Aug. 18, 1931. C. E. FINKENBINDER 1,819,410

LOCKING APPARATUS FOR DOORS

Filed Sept. 29, 1926 2 Sheets-Sheet 1

Fig. 1.

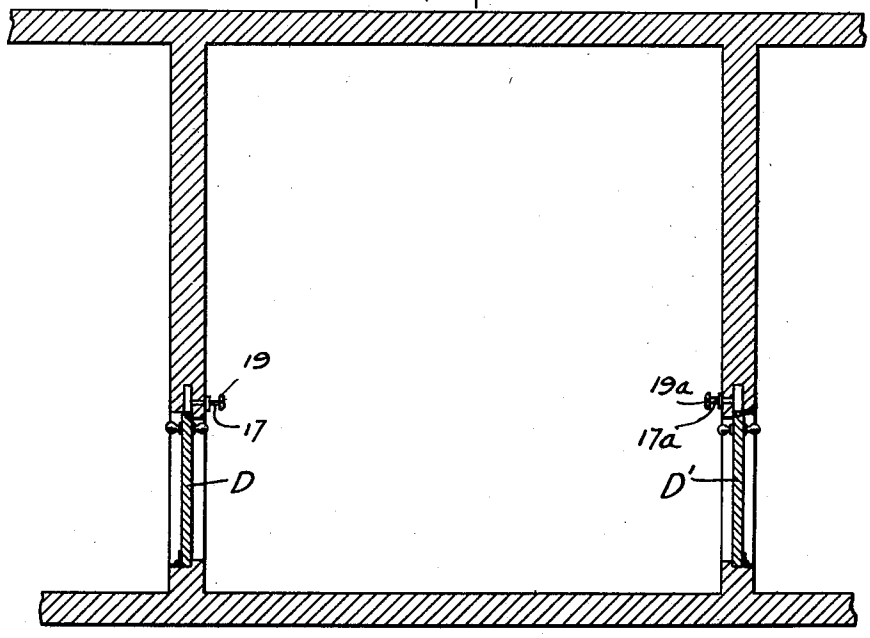
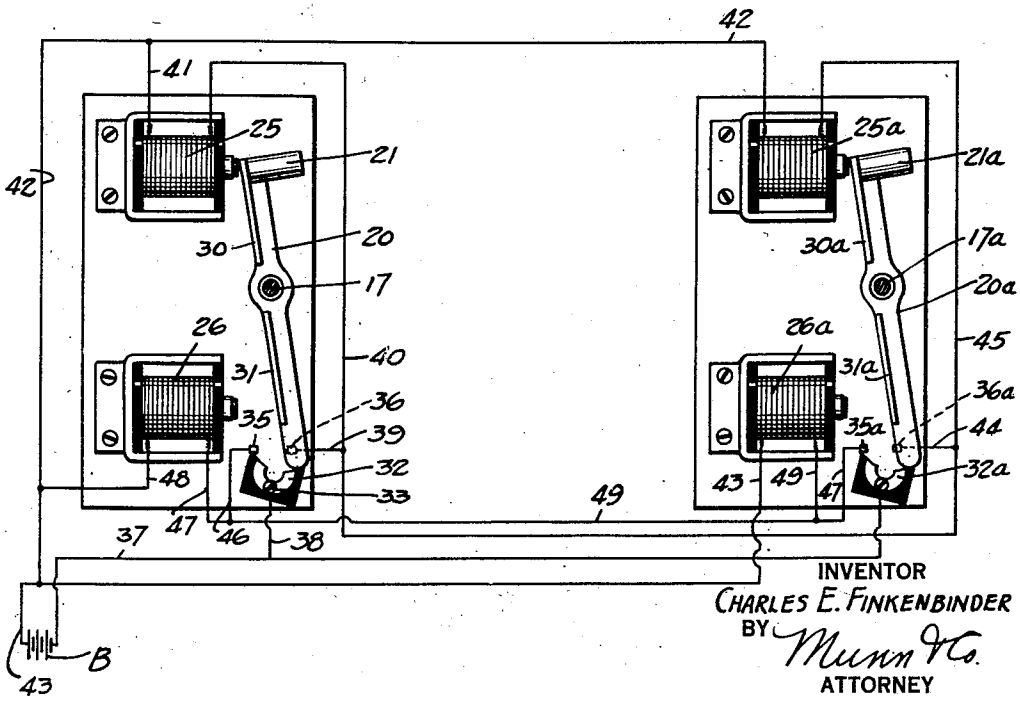


Fig. 2.



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Fig. 2.

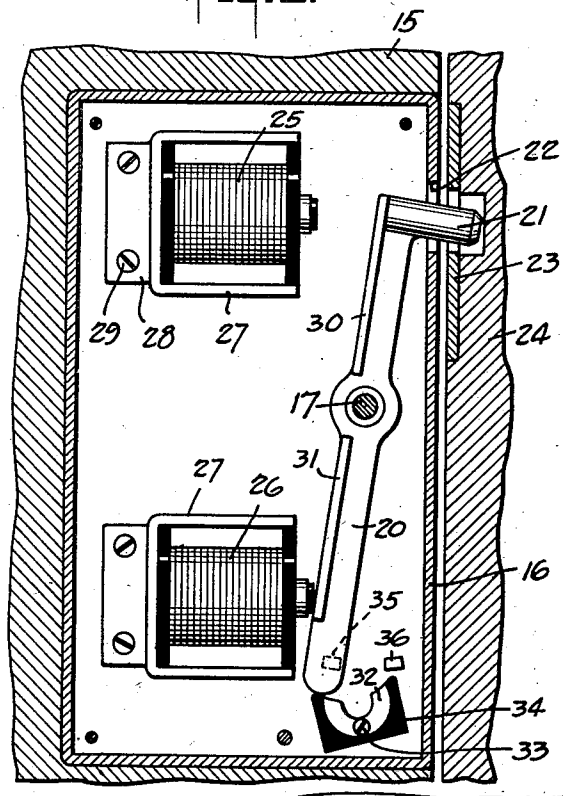


Fig. 3.

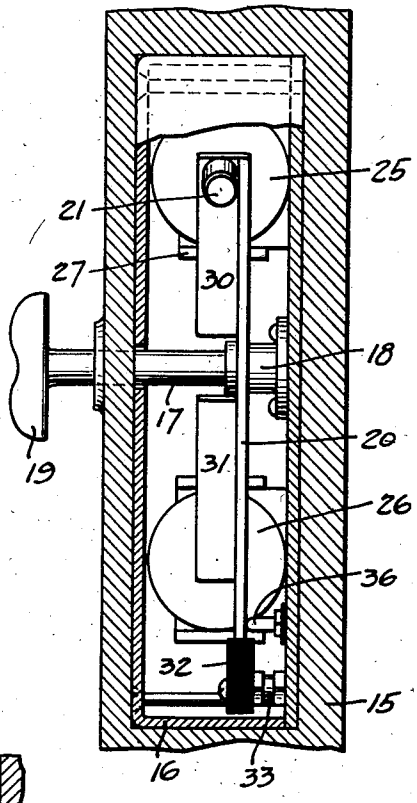
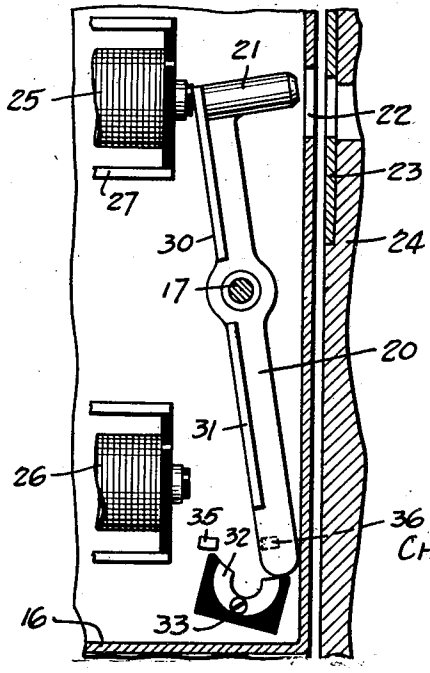


Fig. 4.



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UNITED STATES PATENT OFFICE

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LOCKING APPARATUS FOR DOORS

Application filed September 29, 1926. Serial No. 138,481.

My invention relates to and has for its purpose the provision of an apparatus applicable to two or more doors providing entrances and exits to a room by which, upon the manual locking of any one door by the occupant of the room, the remaining doors will be automatically locked to prevent others from entering the room, and further when the door is unlocked by the occupant the other doors are automatically unlocked to render the room accessible through any of the doors. My invention is particularly adapted, although not necessarily, for use on the doors of a bath room where the bath is accessible through a plurality of doors and it is desirable to maintain all of the doors locked while one is occupying the room and to unlock all of the doors upon the occupant leaving the room.

I will describe only one form of locking apparatus for doors embodying my invention.

In the drawings:

Figure 1 is a view showing in plan section a room having a plurality of doors to which is applied one form of locking apparatus embodying my invention;

Figure 2 is an enlarged vertical sectional view of one of the locking units embodied in the apparatus shown in Figure 1, and in applied position to a door jamb;

Figure 3 is a view showing in end elevation the locking unit shown in Figure 2, with the casing thereof partly in section;

Figure 4 is a fragmentary view similar to Figure 2 showing the other position of the locking bolt and switch of the unit;

Figure 5 is a semi-diagrammatic view of the entire apparatus.

Similar reference characters refer to similar parts in each of the several views.

Referring specifically to the drawings, my invention in its present embodiment comprises two locking units as the apparatus is designed for application to a room having two doors as illustrated in Figure 1. It is to be understood, however, that any number of locking units can be employed, depending upon the number of doors which it is desired to control. As the construction and operation of the two locking units is identical a description of one will suffice for both, and the parts of the two units will be distinguished from each other by exponents applied to the reference characters for the parts of one of the units.

As shown in Figures 2 and 3, a door jamb 15 is provided with a pocket in which is received a casing 16. Extending through the door jamb and into the casing is a shaft 17, the inner end of which is journaled in a sleeve 18 suitably secured within the casing. The outer end of the shaft is provided with a handle 19 by which the shaft can be manually rotated for actuating a lever 20 fixed to the shaft and having one end provided with a locking bolt 21 adapted to extend through an opening 22 in the casing to engage within a keeper plate 23 secured to a door 24 so as to lock the door in closed position. In the retracted position of the bolt 21, as illustrated in Figure 4, it is withdrawn from the keeper plate 23 and into the casing 16, the projected and retracted positions of the bolt being effected through a rocking of the lever 20. The lever can be actuated either through the medium of the shaft 17 or through a pair of electro-magnets 25 and 26.

As shown in Figure 2, the magnets 25 and 26 are positioned one above the other within the casing 16 and secured in position by means of frames 27 having flanges 28 through which screws 29 extend. Flanges 30 and 31 are formed on the lever 20, which function as armatures for the respective magnets 25 and 26, and the positioning of these armatures is such that they are at all times within the influence of the magnets in order that the lever may be rocked to one extreme position or the other in effecting retraction or projection of the locking bolt according as one electro-magnet or the other is energized.

To control the energization of the magnets for both of the locking units, each unit is provided with a switch which includes a movable contact 32 capable of being rocked on a binding post 33 to occupy either of the two extreme positions shown in Figures 2 and 4. The contact 32 is mounted in a block of insulating material 34 and movable with the con-

tact, and the upper ends of the contact and block are formed with curved surfaces as shown, with the ends of the block projecting above the ends of the contact. The switch also includes a pair of stationary contacts 35 and 36 mounted in and insulated from the casing 16 and positioned to be engaged by the lever 20 according as the latter occupies one extreme position or the other. The lower end of the lever is rounded, as shown, for wiping engagement with a contact 32 to effect a bridging of such contact with either the contact 35 or 36 in order to effect a momentary energization of either magnet 26, 26*a* or 25, 25*a*.

In the operation of the switch, the lower end of the lever 20 in its movement from the position shown in Figure 2 to that shown in Figure 3 wipes the contact 32 as it engages the contact 36 so as to momentarily bridge the two contacts. After bridging the two contacts the lever passes to the position shown in Figure 4 in which it engages one of the upper ends of the block 34 so as to be out of engagement with the contact 32. As the lever returns to the position shown in Figure 2 it operates to reverse the position of the contact 32, the lower end of the lever wiping the contact during such movement to momentarily bridge the contacts 32 and 35, and finally reposing on the other end of the block 34 as illustrated in Figure 2.

In Figure 1 I have illustrated a room, say, for example, a bath room to which access is had through a pair of doors D and D′ each provided with a keeper plate 23, and the two locking units applied to the jambs of the doors so that the locking bolts 21 and 21*a* of the units can be operated to effect the locking or unlocking of the respective doors.

As shown in Figure 5, the magnets 25 and 25*a* of the two locking units are provided with a circuit including a source of current such as a battery B. The magnets 26 and 26*a* are also provided with a circuit which includes the battery B and these two circuits are controlled by the switch of the two units in such manner that either one pair of magnets 25, 25*a* or the other 26, 26*a* are momentarily energized according as the switches occupy one extreme position or the other. The circuit for the magnets 25 and 25*a* may be best traced by taking each magnet separately. The circuit for the magnet 25 is as follows: from one side of battery B through wires 37 and 38, contact 32, lever 20, contact 36, wires 39 and 40, winding of magnet 25, wires 41, 42 and 43 back to battery. The circuit for the magnet 25*a* is as follows: wire 37, contact 32*a*, lever 20*a*, contact 36*a*, wires 44 and 45, winding of magnet 25*a*, and wires 42 and 43 back to battery. The circuit for the magnet 26 is as follows: contact 32, lever 20, contact 35, wires 46 and 47, winding of magnet 26, and wires 48, 42 and 43 back to battery. The circuit for the magnet 26 is as follows: contact 32*a*, lever 20*a*, contact 35*a*, wires 47 and 49, winding of magnet 26*a* and wire 43 back to battery. The wires connecting the various magnets and contacts of the two locking units extend through the walls of the room in the manner conventional with electric wiring installations.

The operation of the apparatus is as follows:

When a person enters the room shown in Figure 1, say through the door D, access is had to the handle 19 of either locking unit, and with the parts of the two units in the position shown in Figure 5, it will be clear that by rotating the shaft 17 the lever 20 will be moved from the position shown in Figure 5 to that shown in Figure 2, in which the bolt 21 is projected into engagement with the corresponding keeper plate 23. The door D is thus locked, and simultaneously with this operation of the lever 20 the respective switch is actuated to occupy the position shown in Figure 2. Through this operation the switch functions to momentarily supply current from the battery B to the magnets 26 and 26*a*, the energization of the magnet 26*a* operating to move the lever 20*a* from the position shown in Figure 5 to that shown in Figure 2 so that the locking bolt 21*a* now occupies projected position to effect locking of the door D′.

From this operation it will be manifest that with actuation of either locking unit to effect locking of one door, the identical operation of the other unit is simultaneously effected to secure the locking of the other door.

To unlock the doors it is only necessary to move the lever 20 back to the position shown in Figure 5 by operation of the shaft 17 and to cause retraction of the bolt 21. During this movement of the lever the contacts 32 and 36 are momentarily bridged to energize the magnets 25, 25*a*, and with energization of the magnet 25*a* the lever 20*a* is rocked to retract the bolt 21*a*, thereby unlocking the door D′.

Any number of doors may be controlled in this manner so that when the occupant of the room locks one door the locking of all of the other doors is automatically effected. Conversely, upon the unlocking of any one door all of the other doors are automatically unlocked.

Although I have herein shown and described only one form of locking apparatus for doors embodying my invention, it is to be understood that various changes and modifications may be made therein without departing from the spirit of the invention, and within the spirit and scope of the appended claims.

I claim:

1. In a multiple door locking mechanism, a lock for each of the doors, manually operable means for actuating the lock of each

door and electrical means by which the locks for all of the doors are operated to lock or unlock the doors according as the lock for any one door is manually operated to lock or unlock its respective door.

2. A locking apparatus for doors comprising a plurality of locks each having a bolt capable of being projected or retracted, means by which the bolt of each lock can be so manually actuated, and electrical means connecting all of the locks in such manner that when the bolt of any one lock is manually projected or retracted the bolts of the other locks will be moved to a corresponding position.

3. In a multiple door locking mechanism, a lock for each of the doors, manually operable means for actuating the lock of each door and electro-magnet means by which the locks for all of the doors are operated to lock or unlock the doors according as the lock for any one door is manually operated to lock or unlock its respective door.

4. A locking apparatus for doors comprising a pair of locks each having a bolt capable of being projected or retracted, manually operable means for so actuating the bolt, a pair of electro-magnets, one for retracting the bolt and the other for projecting the bolt, and a switch operable by the electro-magnets, and a circuit including a source of current, the electro-magnets of both locks, and the switches in such manner that when the bolt of either lock is retracted or projected the bolt of the other lock will be simultaneously moved to a corresponding position.

5. A locking apparatus for doors comprising a pair of locks each having a bolt capable of being projected or retracted, manually operable means for so actuating the bolt, a pair of electro-magnets, one for retracting the bolt and the other for projecting the bolt, and a switch operable by the electro-magnets, a circuit including a source of current, the electro-magnets of both locks, and the switches in such manner that when the bolt of either lock is retracted or projected the bolt of the other lock will be simultaneously moved to a corresponding position through a momentary energization of one magnet or the other for the respective lock by the momentary closing of the corresponding switch.

6. In a locking apparatus for doors, a pair of electro-magnets, a pivoted armature common to both of the magnets, a locking bolt on the armature, and a switch momentarily operated by the armature during movement of the armature.

7. In a locking apparatus for doors, a pair of electro-magnets, a pivoted armature common to both of the magnets, a locking bolt on the armature, a switch operable by the armature, comprising a movable contact and a pair of stationary contacts, the movable contact being engageable by the armature when the latter is moved in either direction and the armature engaging either of the stationary contacts so that the armature serves to bridge the movable contact with either of the stationary contacts, the movable contact yielding to the movement of the armature in either direction so as to be momentarily engaged by the armature whereby only a momentary bridging of the movable and stationary contacts is effected, and circuits one for each of the magnets, the movable contact being common to both of the circuits and one stationary contact for each circuit.

8. In a locking apparatus for doors, as embodied in claim 7, wherein the movable contact is pivoted and carries a body of insulating material which is engaged by the armature after bridging one stationary contact or the other to move the stationary contact to such position that upon movement of the armature in the other direction the stationary contact will again be momentarily engaged by the armature.

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