

Filed Aug. 26, 1964

DOOR LOCK

3 Sheets-Sheet 1



Callen, Sloman & Cantor
BY

ATTORNEYS

Aug. 16, 1966

L. YULKOWSKI

3,266,276

DOOR LOCK

Filed Aug. 26, 1964

3 Sheets-Sheet 2

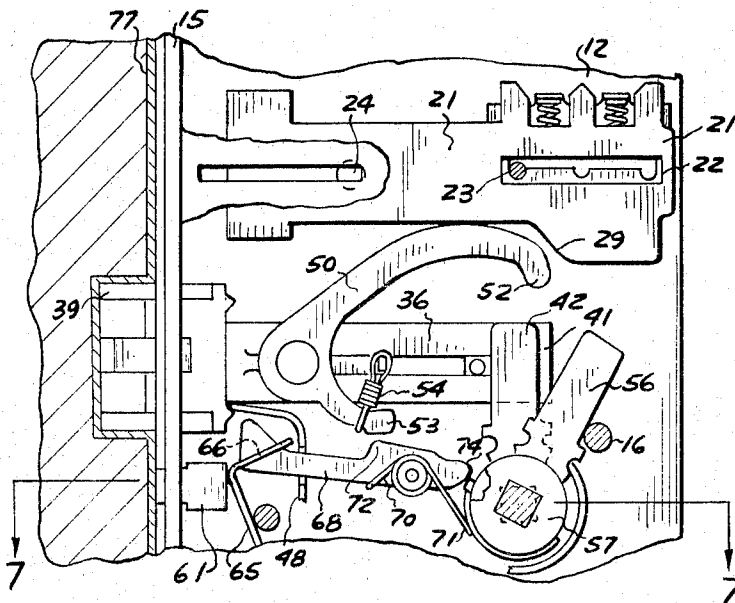


FIG. 4

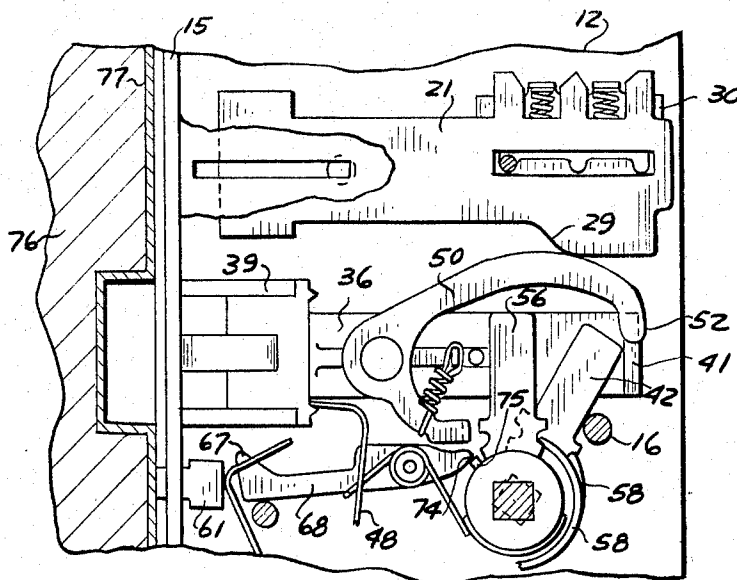


FIG. 5

INVENTOR
LEON YULKOWSKI

Pullen, Roman & Cantor
BY

ATTORNEYS

Aug. 16, 1966

L. YULKOWSKI

3,266,276

DOOR LOCK

Filed Aug. 26, 1964

3 Sheets-Sheet 3

FIG. 6

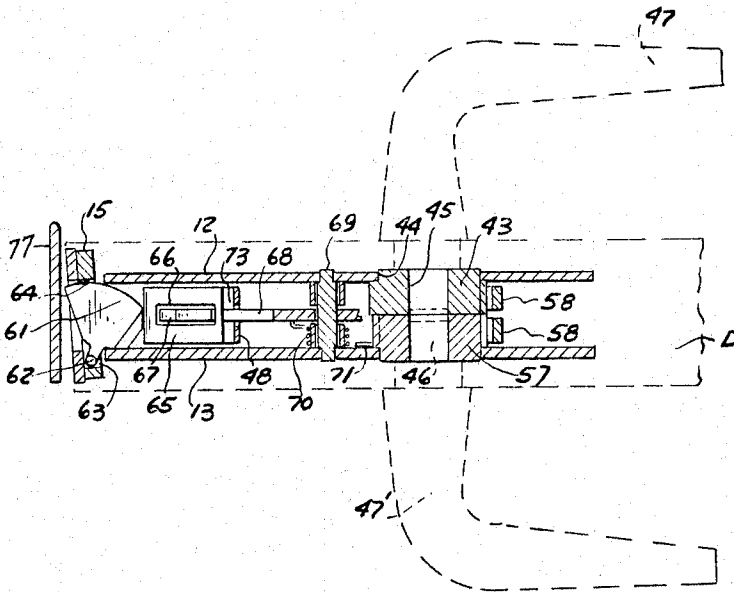
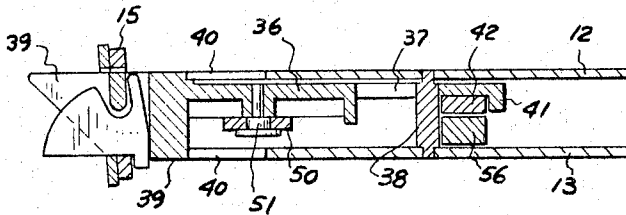


FIG. 7

INVENTOR.

LEON YULKOWSKI

Sullen, Roman & Pantor

BY

ATTORNEYS

1

3,266,276

DOOR LOCK

Leon Yulkowski, 244 W. Sheffield, Pontiac, Mich.

Filed Aug. 26, 1964, Ser. No. 392,093

12 Claims. (Cl. 70-110)

The present invention relates to door locks, and more particularly to an improved door lock construction as a continuation-in-part of my co-pending United States patent application Serial No. 141,272, filed September 26, 1961, now Patent 3,148,524, dated September 15, 1964.

It is an object of the invention to provide a door lock including a latch bolt and inner and outer independently operable control hubs, the inner hub continuously in operative engagement with the latch bolt for retracting it at all times, and wherein the outer hub, though rotatable is normally ineffective for retracting said latch bolt, can be rendered effective by adjustment of a cam means on the lock housing.

It is a further object to provide a safety means by which when said outer hub is disengaged and ineffective for retracting the latch bolt, that other means are incorporated within the lock to prevent unauthorized retraction of said latch bolt by any other means.

It is another object, however, that when the lock is set as to prevent such unauthorized retraction movements of the latch bolt from the outside, that further control means are provided within the lock operable by the inner hub for deactivating said safety mechanism so that one upon the inside can retract the latch bolt as desired.

It is a further object to provide an improved dead bolt wherein the cam means forms a part thereof. In the retracted position of the dead bolt the cam means is ineffective to engage the outer hub with the latch bolt. A latch bolt engaging means is movably mounted on the latch bolt and is normally out of engagement with the outer hub. In an intermediate control position of the dead bolt, said cam means activates the latch bolt engaging means into engagement with outer hub.

These and other objects will be seen from the following specification and claims in conjunction with the appended drawings in which:

FIG. 1 is a side elevational view of the present door lock with the front side plate broken away for illustration.

FIG. 2 is a right end elevational view thereof.

FIG. 3 is a top plan view thereof.

FIG. 4 is a fragmentary view similar to FIG. 1 showing the dead bolt in retracted position.

FIG. 5 is a similar view illustrating the deactivated position of the auxiliary latch lever under the control of the inner hub.

FIG. 6 is a fragmentary section taken in the direction of arrows 6-6 of FIG. 1.

FIG. 7 is a fragmentary section taken in the direction of arrows 7-7 of FIG. 4.

It will be understood that the above drawings illustrate merely a preferred embodiment of the invention, and that other embodiments are contemplated within the scope of the claims hereafter set forth.

Conventional features of door lock

Referring to the drawings housing 11, FIGS. 1 and 2, include side plates 12 and 13, the latter being broken away for illustration. Upright face plate 15 interconnects said plates with spacers 14 interposed for fastening the plates together, one such spacer 16 being a stop for the inner and outer control hubs 43, 57.

Lock assembly

Through corresponding apertures in plates 12 and 13 a cylinder type of lock 17 is nested and anchored as by set screw 18. Said cylinder includes a rotatable plug 19,

2

including the laterally projecting cam 20, which, upon rotation is effective for controlling the three positions of dead bolt 21, i.e.; retracted position FIG. 4, control position, FIG. 1, or locked position shown in dotted lines at 28'.

Dead bolt construction

Elongated dead bolt 21 is slidably supported within housing 11 by means of transverse pin 23 which extends between plates 12 and 13 and through transverse slot 22 in said dead bolt. The forward end portion of the dead bolt upon one side is recessed to loosely support the steel ball 24 which is guidably and movably positioned within elongated slot 25 in side plate 13.

The opposite side of the dead bolt has a lateral projection 26, FIGS. 1 and 2, guidably and movably positioned within elongated slot 27 in side plate 12. Slot 27 has been elevated from its normal position opposite slot 25, for clarity of illustration in FIG. 1. The head 28 of the dead bolt is movably positioned within a transverse aperture in face plate 15 and its "dead locking position" is indicated at 28'.

The undersurface rear portion of the dead bolt has a cam means 29 which has the "operative" position, FIG. 1, when the dead bolt is in its "intermediate control" position, and has the inoperative position, FIG. 4, when the dead bolt is in "retracted" position.

Dead bolt control plate

Dead bolt 21 is normally retained in any one of the aforesaid three positions. Vertically adjustable control plate 30 bears against plate 12 and is retained within a lateral slot upon one side of dead bolt 21 for longitudinal movement therewith. Plate 30 terminates in a pair of laterally extending stops 31 which overlie and are loosely positioned within corresponding upwardly opening slotted portions in the dead bolt towards its rear end. Coiled springs 32 are interposed between the dead bolt and stops 31 normally urging the control plate 30 to the uppermost "locking" position shown. Plate 30 has an elongated slot 33 which has three longitudinally spaced notches 34 retainingly registerable with support pin 23 to normally restrain the dead bolt against longitudinal movement in either direction.

Rotary movement of plug 19 causes cam 29 to move in the path of the dotted lines shown in FIG. 1 for cooperative engagement with one of the stops 31 for depressing the same against the action of springs 32. This disengages the retaining plate from pin 23 and cam 20, operatively engages one of the angular cam surfaces 35 to longitudinally adjust the dead bolt.

Latch bolt

Elongated latch bolt 36 includes slot 37 towards its rear end which loosely retains transverse guide stud and spacer 38 between plates 12 and 13. Enlarged latch bolt head 39 is movably positioned through a corresponding aperture in face plate 15. Head 39 is laterally enlarged for cooperative sliding engagement within the opposed elongated slots 40 in plates 12 and 13, FIGS. 1 and 6. The latch bolt has a normally spring-biased "operative" position, FIG. 1, due to the action of the elongated leaf spring 48 anchored at 49 within housing 11. Latch bolt 36 also has a "retracted" position, FIG. 5, under the control of lever arm 42 on inner hub 43.

Flange 41 on the end of latch bolt 36 is positioned within the path of rotary movement of lever arm 42. Hub 43, spring-biased at 58, 59, 60, FIG. 1, is journaled and retained at 44 within side plate 12, FIG. 7.

Inner hub 43 has an aperture 45 of square cross-section therethrough adapted to cooperatively receive the similarly shaped shank 46 of handle 47, FIG. 7.

Latch bolt engaging means

The latch bolt engaging means 50, FIGS. 1, 4, and 5 is a cantilever pivotally mounted at 51 upon latch bolt 36 and includes at one end of its elongated arm the control means 52. The opposite end includes cantilever arm 53 connected by coil spring 54 to boss 55 on latch bolt 36. Thus, the latch bolt engaging means is normally biased to the "inoperative" position shown in FIG. 4, out of engagement with lever arm 56 of outer control hub 57 journaled within side plate 13, FIG. 7, and in opposed registry with inner hub 43. The control means 52 is adapted for movement into and out of engagement with outer hub 57 and its lever arm extension 56, and is shown in engagement with said outer hub in FIG. 1.

A pair of separate formed leaf springs of general S shape, FIGS. 1 and 7, are anchored at their one ends at 59 upon transverse stud 60, and at their opposite ends respectively engage the corresponding lever arm extensions of the inner and outer control hubs, normally urging the same to the upright position shown in FIG. 1. Thus, the lever arms 42 and 56 may be rotated independently by the respective handles 47 or 47', FIG. 7, against the action of spring 58, will move in a clockwise direction limited by transverse stop 16, FIG. 5.

Auxiliary latch

Auxiliary latch 61, made of nylon for illustration or any other suitable material, movably projects through aperture 64 in face plate 15 with its trunnion end portions 62, FIG. 7, nested in recess 63 providing a pivotal support. Said auxiliary latch is normally biased to its outermost position, FIG. 1, by leaf spring 65.

When the door mounting lock housing 11 within door frame 76, FIG. 5, has been moved to closed position and engages the strike plate 77, the auxiliary latch 61 is cammed inwardly from the position shown in FIG. 1 to the position shown in FIG. 4, against the action of leaf spring 65.

The upper portion of leaf spring 65 is reverse bent and has an elongated transverse slotted portion 66 adapted to receive and to retainingly engage an end portion 67 of auxiliary latch lever 68.

Auxiliary latch lever

The latter is pivotally mounted at 69 within said housing and is biased in a clockwise direction by coil spring 70-71. Absent the restraint of leaf spring 65 said auxiliary latch lever will move to "latch bolt obstructing position," FIG. 4.

Auxiliary latch lever 68 loosely projects through an elongated slot 73 in leaf spring 48, and in the normal position of auxiliary latch 61 and spring 65 takes the position shown in FIG. 1. However, when the door D, FIG. 7, is closed and auxiliary latch 61 has been retracted to the position shown in FIG. 4 by engagement with strike plate 77, leaf spring 65 has been moved inwardly from the position shown in FIG. 1 to the position shown in FIG. 4. This permits the end portion 67 of the auxiliary latch lever 68 to move upwardly through the slot 66 in spring 65 to latch bolt obstructing position. Thus, with auxiliary latch lever 68 spring-biased to the position shown the latch bolt 36 may not be retracted.

In this connection dead bolt 21 is in its retracted position, FIG. 4, and its cam means 29 is ineffective with respect to the latch bolt engaging means 50. The latch bolt engaging means 50 is biased to disengage position and the outer hub 56-57 is ineffective on rotation to retract latch bolt 36. This is the only condition on the lock where there is any interest in preventing the latch bolt 36 from being retracted by any other means, such as a cardboard projected between the door and the strike plate. However, where the cam means 29 has operatively engaged the latch bolt engaging means 50, FIG. 1, the control means 52 is in engagement with outer hub 56-

57. Here the latch bolt 36 is normally retractable merely by rotating the outer handle 47'. In this situation the cantilever extension 53 on the end of the latch bolt engaging means 50 operatively engages an intermediate portion of auxiliary latch lever 68 as at point 72. The opposite end 67 of the auxiliary latch lever 68 is thus restrained to the position shown in FIG. 1 and thus in no manner blocks retraction of latch bolt 36. In FIG. 4 the outer hub 56-57, though rotatable, will not engage the control means 52 and cannot retract latch bolt 36.

With dead bolt 21 in its retracted position, FIG. 4, to disengage outer hub 56-57, and wherein latch bolt 36 is positively restrained against retraction due to the auxiliary latch lever 68, nevertheless a means is provided for tilting the auxiliary latch lever out of obstruction position when it is desired to open the door from the inside on operation of inner hub 43.

This is accomplished by a cam 75 which projects radially outward from the inner hub, FIGS. 1, 4, and 5. When the inner hub 43 is rotated cam 75 operatively engages the end portion 74 of the auxiliary latch lever and rotates said lever from the position shown in FIG. 4 in a counterclockwise direction to the position shown in FIG. 5 so as to no longer obstruct retraction of latch bolt 36.

Operation

In the foregoing embodiment of the present invention, element 29 on dead bolt 21 is referred to as a "cam means." While a dead bolt has been shown, it is contemplated that dead bolt 21 could be omitted and the cam means 29 be movably mounted within and upon the housing 11 in such manner as to control the two positions of latch bolt engaging means 50. In operative position, FIG. 1, control means 52 engages the outer hub, lever 56 by which the latch bolt may be retracted either by the inner hub or outer hub. In inoperative position, FIG. 4, the outer hub is ineffective to retract latch bolt 36.

The auxiliary latch 61 and corresponding auxiliary latch lever 68 provides a safety device to prevent unauthorized retraction of latch bolt 36 when cam means 29 is in the position shown in FIG. 4, namely the retracted position of dead bolt 21, or the retracted position of any other cam means 29. The safety function is achieved since the cam means 29 permits the auxiliary latch lever 50 to assume an inoperative position. The auxiliary latch lever 68 has been released due to the inward positioning of the auxiliary latch 61 so that the auxiliary latch lever 68 can move up into latch bolt obstructing position under the bias of its spring 70-71.

This safety device becomes deactivated, however, when it is desired to retract the latch bolt using merely the inner hub. Cam means 75 upon inner rotary hub 43 tilts the auxiliary latch lever 68 from the latch bolt obstructing position shown in FIG. 4 to the unobstructing position of FIG. 5.

Having described my invention, reference should now be had to the following claims.

I claim:

1. In a door lock including a housing, a faceplate, and an elongated reciprocal latch bolt therein, having a normal spring-biased operative position and a retracted position;

the improvement comprising inner and outer manually rotatable spring-biased control hubs journaled within the housing, the inner hub continuously in operative engagement with the latch bolt for retracting it; latch bolt engaging means movably mounted on the latch bolt and having a control means movable into and out of operative engagement with the outer hub; resilient means on the latch bolt normally biasing said control means into a disengaged position relative to said outer hub; and cam means in said housing movable against said latch

5

bolt engaging means for moving said control means into engagement with said outer hub.

2. In the door lock of claim 1, an auxiliary latch lever movably mounted within the housing and biased for movement from a neutral to a latch bolt obstructing position;

an auxiliary latch movably mounted upon and extending through said faceplate and retractable on engagement with the strike plate in the door frame;

resilient control means on the housing normally biasing said auxiliary latch outwardly of the faceplate and retaining said auxiliary latch lever in neutral position; inward movement of the auxiliary latch moving said resilient control means releasing said auxiliary latch lever so that it is free to move into a position blocking the latch bolt against retraction when the control means is out of engagement with the outer hub.

3. In the door lock of claim 1, an auxiliary latch lever movably mounted within the housing and biased for movement from a neutral position to a latch bolt obstructing position;

an auxiliary latch movably mounted upon and extending through said faceplate and retractable on engagement with the strike plate in the door frame;

resilient control means on the housing normally biasing said auxiliary latch lever outwardly of the faceplate and retaining said auxiliary latch lever in a neutral position;

inward movement of the auxiliary latch moving said resilient control means releasing said auxiliary latch lever so that it is free to move into a position blocking the latch bolt against retraction when the control means is out of engagement with the outer hub; said inner hub having a cam means which on rotation of the inner hub operatively engages the auxiliary latch lever moving the same out of latch bolt obstructing position.

4. In a door lock including a housing, a faceplate and an elongated reciprocal latch bolt therein, having a normal spring-biased operative position and a retracted position;

the improvement comprising an inner manually rotatable spring-biased control hub journaled within the housing and in operative engagement with the latch bolt for retracting it;

an auxiliary latch lever pivotally mounted within the housing and biased for movement from a neutral position to a latch bolt obstructing position;

an auxiliary latch movably mounted upon and extending through said faceplate and retractable on engagement with the strike plate in the door frame;

a spring on the housing engaging and normally biasing said auxiliary latch outwardly of the faceplate and simultaneously engaging and retaining said auxiliary latch lever in neutral position;

inward movement of the auxiliary latch moving said spring releasing and disengaging said auxiliary latch lever from said spring so that it is free to move into a position blocking the latch bolt against retraction independent of said inner hub.

5. In the door lock of claim 4, said inner hub having a cam means which on rotation of the inner hub operatively engages the auxiliary latch lever moving the same out of latch bolt obstructing position.

6. In the door lock of claim 1, said cam means including an elongated reciprocal dead bolt guidably mounted within the housing having a retracted position, a locking position, and an intermediate control position; and a cam on said dead bolt having an inoperative position when said dead bolt is in retracted position and an operative position relative to said latch bolt engaging means when said dead bolt is in its intermediate control position;

and manually operable means for adjusting said dead bolt to any of said positions.

6

7. In the door lock of claim 1, said cam means including an elongated reciprocal dead bolt guidably mounted within the housing having a retracted position, a locking position, and an intermediate control position; and a cam on said dead bolt having an inoperative position when said dead bolt is in retracted position, and an operative position relative to said latch bolt engaging means when said dead bolt is in intermediate control position;

manually operable means on said housing for adjusting said dead bolt to any of said positions; said manually operable means including a lock cylinder with rotatable cam; and means on said dead bolt operably engaged by said cylinder cam.

8. In the door lock of claim 1, said cam means including an elongated reciprocal dead bolt guidably mounted within the housing having a retracted position, a locking position, and an intermediate control position; and

a cam on said dead bolt having an inoperative position when said dead bolt is in retracted position and in operative position relative to said latch bolt engaging means when said dead bolt is in its intermediate control position;

and manually operable means for adjusting said dead bolt to any of said positions;

an auxiliary latch lever pivotally mounted within the housing and biased for movement from a neutral position to a latch bolt obstructing position;

an auxiliary latch movably mounted upon and extending through said faceplate and retractable on engagement with the strike plate in the door frame;

resilient control means on the housing normally biasing said auxiliary latch outwardly of the faceplate and retaining said auxiliary latch lever in neutral position;

inward movement of the auxiliary latch moving said resilient control means releasing said auxiliary latch lever so that it is free to move into a position blocking the latch bolt against retraction when the control means is out of engagement with the outer hub.

9. In a lock for doors including a housing, a faceplate and a lock cylinder with rotatable cam;

the improvement comprising an elongated reciprocal dead bolt guidably mounted within the housing having an inoperative position, a locking position, and an intermediate control position, means on said dead bolt operatively engaged by said cylinder cam on rotation thereof for movement relative to the housing;

cam means on said dead bolt;

an elongated reciprocal latch bolt guidably mounted within the housing having a normal spring-biased operative position and a retracted position;

inner and outer manually rotatable spring-biased control hubs journaled within the housing, the inner hub continuously in operative engagement with the latch bolt for retracting the same;

latch bolt engaging means movably mounted on the latch bolt and having a control means movable into and out of engagement with the outer hub on movement of said latch bolt engaging means;

and resilient means interposed between said latch bolt and said latch bolt engaging means normally biasing said control means in one direction out of engagement with said outer hub;

said cam means on movement of said dead bolt to control position moving said control means to operatively engage the outer hub.

10. In a lock for doors including a housing, a faceplate and a lock cylinder with rotatable cam; the improvement comprising an elongated reciprocal dead bolt guidably mounted within the housing having an inoperative position, a locking position, and an intermediate control position; means on said dead bolt operatively engaged by

said cylinder cam on rotation thereof for movement of the dead bolt relative to the housing;

cam means on said dead bolt;

an elongated reciprocal latch bolt guidably mounted within the housing having a normal spring-biased operative position and a retracted position;

inner and outer manually rotatable spring-biased control hubs journaled within the housing, the inner hub continuously in operative engagement with the latch bolt for retracting the same;

latch bolt engaging means movably mounted on the latch bolt and having a control means movable into and out of engagement with the outer hub on movement of said latch bolt engaging means;

a spring interposed between said latch bolt engaging means and said latch bolt normally biasing said control means out of engagement with said outer hub when said dead bolt is in its retracted inoperative position; said cam means operatively depressing said latch bolt engaging means to engage said control means with the outer hub, when said dead bolt is in intermediate control position;

an auxiliary latch lever movably mounted within the housing and normally biased for movement from a neutral position to a latch bolt obstructing position;

an auxiliary latch movably mounted upon and extending through said faceplate and retractable on engagement with the strike plate in the door frame;

resilient control means on the housing normally biasing said auxiliary latch outwardly of the faceplate and retaining said auxiliary latch lever in neutral position;

inward movement of the auxiliary latch moving said resilient control means releasing said auxiliary latch lever so that it is free to move into a position blocking the latch bolt against retraction when the control means is out of engagement with the outer hub; said latch bolt engaging means having a cantilever arm operatively retaining said auxiliary latch lever in neutral position, when the control means on said

latch bolt engaging means is connected with the outer hub; said cantilever arm releasing said auxiliary latch lever for movement into latch bolt-obstructing position when the control means on said latch bolt engaging means is disengaged from said outer hub.

11. In a door lock including a housing, faceplate and an elongated reciprocal latch bolt therein, having a normal spring-biased operative position and a retracted position;

the improvement comprising inner and outer manually rotatable spring-biased control hubs journaled within the housing, the inner hub continuously in operative engagement with the latch bolt for retracting it;

a control means movably mounted within the housing and movable into and out of operative engagement with the outer hub by which when engaged, the outer hub becomes effective on rotation to retract said latch bolt, said control means being normally biased into a disengaged position relative to the outer hub; and cam means on the housing movable against said control means for moving the same into operative engagement with said outer hub.

12. In the door lock of claim 11, the biasing of said control means including a resilient means in the housing registering with said control means for maintaining it in a disengaged position relative to the outer hub.

References Cited by the Examiner

UNITED STATES PATENTS

971,314	9/1910	Schacht	70—107
980,180	1/1911	Teich et al.	70—151
1,585,105	5/1926	Overdick	70—143
2,107,300	2/1938	Kilpatrick	70—151 X
3,148,524	9/1964	Yulkowski	70—107

BOBBY R. GAY, *Primary Examiner*.