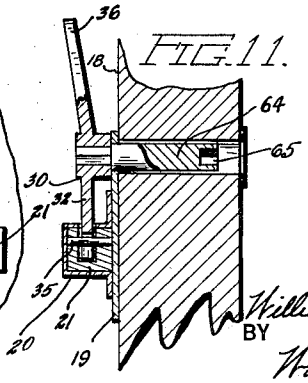


FIG. 11.



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FIG. 4.

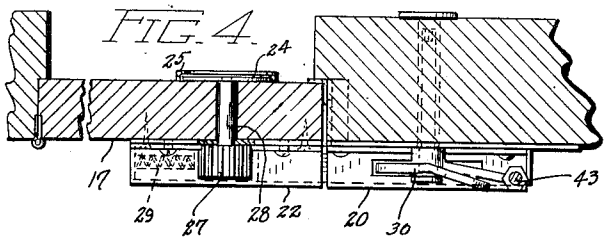


FIG. 15.

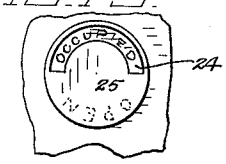


FIG. 5.

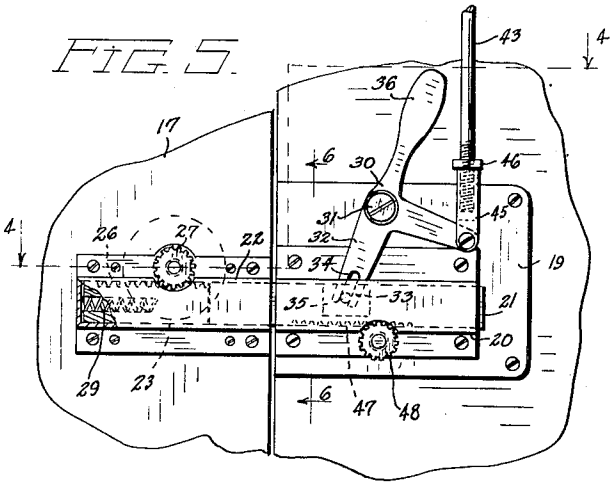


FIG. 6.

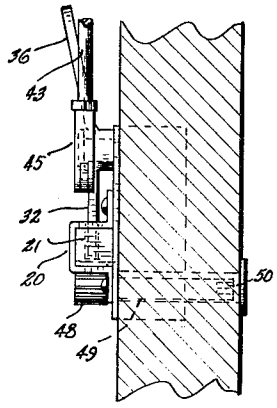


FIG. 8.

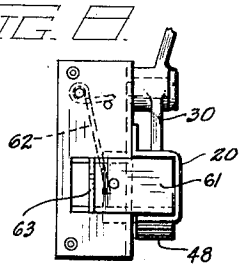


FIG. 7.

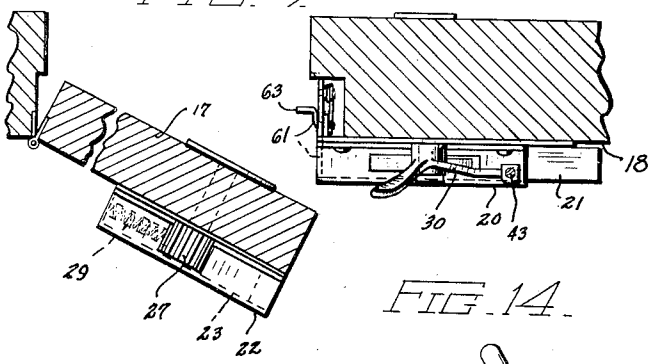


FIG. 14.

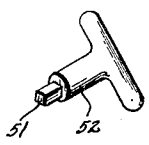
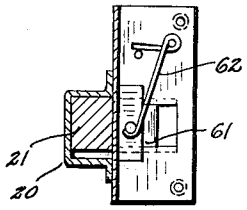


FIG. 9.



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Patented Jan. 15, 1924. 1,480,643

UNITED STATES PATENT OFFICE.

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PLURAL-DOOR LOCK.

Application filed November 2, 1922. Serial No. 593,504.

To all whom it may concern:

Be it known that I, WILLIAM R. THOMPSON, a citizen of the United States, residing at Rowayton, county of Fairfield, State of Connecticut, have invented an Improvement in Plural-Door Locks, of which the following is a specification.

This invention relates to locks and particularly to a locking means for simultaneously controlling a plurality of doors. The device is especially adapted for controlling the doors leading to the so-called semi-private bathrooms provided in some hotels and on ships. In this type of bathroom it is placed between two staterooms with a door leading from each stateroom to the bathroom. In the arrangement as now generally employed there is a separate bolt or lock for each door operable from within the bathroom, and the party using the bathroom would lock his neighbor's door from the inside and also his own by distinct and separate operations. Very often when the party left the bathroom he would forget to unlock the door leading from the other stateroom or would purposely leave it locked and deprive the other party of the use of the bathroom. This led to a great deal of trouble and confusion and deprived one party of his rights.

It is, therefore, an object of the present invention to obviate these difficulties, and to provide locking means for the two or more doors of such an arrangement whereby when either party wishes to use the bathroom he may simultaneously lock both doors from within the room, but is so arranged that he cannot leave the room without unlocking the other party's door so there is no possibility of his monopolizing the bathroom.

It is a further object of the invention to provide a device of simple construction for accomplishing this result which will be comparatively cheap to manufacture and install and which will be reliable and efficient in operation.

With the foregoing and other objects in view I have devised the construction illustrated in the accompanying drawings, in which—

Fig. 1 is a top sectional plan view showing my device as controlling a plurality of doors leading to a single room.

Fig. 2 is a vertical section through the room.

Fig. 3 is an elevation of one of the doors from the outside.

Fig. 4 is a detailed sectional view substantially on line 4—4 of Fig. 5.

Fig. 5 is an elevation of the locking means for a single door from within the bathroom, showing the device in locking position.

Fig. 6 is an end view looking from the right of Fig. 5, the wall being shown in section.

Fig. 7 is a sectional view showing means for preventing operation of the lock when the door is open.

Fig. 8 is a side elevation of this safety device.

Fig. 9 is a section substantially on line 9—9 of Fig. 5.

Fig. 10 is a view similar to Fig. 5 showing the device in unlocked position and also showing a slightly different construction.

Fig. 11 is a section substantially on line 11—11, Fig. 10.

Fig. 12 is a side elevation of a supporting bracket for the operating rod.

Fig. 13 is a section through this bracket substantially on line 13—13, Fig. 12,

Fig. 14 is an elevation of a key by which the doors may be unlocked from the outside of the room, and

Fig. 15 is a plan view of an indicator.

In the drawing the bathroom is indicated at B with two staterooms S on the opposite sides thereof, with doors 16 and 17 leading from these staterooms respectively to the bathroom. I have shown my improved locking device as applied to these doors, but the scale used in the drawings is such that the size of the locking device is all out of proportion to the size of the room and the doors to more clearly show the arrangement.

In the embodiment shown, on the inner wall 18 of the bathroom adjacent the swinging edge of each door is mounted a plate 19 carrying a casing 20 in which is slidably mounted a bolt 21. Carried by each door adjacent this casing and in alignment therewith is a second casing 22 which is adapted to receive an end of the bolt 21 to lock the door and also to carry a second bolt 23 which is arranged to be operated by the first bolt 21 to operate the dial 24 of an indicator 25. This second bolt is provided with teeth 26 on one side adapted to engage with a pinion 27 connected by means of a shaft 28 with

the dial 24, this dial being on the outside of the door or in the stateroom to indicate whether the bathroom is occupied. A spring 29 tends to advance the bolt 23 toward the edge of the door or to the right, as shown in Figs. 4, 5, and 10.

Suitable means is provided for sliding the bolt 21 to and from the door locking position such as a bell crank lever 30 fulcrumed at 31 and having one of its arms 32 connected with the bolt by a pin and slot connection. In the form shown the arm is forked at 33 and projects into a recess 34 in the bolt, and embraces the transverse pin 35. The bell crank lever is provided with an operating handle 36. Extending throughout the length of the room is rod 37 which is preferably square in cross section although it may be any other shape desired and it is rotatably mounted in suitable brackets 38 secured to the wall of the room, as the ceiling 39. As the rod is square I provide a sleeve 40 cylindrical on its outer wall, so as to turn readily in the bearing bracket and adjustably secured to the rod by any suitable means as a set screw 41. Also clamped on the rod are the arms 42 and these arms are connected by a connecting rod 43 with another arm 44 of the bell crank lever 30, the connecting rod having pivoted connection with these arms. The connecting rods 43 are also preferably adjustable in length as by having threaded engagement with the connecting elements 45 secured in adjusted position by lock nuts 46. The bolt 21 is also preferably provided with teeth 47 meshing with a pinion 48 connected to a shaft 49 projecting through the wall of the room so that it is accessible from the stateroom, but is operable only by means of a special key which will be in the hands of an authorized person only, such as the steward. For the purpose of illustration I have shown the shaft 49 as provided with a square socket 50 in the end thereof in which the square end 51 of the key 52 may be inserted to operate the bolt.

Sometimes the bathroom is provided with a third door 53 leading to a passageway P outside the staterooms, and in this event this door may be provided with the same locking mechanism and connected with the rod 37 so that all three locks will be operated simultaneously. This can be done by mounting on the rod an arm 54 similar to arms 42 and connecting it to a similar arm 55 of a short counter shaft 56 mounted in brackets 57 in the same manner as is the rod 37, and which is provided with another arm 58, connected by rod 59, similar to the connecting rods 43, with the lock operating bell crank lever 30 of this third door.

Each door is provided on the outside thereof with a bolt 60 which is operable only from that side of the door so that each door may be locked from the inside of the stateroom to prevent access to the stateroom from the bathroom.

Mounted to slide in the jamb of each door is a plate 61 and it is provided with a spring 62 tending to advance the same into the path of movement of the bolt 21 and prevent operation thereof under certain conditions presently to be described. This plate is provided with means adapted to be engaged by the door such as a projection 63 to retract this plate from the path of movement of the bolt when the door is moved to closed position.

The operation is as follows:

Assuming both doors are closed and a party wishes to use the bathroom he will first unlock his door from his stateroom by sliding the bolt 60. As the bolts 21 are all retracted he may now open his door but as he opens the door the plate 61 is advanced by the spring 62 to a position across the inner end of the bolt 21 as shown in Fig. 7. If he tries to lock the doors without closing his own door he cannot do so as this plate 61 will prevent the sliding of the bolt 21 to locking position, and as the locking bolts on all of the doors are connected together he cannot lock any door while his door is open. Therefore, in order to lock the door into his neighbor's stateroom he must close his own door. When the door is closed the projection 63 of the plate 61 will be engaged by the edge of the door and will retract the plate 61 from the path of movement of the bolt 21. The door may now be locked by swinging the lever handle 36 away from the door sliding a portion of the bolt 21 into the casing 22 carried by the door. As the bell crank levers 30 are connected by rods 43 and 37, all the doors will be locked simultaneously by the act of locking any one door. Conversely, when a party wishes to leave the bathroom the act of unlocking his own door must simultaneously unlock all the other doors, and because of the plates 61, as he cannot lock any of the doors when his door is open, he cannot leave the bathroom without leaving all the doors unlocked from the inside. He, therefore, cannot leave his neighbor's door locked and prevent his use of the bathroom. Operation of bolts 21 will also operate the short bolts 23 and through the pinion 27 will operate the indicator dial 24 so that any party may ascertain at a glance whether the bathroom is occupied.

There should be some means, however, whereby an authorized person may unlock the doors from either stateroom or the passageway. For this purpose the pinion 48 connected with the bolt 21 and operable by the key 52 is provided. It will be apparent that operation of the pinion 48 for any door will unlock all the doors. Thus if a party

should become ill or disabled in the bathroom, the doors may still be opened by an authorized person.

In Figs. 10 and 11 I have shown a construction slightly different in which the pinion 48 is omitted and the bell crank lever 30 is mounted on a shaft 64 in which the socket 65 for the key 52 is provided.

I have shown the locks and the operating means therefor as mounted within the bathroom and so they may be applied to rooms already built. When they are applied to rooms as they are constructed they may of course be located in the walls and partitions so as to be out of sight, and may not be readily tampered with.

It will be apparent from the foregoing description that I have provided a simple and effective device whereby the doors to a room may be simultaneously locked and unlocked and whereby the rights of all parties entitled to the use of a room will be safe guarded, as no party can prevent the other party from using the room when he does not wish to use it himself.

Having thus set forth the nature of my invention, what I claim is:

1. In combination a plurality of doors, locking means for each door, an operative connection between the locking means whereby they will move in unison, and means for preventing locking of one door when the other door is open.

2. In combination a plurality of doors, locking means for each door, an operative connection between the locking means whereby they will be operated in unison, and means to prevent locking of either door when one of the doors is open.

3. In combination a plurality of doors, a sliding bolt for each door arranged to lock and unlock the same, means for operating the bolts, a connection between the bolts whereby operation of one will operate the other, and means movable automatically into the path of movement of a bolt when the corresponding door is opened.

4. In combination a plurality of doors, a locking means for each door, means for connecting the locking means whereby they will be operated in unison, means for securing said locking means in unlocked position so arranged that when a door is closed said means will be withdrawn from securing position, and means for automatically moving it to securing position when the door is opened.

5. In combination with a room having a plurality of doors, locking means for each door, means connecting said locking means whereby they will be operated in unison, operating means for each locking means accessible only from the interior of the room, and automatically operating means arranged to prevent operation of the locking means when either door is open.

6. In combination with a room having a plurality of doors, locking means for each door, means connecting said locking means whereby they will be operated in unison, operating means for each locking means accessible only from the interior of the room, and operating means for each locking means accessible for operation exteriorly of the room only and solely by authorized persons.

7. In combination with a room having a plurality of doors, locking means for each door, means connecting said locking means whereby they will be operated in unison, operating means for each locking means accessible only from the interior of the room, operating means for each locking means accessible for operation outside of the room only by authorized persons, and automatically operating means arranged to prevent operation of the locking means when either door is open.

8. In combination with a room having a plurality of doors, a movable locking bolt for each door, a pivoted lever connected to each bolt, operating means for each lever accessible only from within the room, operating means for each lever accessible for operation exteriorly for the room only and solely by authorized persons, a rotatably mounted rod, and operative connections from said levers to said rod whereby they will be operated in unison.

9. In combination with a room having a plurality of doors, a reciprocating bolt carried by the walls adjacent each door, means accessible only from within the room for moving each bolt into engagement with its door to lock the same, means connecting said operating means whereby the bolts will be operated together, a slide for each bolt adapted to be moved into the path of movement thereof, means adapted to be engaged by the door to remove the slide from the path of movement of the bolt when the door is closed, and means for moving the slide into the path of movement of the bolt when the door is opened.

In testimony whereof I affix my signature.

WILLIAM R. THOMPSON.