

Dec. 30, 1941.

L. HIRSH

2,268,254

DOOR LOCK

Filed Feb. 10, 1940

2 Sheets-Sheet 1

Fig. 1.

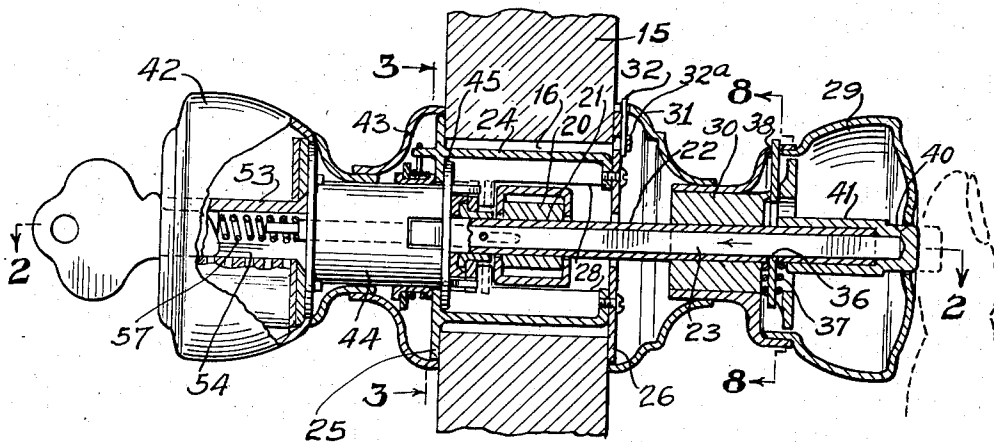


Fig. 2.

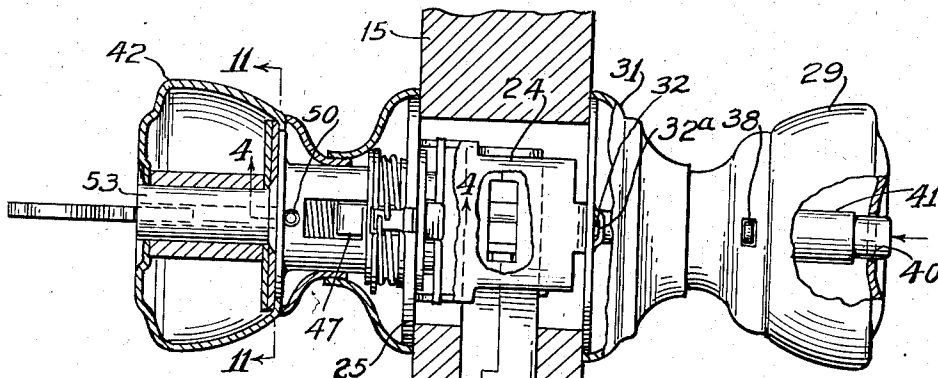


Fig. 13.

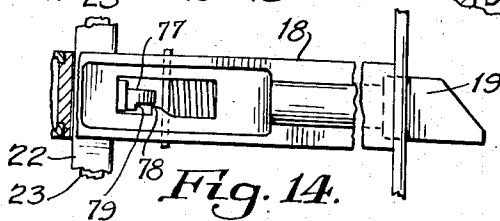
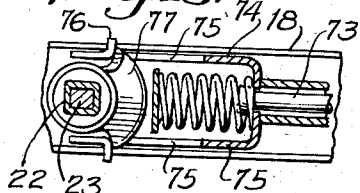
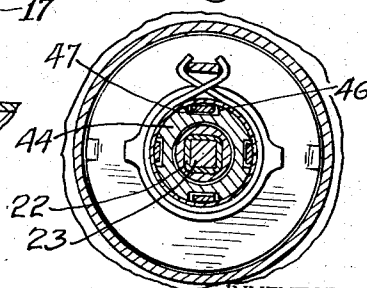


Fig. 14.

Fig. 3.



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Fig. 5.

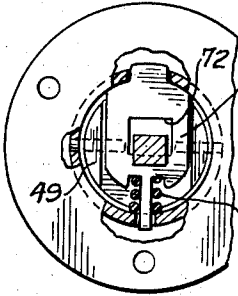


Fig. 4.

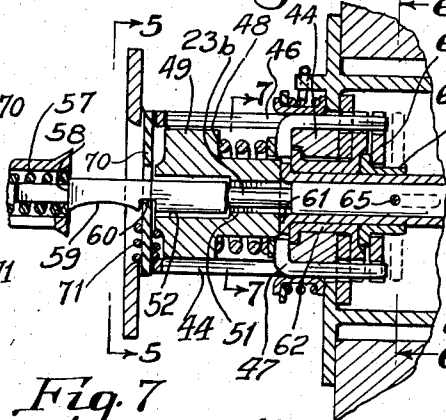


Fig. 6.

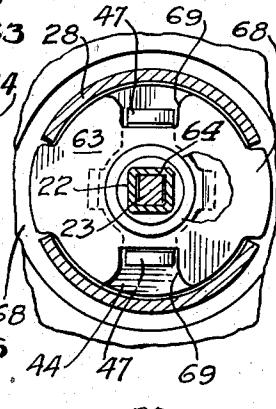


Fig. 7.

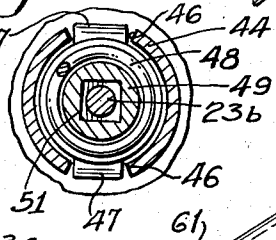


Fig. 8.

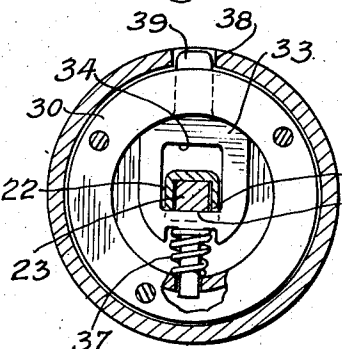


Fig. 9.

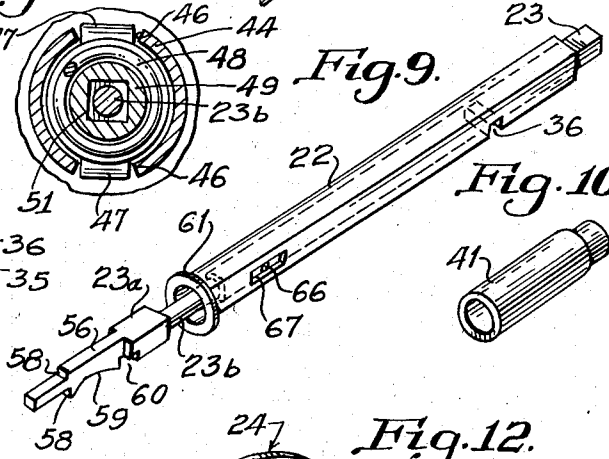


Fig. 10.

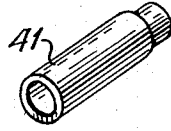


Fig. 11.

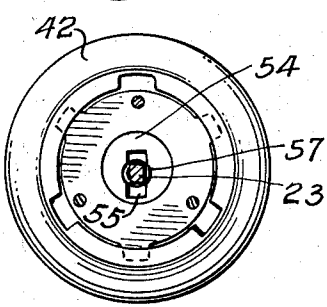
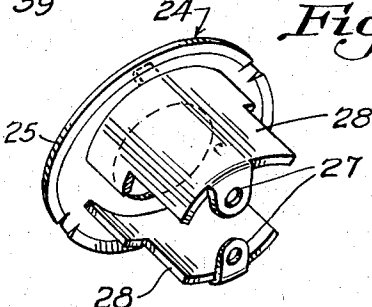


Fig. 12.



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UNITED STATES PATENT OFFICE

2,268,254

DOOR LOCK

Leo Hirsh, Los Angeles, Calif.

Application February 10, 1940, Serial No. 318,239

5 Claims. (Cl. 70-146)

This invention relates to locks and more especially to door locks of the rotary knob type having different inner and outer locking characteristics.

The general object of the invention is to provide an improved locking mechanism of the rotary knob wherein one of the knobs is provided with a key cylinder and the other knob is provided with means for locking the mechanism and also releasing the same so as to be actuated by the knob having the key cylinder.

A particular object of the invention is to provide a lock mechanism according to the previous object wherein the key cylindered knob may be released by merely turning the other knob.

Other and more specific objects and advantages will appear and be brought out more fully in the following specification, reference being had to the accompanying drawings, wherein:

Fig. 1 is an embodiment of my invention shown in vertical section with the parts shown in locked position;

Fig. 2 is a sectional view taken along line 2-2 of Fig. 1;

Fig. 3 is a cross sectional view taken along the line 3-3 of Fig. 1;

Fig. 4 is a vertical sectional view taken along line 4-4 of Fig. 2;

Fig. 5 is a sectional view taken along line 5-5 of Fig. 2;

Fig. 6 is a sectional view taken along the line 6-6 of Fig. 4;

Fig. 7 is a sectional view taken along the line 7-7 of Fig. 4;

Fig. 8 is a sectional view taken along line 8-8 of Fig. 1;

Fig. 9 is a perspective view of the reciprocating spindle and sleeve;

Fig. 10 is a perspective view of the plunger button;

Fig. 11 is a sectional view taken along the line 11-11 of Fig. 2;

Fig. 12 is a perspective view of one of the lock housing members.

Fig. 13 is a fragmentary side view of the bolt mechanism; and

Fig. 14 is a top view of the same.

Referring more particularly to the drawings, I show a door jamb 15 having a lock aperture 16 and an aperture 17 for a bolt housing 18.

The bolt 19 is spring biased in the usual manner and is adapted to be retracted by the rotation of a roll-back 20 which has a square aperture 21 in which is slidably positioned a rectangular tube or sleeve 22 within which is slid-

ably positioned a rectangular section spindle 23. Spindle 23 is slidable within tube 22 but is rotatable therewith. A lock retaining shell 24 has a circular flange 25 by which it is held against one face of door jamb 15 and it is secured to the other face by a plate 26 secured as by screws to in-turned flanges 27. Shell 24 is prevented from rotation by cut-out portions 28 which extend above and below housing 18.

The inner knob indicated at 29 has a hub 30 provided with a squared aperture through which extends tube 22. An escutcheon section 31 for knob 29 is secured to plate 26 by internally formed beads and a flat pin 32 which extends partially through an aperture in escutcheon 31 and is held by a loop 32a pressed out on plate 26. Knob 29 is held in place on tube 22 by means of a lock piece 33 which is reciprocally mounted in hub 30 and is provided with a square aperture 34 through which tube 22 and spindle 23 extend, piece 33 having an edge portion 35 adapted to engage a slot 36 in the lower side portion of tube 22 in which position the piece 33 is held by means of a spring 37. An aperture 38 in knob 29 provides a bearing for an extension 39 of piece 33 by which it may be released from engagement with slot 36 by pressing inwardly thereon. Knob 29 has a central aperture 40 through which extends the button end of a plunger 41 which is hollow so as to receive the ends of tube 22 and spindle 23.

Outer knob 42 is provided with an escutcheon 43 which is secured to flange 25 by a frictional forced fit and is provided with a hub 44 retained in position by a flanged member 45 on the inner side of flange 25. Hub 44 has a pair of diametrically opposite slots 46 in each of which is positioned an L-shaped piece 47 each held in position by a spring 48 which seats against the shoulder of a bushing 49 which is secured to hub 44 in any suitable manner such as by a pin 50. Bushing 49 has a square aperture 51 slightly larger than the dimensions of spindle 23 so as to be rotatable with a portion 23a of spindle 23 when in engagement therewith, and a larger aperture 52 in which spindle 23a may rotate without turning with the bushing. Spindle 23 is provided with a circular portion 23b which permits spindle 23 to rotate without engaging bushing 49 as it extends in square aperture 51 at such times.

A pin lock barrel 53 is suitably secured to hub 44 and is provided with a usual plug 54 having an elongated aperture 55 adapted for engagement with a flattened end portion 56 of spindle

section 23a such that rotation of barrel 54 will rotate spindle 23. A spring 57 is positioned in barrel 54 and presses against shoulders 58 formed at the end portion 56. By this construction spindle 23 is normally biased to the right and will, when released as hereinafter more fully described, push plunger 41 to its outermost position as indicated by the dotted lines in Fig. 1. End portion 56 has a curved cam portion 59 and a notch 60, the function of which will be presently described.

Tube 22 has a flanged end portion 61 and is held against removal from the assembly of hub 44 by a flanged sleeve 62 secured in the assembly by the flange thereof which is positioned between a shouldered recess in hub 44 and the flanged ends of pieces 47. A locking plate 63 is mounted on a flanged collar 64 which is secured by a pin 65 extending through spindle 23, the latter having an aperture 66 therefor. Plate 63 is retained on collar 64 between the flanged portion thereof and pin 65. Tube 22 is provided with a pair of oppositely disposed slots 67 through which pin 65 extends and by which the limit of reciprocation of spindle 23 is effected.

Locking plate 63 has a pair of diametrically disposed extensions 68 which extend into cut-out portions 28 of shell 24 in such manner that plate 63 is kept from rotation but is slidable in the shell. Plate 63 is also provided with a pair of diametrically disposed shouldered cut-outs 69 for engagement with pieces 47 by which the hub assembly 44 is locked when plate 63 is in engagement therewith and unlocked when out of engagement by retraction of the spindle 23.

Hub 44 and bushing 49 are provided with guides for a slidable locking plate 70, and a spring 71 normally keeps plate 70 in its uppermost position. Plate 70 is provided with a square aperture 72 through which extends portion 23a of spindle 23. Aperture 72 is for the purpose of engaging notch 60 so as to retain spindle 23 in the inner or left hand position. Cam surface 59 is adapted to pass over the lower edge of aperture 72 when plunger 41 is pressed inwardly, which carries spindle 23 inwardly forcing plate 70 inwardly and locking by engagement with notch 60. This inward movement of spindle 23 causes engagement of locking plate 63 with pieces 47 which locks hub assembly 44 against rotation including outer knob 42.

The locked assembly may be released by the turning of spindle 23 in either of two manners. When the inner knob is turned, tube 22 and spindle 23 will be rotated, retracting bolt 19; and when spindle 23 has been turned a quarter turn, notch 60 will be freed from aperture 72 and spring 57 will push spindle 23 outwardly carrying with it locking plate 63 which will be freed from engagement with pieces 47. The same action will occur upon the rotation of key cylinder 54 by the key which rotation will turn spindle 23 by the engagement of spindle section 56 in piston barrel 54. Upon the retraction as just described of spindle 23, square section 23a will engage square aperture 51 and the bolt retracting mechanism can be actuated by the outer knob through hub 44 and bushing 49.

Bolt 19 has a tubular shank 73 from which extend a pair of flat extensions 74, each having an aperture 75 and an abutment 76. Cylinder 20 has a sector 77 which engages abutments 76 for retracting bolt 19 when roll-back 20 is turned and an ear 78 extends into one aperture 75 so as to engage an abutment 79 on sector 77. By this

construction when the door is closed in any manner, the retraction of bolt 19 by passing over the strike plate 80 will cause ear 78 to engage abutment 79 and turn roll-back 20 which action will release notch 60 from aperture 72 as described above. Thus the door can be locked only after it has been closed and plunger 41 and spindle 23 depressed thereafter.

Having described my invention, what I claim is:

1. In a door lock as described having a fixed housing, a rotatable bolt retractor therein, an inner knob having a plunger element and an outer knob having a key cylinder, the combination of a tube engaging said retractor and rotatable by said inner knob, a spindle extending through said tube and rotatable therewith, a hub secured to said outer knob and having members projecting into said housing, and a locking plate secured to said spindle adapted to engage said projections when said spindle is actuated.

2. In a door lock as described having a fixed housing, a rotatable bolt retractor therein, an inner knob having a plunger element and an outer knob having a key cylinder, the combination of a tube engaging said retractor and rotatable by said inner knob, a spindle slidably mounted in said tube and rotatable therewith, a hub secured to said outer knob and having members projecting into said housing, and a locking plate secured to said spindle adapted to engage said projections to lock said lock when said spindle is actuated by said plunger element and adapted to be disengaged from said projections to unlock said lock when said spindle is rotated by said key cylinder in the outer knob.

3. In a door lock as described having a fixed housing, a rotatable bolt retractor therein, an inner knob having a plunger element and an outer knob having a key cylinder, the combination of a tube engaging said retractor, a spindle slidably mounted in said tube and rotatable therewith, a plunger in said inner knob whereby to depress said spindle toward said outer knob, a spring actuated locking plate adapted to hold said spindle in depressed position, a hub secured to said outer knob, a locking plate secured to said spindle adapted to engage a portion of said hub to lock the same against rotation when said spindle is depressed, said spindle when rotated adapted to be freed from said locking plate, and a spring engaging said spindle adapted to retract the spindle when so freed whereby to release said locking plate from said hub.

4. In a door lock as described having a fixed housing, a rotatable bolt retractor therein, an inner knob having a plunger element and an outer knob having a key cylinder, the combination of a tube engaging said retractor, a spindle slidably mounted in said tube and rotatable therewith, a plunger in said inner knob whereby to depress said spindle toward said outer knob, a spring actuated locking plate adapted to hold said spindle in depressed position, a hub secured to said outer knob, a locking plate secured to said spindle adapted to engage a portion of said hub to lock the same against rotation when said spindle is depressed, said spindle when rotated adapted to be freed from said locking plate, and a spring engaging said spindle adapted to retract the spindle when so freed whereby to release said locking plate from said hub, said spindle adapted to engage said hub so as to be rotatable thereby when said spindle is in retracted position.

tion and to be disengaged from said hub when in depressed position.

5. In a door lock as described having a fixed housing, and a rotatable bolt retractor therein, the combination of a spindle element, a hub on said spindle element, a knob secured to said hub, and means to secure said hub on said spindle, said means comprising a spring actu-

ated plate having a spindle aperture and a notch engaging shoulder, said spindle having a notch adapted for engagement with said shoulder, said plate adapted to be displaced transversely on said spindle whereby to release said hub therefrom.

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