May 24, 1949. H. S. HARVEY 2,470,770

COMMUNICATING DOOR LOCK

Filed Jan. 24, 1945

FIG. 1.

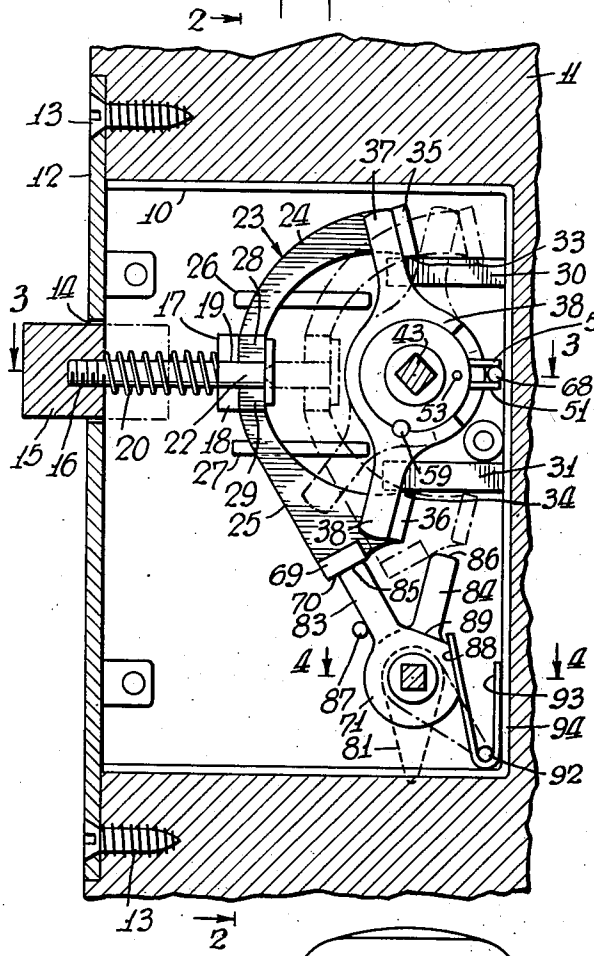


FIG. 2.

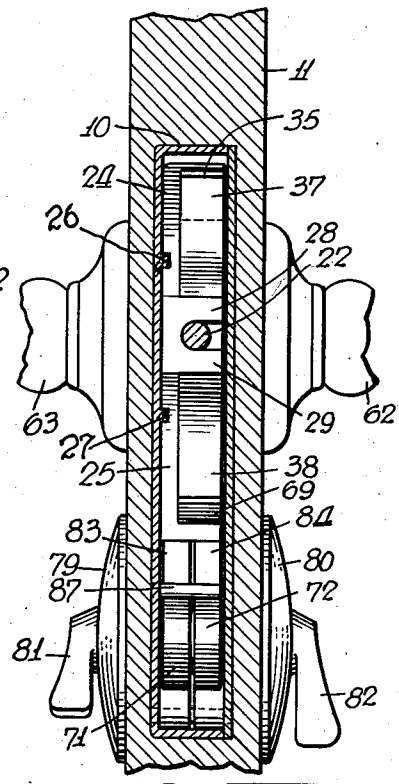


FIG. 4.

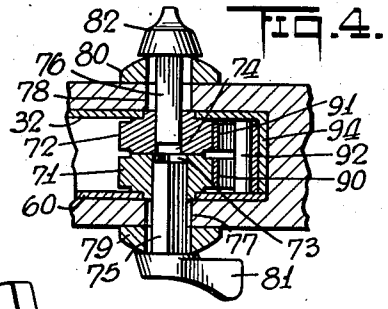


FIG. 3.

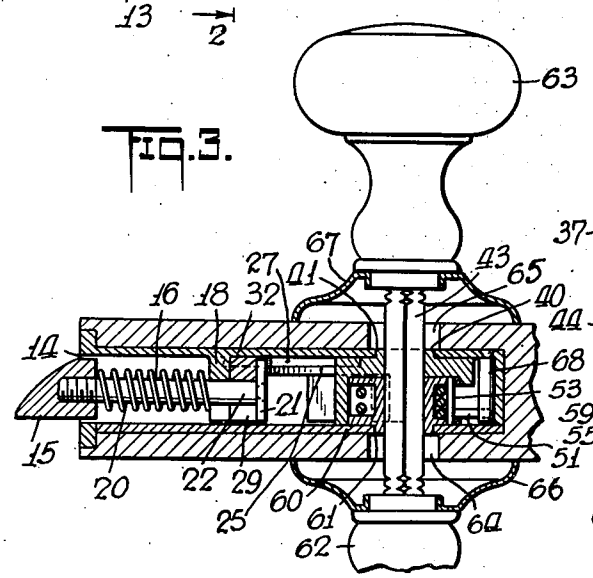


FIG. 5.

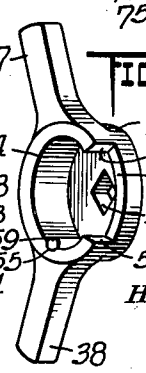
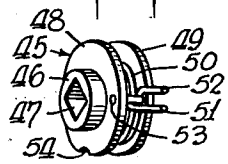


FIG. 6.



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44-175

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COMMUNICATING DOOR LOCK

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Application January 24, 1945, Serial No. 574,315

2 Claims. (Cl. 292—173)

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This invention relates to locks; more particularly to spring projected latch bolts with dogging means for the spindle operator of the latch bolt retractor assembly; and still more particularly, to locks for communicating doors, bathrooms and the like.

It is an object of my invention to provide a mortice-type of latch bolt for doors and the like, which is exceedingly simple insofar as it involves the nature and number of movable parts, wherein dogging of the latch bolt retractor mechanism assembly is secured in a highly effective manner, and which will withstand most rigorous use, and require the minimum amount of attention for adjustment, replacement and maintenance.

More particularly, it is an object of my invention to provide a lock having a spring projected latch bolt which may be readily used in communicating doors, such as between adjoining rooms of hotels, compartments of trains, steamships, where temporarily at least, such communicating doors may be locked, or in bathrooms of hotels and like establishments, where a bathroom is accessible to more than one room, and which may require independent locking from opposite sides of the same door.

My invention therefore has as an object thereof to provide a lock for communicating doors which may be locked from opposite sides, and employ a single latch bolt having the retractor mechanism thereof operable from opposite sides of the door, yet embodying a single bolt, thereby effecting substantial economies in lock mechanism of this character.

Still further objects of my invention reside in the provision of a door lock for communicating doors, bathroom doors or the like, which is exceedingly sturdy, rigid and compact, and involves simple, economical, yet efficient cooperating elements.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, I make reference to the accompanying drawing, forming a part hereof, in which—

Figure 1 is a longitudinal sectional view of my device shown in position in connection with the fragment of a door;

Figure 2 is a section taken on the line 2—2 of Figure 1;

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Figure 3 is a section taken on the line 3—3 of Figure 1;

Figure 4 is a section taken on the line 4—4 of Figure 1;

Figures 5 and 6 are perspective views of the rollback and spring hub assembly.

Making reference to the drawings, a lock in accordance with my invention is illustrated in the form of a casing 10, morticed within a door 11, and held in position edgewise of the door by the end plate 12, employing screws 13 or like fastening elements. The plate 12 includes an opening 14 through which the latch bolt 15 projects. The latch bolt is affixed to a latch bolt shank 16 by screw threading or the like means of attachment, and is directed rearwardly through the guiding studs 17 and 18, defining a guide slot 19. A helical spring 20 is convoluted on the shank 16 between the rearward shoulder of the latch bolt 15 and the studs 17 and 18. The latchbolt is formed with a headed portion 21, leaving the neck 22 of the shank. A retractor link 23, comprising branches 24 and 25, is mounted upon guides 26 and 27 for reciprocation, and these branches terminate forwardly in a cross head having upwardly directed fingers 28 and 29, which span the neck portion 22 behind the head 21.

Each of the branches 24 and 25 is rearwardly directed to span the rear guides 30 and 31, affixed to the casing side plate 32. The branches 24 and 25 include bearing portions 33 and 34, slidable upon the guides 30 and 31, respectively, and are radially and laterally formed with ears 35 and 36, respectively. These ears are engaged by camming fingers 37 and 38, disposed substantially diametrically on the rollback 39, formed on the hub 40, entering a bearing orifice 41 in the side plate 32.

The rollback 39 is axially formed with a keyway 42, preferably of square contour, to receive a similarly contoured knob spindle 43 in keyed engagement therewith. Preferably the rollback 39 is recessed at 44, to form a housing portion within which may be retained the spool 45 which carries a hub portion 46, and is axially formed with a keyway 47, desirably of square contour to receive the knob spindle 43.

The spool 45 has its flanges 48 and 49 provided therebetween with a coiled spring 50, the ends 51 and 52 whereof are bent outwardly radially

and are held under tension against expansion by straddling to opposite sides of the anchoring pin 53, which is fixed by passing through the flanges 48 and 49. The spool 45 may be housed within the recess 44, to align the keyways 42 and 47, and this aligned position is maintained by forming the flanges 48 and 49 with splines 54, correspondingly positioned to the spline 55 formed in the wall of the rollback 39 defining the recess 44.

The rollback 39 is also formed with an annular cutout 56, leaving shoulders 57 and 58 spaced apart sufficiently to allow for an oscillation of the rollback, as will appear more clearly hereinafter, and also to provide a clearance for the radially directed spring ends 51 and 52. With this assembly effected and the keyways 42 and 47 aligned, the spool may be housed within the recess 44 and keyed thereto by dropping a feather pin 59 in the aligned splines 54 and 55.

With the spool 45 housed in the rollback 39 within its recess 44, the hub portion 46 thereof may thereafter be positioned in the cap plate 60 and the bearing orifice 61 provided therefor.

As assembled, the camming fingers 37 and 38 are arranged to engage the ears 35 and 36, respectively, of the retractor link 23, which, upon oscillation of the spindle 43 clockwise or counterclockwise, will serve to retract the latch bolt 15 acting upon the head 21 of its shank 16. In this manner, knobs 62 and 63 attached to the spindle 43 and projecting through the apertures 64 and 65 are rotatably mounted on the escutcheons 66 and 67 for retraction of the latch bolt when either of the knobs 62 or 63 is oscillated.

In order to orient the camming fingers 37 and 38 of the rollback 39 and the link 23 actuated thereby, to the neutral position from either of the oscillated positions independently of the spring projected latch bolt, the spring fingers 51 and 52 are arranged to span the pin 68, acting as the fixed point of resistance for the coiled spring 50, with the pin 53 acting as the movable point of resistance with respect to the ends 51 and 52 upon oscillation of the rollback 39.

The guide fingers 28 and 29 for the link 23 normally abut the studs 17 and 18 which form the forward stops for the link. For dogging the link 23 against action by the rollback fingers 37 and 38, I extend from the link branch 25 a lug 69 and provide an engaging face 70 which is substantially tangential to the axial line of a pair of locking element hubs 71 and 72, each of which is rotatably mounted in the side wall 32, and cap plate 69, respectively, and which have directed through keyways 73 and 74 keying spindles 75 and 76, projected through borings 77 and 78 to said keyways 73 and 74, respectively. Escutcheons 79 and 80 rotatably mount the spindles 75 and 76, respectively, and each of the spindles may be connected to turnbuttons 81 and 82 on opposite faces of the door.

The hubs 71 and 72 each carry dogging fingers 83 and 84, whose abutting ends 85 and 86 may both engage the engaging face 70 of the lug 69, to lie against the same and when given limiting engaging movement, each of the dogging fingers 83 and 84 engages the stop pin 87 which is located to direct the dogging fingers 83 and 84 in a pre-dead-center position with respect to the lug face 70, the effect of which relationship of dogging fingers 83 and 84 to the lug face 70 is to take up any play in the link 23 and effectively move the fingers 28 and 29 into abutting position against the studs 17 and 18.

Each of the hubs 71 and 72 is formed with peripheral flat camming faces 88 and 89, engageable by the detent springs 90 and 91. The detent springs 90 and 91 are wrapped under tension about the anchoring pin 92, to have the free end 93 engage the end wall 94 of the casing.

By the construction shown and described, it will be observed that spaced, independently operable and aligned dogging fingers 83 and 84 may each be used to dog the link 23, in turn locking the spindle 43 by engagement effected by the ears 35 and 36 upon the camming fingers 37 and 38.

Thus, a single latch bolt may be employed, and with the same secure effective dogging of the spindle operated mechanism for the latch bolt independently to opposite faces of the door, by the turnbuttons 81 and 82, where the lock mechanism is used in a communicating door installation.

It will be understood that while I have shown independent turnbuttons 81 and 82 for a communicating door, that key operated means may be employed to rotate the spindles 75 and 76, especially where the communicating door may serve as a common door between hotel rooms or compartments desired to be maintained in a locked condition to the respective occupants.

It will also be observed that while I have disclosed independently operable hubs 71 and 72, I may provide a common spindle for manipulating one or both dogging fingers 83 and 84 in unison, where operation from only one side of the door is desired, as where the locking mechanism is to be used for bathroom doors or the like.

The housing of the spring hub spool 45 in the rollback 39, with the free ends of the spring 51 and 52 spanning the pin 68, provides for an oscillation of the rollback 39 to the neutral position, eliminating lost motion and play between the spindle 43 and the retractor mechanism for the latch bolt 15. In addition, the installation and replacement features emphasized in my companion applications filed on even date by me are likewise secured.

It is further to be understood that while I may, by my construction, dog the retractor link 23 by the locking elements herein described, leaving the latch bolt 15 independently depressible, as where the latch bolt engages the strike plate in slamming of the door, that dead-bolting of the latch bolt 15 may also be secured by an alteration of the locking hubs, as more particularly described in my companion application, Serial No. 574,316, entitled Latch, filed on even date herewith.

It will be understood that while I have exemplified my invention as of utility when all of the elements illustrated are combined, that isolated features, segregated from the entire assembly, may have independent utility and that my invention is, accordingly, not to be limited by the employment of all of the features illustrated but only by the appended claims.

Having thus described by invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is:

1. In a communicating door or the like having a spring projected latch bolt, the combination therewith comprising a spindle operable rollback hub and retractor for the latch bolt, locking elements mounted upon rotatable hubs, each including a dogging finger, a lug on said retractor for edgewise contact with said dogging finger, to dog the rollback, and independent means for operating said locking elements independently to

direct said dogging fingers into engagement with said lug upon independent rotation of said locking elements.

2. In a communicating door or the like having a spring projected latch bolt, the combination therewith comprising a spindle operable rollback hub engaging a retractor link for the latch bolt, locking elements mounted upon rotatable hubs, each including a dogging finger, a lug on said link directed edgewise toward said dogging fingers and restrained radially toward said fingers in a pre-dead-center position, said locking elements being independently operable from each face of the door.

HENRY STEPHEN HARVEY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,089,435	Page	Mar. 10, 1914
1,507,631	Taylor	Sept. 9, 1924
1,771,387	Freysinger	July 22, 1930
1,902,343	Shaw	Mar. 21, 1933
2,131,458	Turner	Sept. 27, 1938
2,164,290	Hurd	June 27, 1939

FOREIGN PATENTS

Number	Country	Date
444,134	Great Britain	Mar. 16, 1936