This invention relates to lock and latch means for upwardly acting doors and the like.

The main objects of this invention are:
First, to provide a lock and latch means for upwardly acting doors and the like which may be locked and released from the outside by means of a key and may be manipulated from the inside without the use of a key.

Second, to provide an upwardly acting door structure of the type in which the door is slidably supported on tracks in which the tracks are provided with bolt receiving keepers in which the lock means is not subjected to substantial stress in the event that an effort is made to pry open the door when it is locked.

Third, to provide a lock and latch means which is readily adapted to doors of varying widths.

Fourth, to provide a lock and latch means which may be readily adapted for use with a single bolt or with two bolts.

Fifth, to provide a lock and latch means adapted for use on slide doors which may be adjusted for positioning the bolt into coacting relation to keepers disposed at either side of the door.

Sixth, to provide a lock and latch means including a housing and a bolt slidably mounted on the housing and project in the direction to keeper engaging position with actuating means disposed within the housing parts thereof being adjustable to project the bolts from either side of the housing.

Seventh, to provide a lock and latch means in which the parts may be economically produced and assembled and one in which the bolts are automatically retracted and held in retracted position when the lock means is released.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is an outside view of an upwardly acting door assembly embodying my invention, several parts being shown mainly conventionally.

FIG. 2 is a fragmentary inside view with the bolts in actuated position.

FIG. 3 is an enlarged fragmentary view of the parts of my invention illustrated in FIG. 2, the bolts being shown in projected or locking position by full lines and in retracted position by dotted lines.

FIG. 4 is an enlarged fragmentary view partially in section on a line corresponding to line 4—4 of FIG. 3.

FIG. 5 is an enlarged inside view of the lock mechanism illustrated in FIGS. 3 and 4.

FIG. 6 is a fragmentary view in section on a line corresponding to line 6—6 of FIG. 5.

FIG. 7 is a fragmentary view in section on a line corresponding to line 7—7 of FIG. 3.

FIG. 8 is a fragmentary view partially in section illustrating an adaptation of my invention for use with one bolt.

FIG. 9 is a view corresponding to FIG. 8 showing the adaptation of the lock and latch means to the other side of the door from that shown in FIG. 8.

FIG. 10 is an inside view of the lock and latch assembly embodying my invention as shown in FIGS. 8 and 9.

In the accompanying drawing applicant has illustrated his invention as adapted to upwardly acting doors of the sectional type comprising a plurality of sections 1 connected by the hinges 2 which, in the embodiment illustrated, support the rollers 3 which coat with the tracks 4 of inwardly facing channel cross section. A portion of the wall of a garage or the like is conventionally illustrated. It will be understood that the tracks are provided with so called overhead portions which are not illustrated as they form no part of this invention.

The door is provided with a counterbalance means designated generally by the numeral 6 which has pulleys 7 for the cables 8. Details of this counterbalance means are not illustrated as they form no part of the applicant's present invention.

Applicant's latch or bolt lock means in the embodiment thereof, illustrated in FIGS. 1 to 7, comprises a housing designated generally by the numeral 9 and including a front wall 10, top wall 11, bottom wall 13 and side walls 14. The housing in this embodiment is formed as an integral stamping and the top and bottom walls are provided with outwardly projecting flanges 15 which have openings for the attaching screws 16 by means of which the housing is generally connected to the door panel 1.

The side walls of the housing have slot-like openings 17 therein in which the bolt member 18 is slidably supported. This bolt member in the embodiment illustrated has an outer section 19 pivotally connected thereto at 20.

The embodiment illustrated in FIGS. 1 to 7 is provided with a second bolt member 21 disposed on the inner side of the door and below the housing. These bolt members 19 and 21 are slidably supported adjacent their outer ends by the bracket or guide member 22 fixedly secured to the inner side of the door.

The bolt coupling member 23 is mounted on the pivot or spindle 24 provided with a handle 25 on the outer side of the door, and with a handle 26 on the inner side of the door, see FIGS. 1, 2 and 3. This bolt coupling and actuating member is actuated to bolt retracted position by means of the spring 27, one end of which is connected to the bolt coupling and actuating means at 28 and the other end to the housing wall at 29, see FIG. 5.

With this arrangement the bolts are retracted by the spring 27 upon the releasing of catch 30 which is pivotally mounted at 31 on the front wall of the housing which is provided with a bearing 32 therefor, the front wall being provided with a similar bearing 33 for the spindle 24.

The catch or latch member 30 is actuated to engaged position by the spring 34 connected to the lug 35 on the latch member and to the side wall at 36, see FIG. 5. This latch member is provided with a finger piece 37 projecting through an opening or slot 38 in the top 11 of the housing. The housing is provided with a slot 39 in its bottom wall through which the bolt coupling and actuating member 23 projects and to which the inner end of the bolt member 21 is pivotally connected at 40.

The lock barrel 41 is supportedly mounted in the bore 42 in the door. The lock spindle 43 may be adjusted only from the outer side of the door as by the key 44. The spindle 43 engages the catch member 30 so that it may be
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disengaged from the keeper 45 on the bolt coupling and actuating member 23 by means of the key.

In the embodiment illustrated the bolt member 18 is connected to the bolt actuating and coupling member by means of the pin 46 engaging the slot 47, see FIG. 3. When the catch 30 is in engagement with the coupling member 23 the bolts are held in projected position but they may be retracted from the inner side of the door by disengaging the catch 30 from the upper end of the bolt coupling and actuating member 23. However, with this catch in engaged position, as illustrated in FIG. 5, it cannot be moved by manipulation of the handle 25. In other words, the handle 25 is locked and also the bolts cannot be disengaged through the handpiece 26 from the inner side of the door but the latch 30 may be released by the handpiece 37 and the bolts are retracted by the spring 27. They may be adjusted to locking position from the inside of the door but the latch 30 may be released by the handpiece 37 and the bolts are retracted by the spring 27. They may be adjusted to locking position from the inside of the door by means of the handle 26.

The bolts and coating parts are illustrated in their retracted position in dotted lines in FIG. 3. In the embodiment illustrated the rails are provided with holes 48 which constitute keepers for the bolts, see FIG. 3.

In the embodiment of my invention shown in FIGS. 8 and 9 the door sections 50 are somewhat modified in structure from that shown in the other figures but it should be understood that this is not important as to the structural features of my present invention but it does illustrate a type of door which is in extended commercial use. The tracks 4 are substantially those shown in FIGS. 1 and 3.

The bolt and latch housing and support member 10 of this embodiment is the same as that shown in the embodiment of FIGS. 1 to 7 inclusive. However, it should be understood that the bolt member 51 illustrated in these FIGURES 8, 9 and 10 has the same shape on both ends and either end is adapted to be engaged with the keeper 48 on either track. See FIGS. 8 and 9.

The handles 25 and 26 on the inner and outer sides of the door are the same as in the embodiment of FIGS. 1–7 inclusive, however, in FIGS. 1–7 inclusive two simultaneously actuated bolts are provided for engagement with both tracks. In the present embodiment a single bolt 51 is provided which corresponds generally to the bolt member 18 of FIG. 3.

It will be noted that in FIG. 8 the lock member is mounted on the left hand side of the door viewed from the inner side thereof, and in FIG. 9 it is mounted on the right hand side of the door and in commercial practice the positioning is varied according to the manner which is most convenient for manipulation, for example, the relationship of the garage to a house or other building. Having these points in mind, attention is directed to FIG. 10 in which the bolt is shown projected to the left in the figure but it would be projected to the right as shown in FIG. 9 when applied to a door.

The latch member 30 is provided with corresponding lugs 52 uniformly spaced from the pivot for the latch member and engageable with the keeper 45.

It should be noted that FIG. 10 corresponds in structural details to FIG. 5 with the exception that the bolt 51 has end portions, both of which are adapted to engage a keeper when in projected position and the only change in the structure is the elimination of the bolts 19 and 21 and the shortening of the bolt 18 to adapt the structure to positioning adjacent the track, as is illustrated in FIGS. 8 and 9.

It should be understood, as stated, that the embodiment as shown in FIGS. 8, 9 and 10 is an adaptation of my invention to the use of a single bolt and that it illustrates that the lock means is adapted to be positioned on either side of a door. It is a structure more economical to produce than that of FIGS. 1–7 inclusive but it does not have bolt means for engaging keepers on both sides of the door which is an advantage in anchoringly locking both sides of the door which vary considerably in width.

I have illustrated and described my invention in highly practical embodiments thereof. I have not illustrated or described any of the structural adaptations as it is believed this disclosure will enable those skilled in the art to embody or adapt the invention as may be desired for particular installations.

Having thus described the invention, what is claimed is:

1. The door assembly including a door frame and tracks and a door comprising a plurality of hingedly connected sections disposed between and slidably mounted on the tracks, a latch and lock means comprising a housing mounted on the inner side of one of the door sections and including front, top, bottom and side walls, the top and bottom walls having openings therein and the side walls having aligned openings therein, a first bolt member slidably disposed in said openings in said side walls, a bolt coupling and retracting member pivotally mounted on said front wall and having a slot in said portion of said coupling through which opening in said bottom wall, said first bolt member having a stud engaged with said slot, a second bolt member pivotally connected to the projecting end of said bolt coupling and retracting member, a first spindle disposed through said door section and side wall of said housing and through said bolt coupling and retracting member, the track provided with handles on its projecting ends, a catch for said coupling member disposed within said housing and pivotally mounted on said front wall thereof and provided with a finger piece projecting through the slot in the top wall thereof, said bolt retracting member being provided with a detent which said catch engages when the bolts are in actuated position, a key actuated lock mounted on said door section to be actuated from the outer side of the door and provided with an inwardly projecting spindle operatively connected to said catch, a spring disposed within said housing connected to said coupling member for actuating the same to bolt retracting position when said catch is disengaged, and a second spring disposed within said housing with one end connected thereto and with its other end connected to said catch for automatically engaging it with said detent on said bolt retracting member when said actuating member is in bolt projecting position, said tracks being provided with keepers for said bolts.

2. The combination in an upwardly acting door assembly including a door frame and tracks and a door slidably mounted on the tracks, a latch and lock means comprising a housing mounted on the inner side of the door and including front, top, bottom and side walls, the top wall having an opening therein and the side walls having aligned openings therein, a bolt member slidably disposed in said openings in said side walls, a bolt coupling and actuating member pivotally mounted on said front wall and operatively connected to said bolt, a spindle disposed through said door and the side wall of said housing and operatively connected to said coupling member and provided with handles on its inner and outer ends, a catch for said coupling member disposed within said housing and pivotally mounted on the said front wall thereof and provided with a finger piece projecting through the top wall, said bolt actuating member being provided with a detent which said catch engages when the bolt is in actuated position, a key actuated lock mounted on said door section to be actuated from the outer side of the door and provided with an inwardly projecting spindle operatively connected to said catch, a spring disposed within said housing connected to said coupling member for actuating the same to bolt retracting position when said catch is disengaged, and a second spring disposed within said housing for automatically engaging said catch with said detent on said bolt actuating member when it is in bolt
projecting position, said tracks being provided with a keeper for said bolt.

3. The combination with a door and tracks therefor, of a latch and lock means comprising a housing mounted on the inner side of the door, a first bolt member slidable mounted on said housing for adjustment transversely of the door, a bolt coupling and actuating member pivotally mounted within said housing and with one end projecting from the housing and with which the inner end of said first bolt member is operatively connected, a second bolt member operatively connected to the projecting end of said coupling member, a spindle operatively connected to said bolt coupling and actuating member disposed through the door and said housing and provided with a handpiece at the outer side of the door and a second handpiece at the inner side of said housing, a key actuated lock mounted on said door to be actuated from the outer side of the door and provided with an inwardly projecting spindle, and a catch for said coupling member provided disposed within the housing and pivotally mounted thereon and provided with a fingerpiece projecting from the housing, said bolt coupling member being provided with a detent with which said catch engages when said bolts are in actuated position, said tracks being provided with keepers for said bolts.

4. The combination with a door and tracks therefor, of a latch and lock means comprising a housing adapted to be fastened on the inner side of the door, a first bolt member slidable mounted on said housing for adjustment transversely of the door, a bolt coupling and actuating member pivotally mounted within said housing and with one end projecting from the housing and with which the inner end of said first bolt member is operatively connected, a second bolt member operatively connected to the projecting end of said coupling member, a spindle operatively connected to said bolt coupling and actuating member disposed through the door and said housing and provided with a handpiece at the outer side of the door and a second handpiece at the inner side of said housing, a catch for said coupling member disposed within the housing and pivotally mounted thereon and provided with a fingerpiece projecting from the housing, said bolt coupling member being provided with a detent with which said catch engages when said bolts are in actuated position, a key actuated lock mounted on said door to be actuated from the outer side of the door and provided with an inwardly projecting spindle operatively connected to said catch, said tracks being provided with keepers for said bolts.

5. The combination with a door and tracks therefor, of a latch and lock means comprising a first bolt member and a second bolt member slidably mounted on the inner side of the door transversely thereof, a spring actuated bolt coupling and actuating member pivotally mounted on the inner side of the door, said bolt members being operatively connected to said coupling and actuating member on the opposite sides of its pivot, a spindle operatively connected to said bolt coupling and actuating member disposed through the door and provided with handpieces on its inner and outer ends, said bolt coupling member having a detent, a manually releasable spring actuated, said bolt coupling member mounted on the inner side of the door to coact with said detent on said bolt coupling member, and a key actuated lock mounted on said door to be actuated from the outer side thereof and provided with an inwardly projecting spindle operatively connected to said catch, said tracks being provided with keepers for said bolt members.

6. The combination in an upwardly acting door assembly including laterally spaced tracks, each provided with a bolt receiving keeper, and a door slidable on said tracks, a latch and lock means comprising a housing adapted to be selectively positioned on the inner side of said door and including front, top and side walls, the side walls having aligned openings therein, a bolt slidably disposed in said openings in said side walls, a bolt retracting member swingably mounted on the front wall of said housing and operatively connected to said bolt, said bolt retracting member having a keeper, a spindle disposed through the door and the side wall of the housing operatively connected to said bolt retracting member and provided with handles on the inner and outer sides of the door, said bolt retracting member pivotally mounted in said housing and provided with a fingerpiece projecting from said housing, said latch having lugs projecting oppositely from its pivot for engagement with said keeper on said bolt retracting member, a spring selectively engageable with said lugs and with said housing to actuate said latch into engagement with said bolt actuating member, and a key actuated lock mounted on said door to be actuated from the outer side of the door and provided with means operatively connected to said latch and whereby said latch may be disengaged from said bolt retracting member from the outer side of the door.

7. The combination in an upwardly acting door assembly including laterally spaced tracks provided with bolt keepers and a door disposed between and slidably mounted on said tracks, a latch and lock means comprising a bolt retracting member operatively mounted on the inner side of said door relative to said tracks, a bolt slidably mounted in said housing for projecting from opposite sides thereof, a bolt retracting member adjustably mounted in said housing and operatively connected to said bolt, a spindle disposed through the door and operatively connected to said bolt retracting member and provided with handles, one on the inner and the other on the outer side of the door, a retracting spring for said bolt connected thereto and adjustable to act to retract said bolt from either of its actuated positions, a manually operated latch for said bolt retracting member pivotally mounted in said housing and having parts projecting oppositely from its pivot for engagement with said bolt retracting member, spring means adjustable engageable with said latch for actuating said latch into engagement with said bolt retracting member for holding said bolt in its projected position against the tension of said bolt retracting spring, and a key actuated lock mounted on said door to be actuated from the outer side of the door for disengaging said latch from said bolt retracting member.

8. The combination with a door, a frame with which said door is slidable associated, a latch and lock means comprising a housing positioned on the inner side of the door and having side walls with aligned openings therein, a bolt slidably disposed in said openings in said side walls, a spring actuated bolt retracting a member pivotally mounted on the front wall of said housing and having a swinging end portion disposed in overlapping relation to said bolt and having a slot therein, said bolt having a stud engaged with said slot and having a centrally disposed keeper on its swinging end, a spindle disposed through the door and the said housing and operatively connected to said bolt retracting member and provided with handles on the inner and outer sides of the door, a bolt retracting spring connected to said bolt retracting member, a spring actuated latch for said bolt retracting member pivotally mounted in said housing and provided with a fingerpiece projecting therefrom, and a key actuated member mounted on said door to be actuated from the outer side of the door and operatively connected to said latch whereby said latch may be disengaged from the outer side of the door.

9. The combination with a door, a frame with which said door is slidable associated, a latch and lock means comprising a housing positioned on the inner side of the door and having side walls with aligned openings therein, a bolt slidably disposed in said openings in said side walls,
a spring actuated bolt retracting member pivotally mounted on the front wall of said housing and having a swinging end portion disposed in overlapping relation to said bolt and having a slot therein, said bolt having a stud engaged with said slot and having a centrally disposed keeper on its swinging end, a bolt retracting spring connected to said bolt retracting member, a spring actuated latch for said bolt retracting member pivotally mounted in said housing and provided with a fingerpiece projecting therefrom, and a key actuated member mounted on said door to be actuated from the outer side of the door and operatively connected to said latch whereby said latch may be disengaged from the outer side of the door.

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ALBERT H. KAMPE, Primary Examiner.