Sept. 22, 1964 A. DEUTSCHER ET AL 3,149,865

DOUBLE DOOR HOLDER

Filed Jan. 14, 1963 2 Sheets-Sheet 1

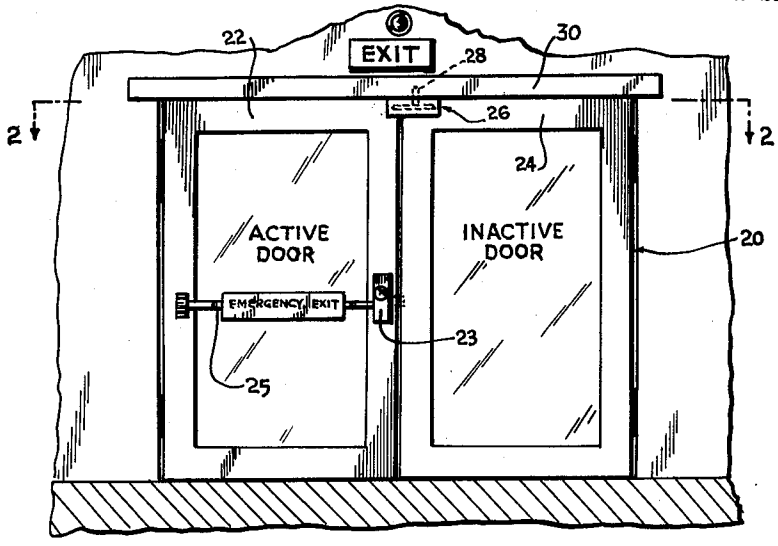

Fig. 1.

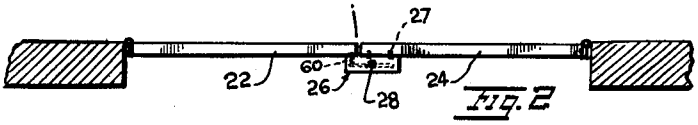

Fig. 2

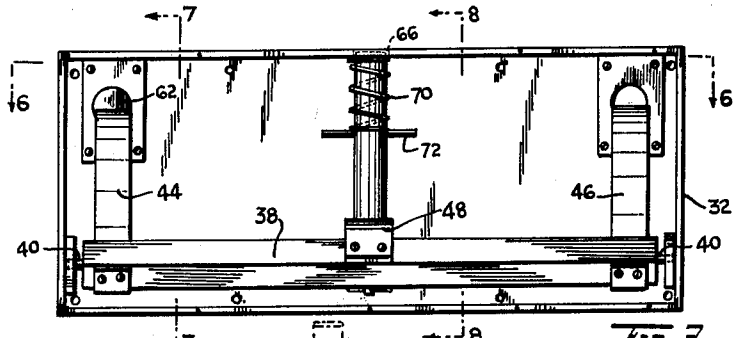

Fig. 3.

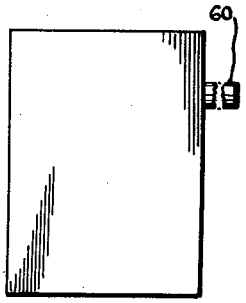

Fig. 5.

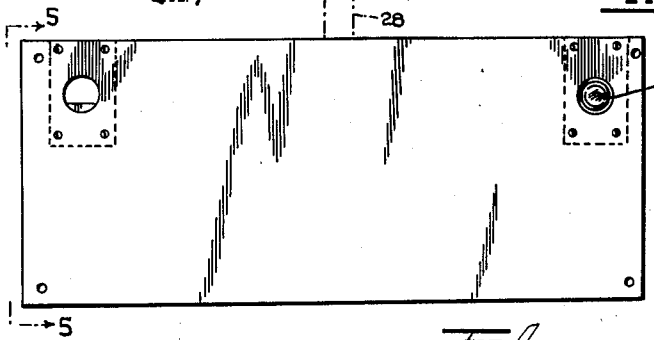

Fig. 4.

INVENTORS
ABE DEUTSCHER
HOWARD DEUTSCHER
BY
ATTORNEY

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DOUBLE DOOR HOLDER

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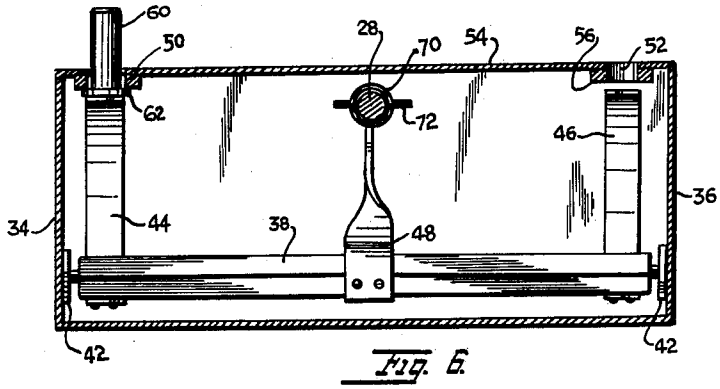

Fig. 6.

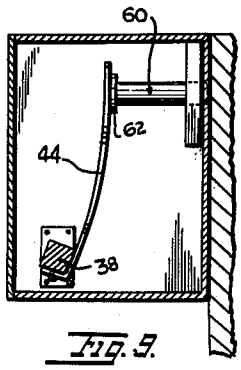

Fig. 9.

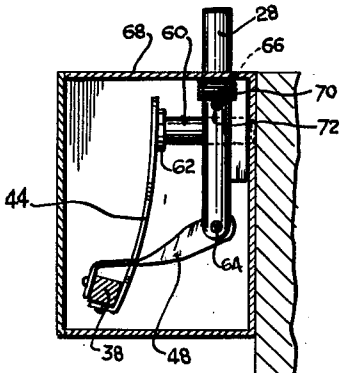

Fig. 10.

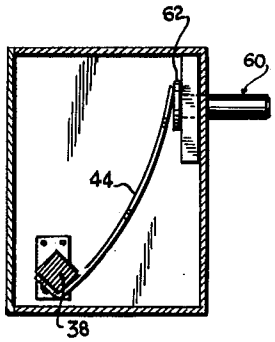

Fig. 7.

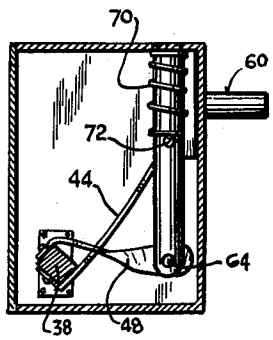

Fig. 8.

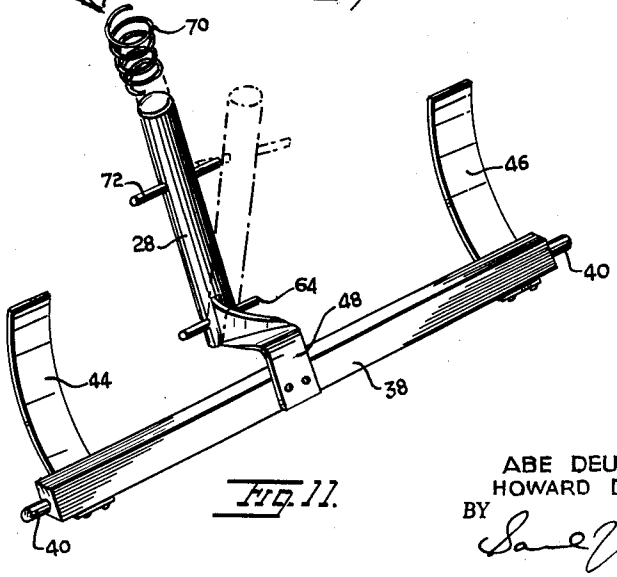

Fig. 11.

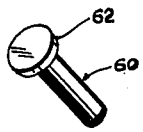

Fig. 12.

INVENTORS
ABE DEUTSCHER
HOWARD DEUTSCHER
BY
ATTORNEY

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DOUBLE DOOR HOLDER

Abe Deutscher, 83—06 Edgerton Blvd., and Howard Deutscher, 83—03 Edgerton Blvd., both of Jamaica, N.Y.

Filed Jan. 14, 1963, Ser. No. 251,381
4 Claims. (Cl. 292—146)

This invention relates to an inactive door holder or bolt for use in connection with double doors, wherein only one of the two doors is normally active and the other inactive, and the active door automatically controls the bolting or holding of the inactive door.

Specifically, in public buildings, institutions and other places open to the public, it is important that all exit doors be provided with automatic unlatching or unbolting means for emergency purposes. In the instance of double doors, it is frequently the case that only one of the doors is active in the sense of being in regular use, the other door being normally closed and latched. The problem is to provide for automatic unlatching of the inactive door in the event of an emergency, or for any other purpose. The present invention is devoted to means for automatic latching and automatic unlatching of the inactive door, said latching and unlatching means being under the control of the active door.

Specifically, the present device is an attachment to the inactive door and it is activated or operated by the active door. In the operation of this device, when the active door is in closed position, the inactive door is automatically bolted or latched to the door frame and, more particularly, to the upper portion or lintel thereof. When the active door is swung to open position, the latching action automatically reverses, and the bolt automatically retracts, thereby freeing the inactive door from the door frame and permitting it to open.

The essential object of this invention is the provision of a door latching and unlatching mechanism of the character described, said mechanism having important features and advantages over the prior art as, for example, as follows:

(1) The present device may be applied interchangeably to right-hand and left-hand doors.

(2) No mortising is required, since the device may be mounted externally of the inactive door as an attachment thereto. By the same token, it may readily be removed therefrom without defacement of the door.

(3) As indicated in Point 2 above, the present device is normally mounted on the inactive door where it is out of the way and does not interfere in any respect with the operation of the active door.

(4) Bolting of both doors is achieved by reason of the bolting of the inactive door to the door frame, and latching of the active door to the inactive door.

(5) The present device is mounted on the inside of the inactive door thereby precluding tampering from the outside.

(6) The present device is a self-contained unit having no arms or levers external of the case, with the sole exception of the bolt which engages the overhead door frame, as hereinafter described, thereby protecting against unauthorized entry as by sawing, cutting or distorting an arm or lever between the doors.

(7) The present device automatically creates a stop for the active door when in the closed position, thus keeping both doors in automatic alignment, and preventing the doors from being forced inwardly with resultant distortion or breaking of the hinges and door frames.

(8) The design and application of the present device permits maximum functional efficiency even in cases where either door is warped at the top, by the simple expedient

of attaching a shim plate on the active door where it strikes plunger or bolt control button 60, so that said button 60 is fully depressed and bolt 28 is fully upward for maximum holding.

The invention is illustrated in the accompanying drawing in which:

FIGURE 1 is an inside view of double doors showing the present door holding device mounted in position on the inactive door.

FIGURE 2 is a horizontal section on the line 2—2 of FIGURE 1.

FIGURE 3 is an inside view of the door latching and unlatching device herein described and claimed.

FIGURE 4 is a face view thereof.

FIGURE 5 is an end view of arrows 5,5 of FIGURE 4.

FIGURE 6 is a horizontal section on the line 6—6 of FIGURE 3.

FIGURE 7 is a vertical section on the line 7—7 of FIGURE 3.

FIGURE 8 is another vertical section taken on the line 8—8 of FIGURE 3.

FIGURE 9 is a sectional view similar to that of FIGURE 7, but showing the bolt control button in retracted position.

FIGURE 10 is a section similar to that of FIGURE 8 wherein the locking or latching bolt is in projected locking position.

FIGURE 11 is a perspective view of the operative parts of the device, exclusive of the bolt control button.

FIGURE 12 is a perspective view of the bolt control button.

Referring now to the details of the invention as illustrated in the drawing, it will be understood that the double doors 20 shown in FIGURES 1 and 2 of the drawing consist of an active door 22 and an inactive door 24, although this arrangement may obviously be altered as desired. The active door 22 is the left-hand door as viewed from the inside of the room, and inactive door 24 is the right-hand door. As has above been indicated, either the left- or right-hand door may be utilized as the active door and the present device would adapt accordingly. A conventional door lock or safety alarm lock 23 may be mounted on the active door for engagement with a conventional bolt keeper on the inactive door. When both doors are in closed position the inactive door, being bolted to the door frame by the door holder hereinafter described and claimed, said conventional door latch or lock 23 latches or locks the active door in closed position. The active door may also be equipped with an emergency or panic bar extension 25, connected to lock 23. Any other conventional locking, latching and signal equipment may also be used.

The latching and unlatching door holding device 26 herein claimed is shown to be mounted on the inside of the inactive door 24, projecting in part behind the active door. It is provided with a latching bolt 28 which is vertically engageable with the upper portion or lintel 30 of the door frame.

More particularly, the latching and unlatching device 26 includes a casing 32 which may be screwed or bolted to the inactive door by any conventional fastening means 27. Journaled into the side walls 34 and 36 of said casing is a bar 38. In the preferred form of the invention, this bar is provided with stud shafts or pins 40 at its respective ends, and these stud shafts or pins are journaled into bearings 42 which are secured to said side walls 34 and 36. For convenience, bar 38 is square in cross-section, since this facilitates assembly of the bar and the other parts which are connected therewith.

There are three elements which are secured to said bar 38, namely a pair of end straps 44 and 46, respectively,

and an intermediate strap 48 disposed centrally of the bar. These straps are made of relatively stiff material and they may take any shape or form, but the moderately curved shape shown in FIGURES 7, 9, 10 and 11 of the drawing is the preferred shape.

Opposite the two end straps 44 and 46 are holes 50 and 52, respectively, formed in the outer wall 54 of the casing. If desired, annular bosses 56 may be provided on said outer wall in registration with said holes in order to form bushings for bolt control button or plunger 60, as will shortly appear.

The bolt control button is simply a short cylindrical rod having an enlarged head 62 formed thereon at one end. There is only one bolt control button in the present device, but it may be placed in either of the two holes 50, 52 in the front wall of the casing. As illustrated in FIGURE 6, it occupies hole 50, the head of said bolt control button being situated within the casing and engageable with the annular boss which surrounds said hole. It could just as easily occupy hole 52, but for illustrative purposes it suffices to show the bolt control button lodged within hole 50.

It will be observed in FIGURES 7 and 9 that strap 44 is engageable with the head of the bolt control button 60. If said bolt control button were disposed within hole 52, its head would be engageable by strap 46. It will be noted that when the present device is mounted on the inactive door 24 as shown in FIGURES 1 and 2, bolt control button 60, being mounted in hole 50, is engageable at its outer end with the active door 22.

More specificaly, when the active door is brought into closed position, it engages said bolt control button and pushes it inwardly into the casing of the present device and thereby causes strap 44 to be moved from its FIGURE 7 to its FIGURE 9 position. Since strap 44 is secured to bar 38, this movement of strap 44 from right to left as viewed in FIGURES 7 and 9 results in counterclockwise rotation of bar 38 about the axis of its end stud portions 40. Strap 46 will also move integrally with bar 38, but this will have no significance in the illustrated form of the invention since strap 46 is inactive, there being no bolt control button in hole 52.

Intermediate strap 48 is in the nature of a bell crank, one end being fixed to bar 38 and the opposite end being pivotally secured by means of pin 64 to the lower end of bolt 28.

It will now be observed that bolt 28 projects through an opening 66 in top wall 68 of the casing. A coiled compression spring 70 is mounted on said bolt between said top wall 68 and a pin 72, which is secured to said bolt a spaced distance below its upper end. The action of this spring is to urge or thrust the bolt downwardly from its FIGURE 10 to its FIGURE 8 position. Since the lower end of the bolt is pivotally secured to strap or bell crank 48 and since said strap or bell crank is fixed to bar 38, the net effect on said bolt of angular movement of the bar is to cause it to move vertically either upwardly or downwardly as the case may be, depending upon the direction of movement of said bar 38. If the bar is caused to rotate in clockwise direction as viewed in FIGURE 8, bolt 28 will be retracted in downward direction to its position in said FIGURE 8. If said bar 38 is rotated in counterclockwise direction, the bolt will be moved upwardly against the action of spring 70 to its FIGURE 10 position.

The operation of the present device may now be described sequentially. When the two doors are in their closed positions as shown in FIGURES 1 and 2, active door 22 will bear against bolt control button 60 and will hold it in retracted position as viewed in FIGURE 9. Through the linkage above described, namely strap 44, bar 38, and strap or bell crank 48, this will have the effect of projecting bolt 28 upwardly against the action of spring 70 and into locking engagement with lintel 30 of the door frame. The active door may be held in closed position either by conventional means or by latching means engaging the inactive door, or in any other conventional manner and any other conventional means.

When it is desired to open the active door it is swung outwardly, as indicated by the curved arrow in FIGURE 2. The bolt control button is now disengaged and is free to move forwardly and outwardly to its FIGURE 8 position, and it does move into such position by reason of the action of loaded spring 70 on bolt 28. The spring thrusts the bolt downwardly to its FIGURE 8 position, thereby causing strap 48, bar 38, and strap 44 to move in clockwise direction about the axis of said bar. The inactive door is now unbolted and ready to be opened. This procedure is reversed when the active door is swung back to closed position. It engages outwardly projecting bolt control button 60 and thrusts it inwardly (leftwardly) from its position in FIGURES 7 and 8 to its position as illustrated in FIGURES 9 and 10. Strap 44, bar 38 and strap 48 will thereby be caused to move in counterclockwise direction and this, in turn, will effect an upward movement of bolt 28 against the action of its spring 70 and into locking engagement with lintel 30 of the door frame.

The foregoing is illustrative of the present invention and it will be understood that modifications therein may be had without departing from the scope and spirit of the invention. For example, should it be desired to convert door 24 to active status and door 22 to inactive status, all that need be done to the present device is to remove bolt control button 60 from hole 50 and to place it in hole 52, and the casing of said device would be secured to door 22 rather than to door 24, as is presently the case. The mechanism will function in precisely the same manner as has been above described. This feature of interchangeability as between right- and left-hand doors is extremely valuable, since it may be utilized in the field or on the job as distinguished from the factory or place of manufacture of the present device. Other modifications are contemplated and encompassed within the scope of the invention.

What is claimed is:

1. A door holder for double doors mounted within a common door frame, wherein one of the doors is active and the other inactive, a latching device being adapted to hold the inactive door to said common door frame, said latching device comprising a casing which is adapted to be mounted on the inactive door adjacent the common door frame, a portion of said casing projecting behind the active door, a vertically movable bolt mounted in said casing for engagement with said door frame to latch the inactive door thereto, a horizontally mountable bolt control button mounted in said casing for engagement with said active door, and a linkage within the casing operatively connecting said bolt and said bolt control button, said linkage comprising a horizontally disposed bar which is journaled at its ends into said casing to permit angular movement about its longitudinal axis, a strap secured at one end to said bar, its opposite end engaging the inner end of the bolt control button, and a bell crank connected at one end to said bar and at its opposite end to said bolt, whereby downward movement of the bolt into the casing is transmitted through said bell crank, bar and strap and converted into outward movement from the casing of said bolt control button, and whereby inward movement of said bolt control button is transmitted through said strap, bar and bell crank and converted into upward movement of said bolt, spring means being connected to said linkage to cause downward movement of the bolt and outward movement of the bolt control button when the active door is in open position, thereby unlatching the inactive door from the common door frame, said bolt control button being movable inwardly against the action of said spring means when engaged by the active door moving into closed position, thereby causing the bolt to move upwardly into latching engagement with the common door frame.

2. A door holder in accordance with claim 1, wherein

the spring means connected to said linkage comprising a compression spring mounted on said bolt, a cross pin being provided on said bolt against which the lower end of said spring bars, the upper end of the spring bearing against a portion of said casing.

3. A door holder for double doors mounted within a common door frame having an overhead lintel, wherein one of the doors is active and the other inactive, said door holder being mounted on the inactive door to bolt said inactive door to the common door frame, and said active door being latched to the inactive door, said door holder comprising a casing which is secured to the inactive door adjacent the lintel, a portion of said casing projecting outwardly behind the active door, a vertically movable bolt mounted in said casing for upward movement into holding engagement with the lintel and for downward movement to disengage the lintel, a horizontally movable plunger mounted in said outwardly projecting portion of said casing for engagement with said active door when the latter is moved into closed position, and connecting means within said casing operatively interconnecting said plunger with said bolt, whereby closing of the active door causes inward movement of said plunger and upward movement of said bolt into holding engagement with said lintel, and whereby opening of the active door results in outward movement of said plunger and downward movement of said bolt to disengage the lintel, said bolt being the only portion of said door holder which projects outwardly from the casing when the active door is in closed position, thereby reducing the possibility of unauthorized entry by sawing, cutting or otherwise distorting locking or bolting elements.

4. A door holder for double doors mounted within a common door frame, wherein one of the doors is active and the other inactive, a latching device being adapted to hold the inactive door to said common door frame, said latching device comprising a casing having a vertically movable bolt mounted therein for engagement with said door frame to latch the inactive door thereto, a horizontally mountable bolt control button mounted in said casing for engagement with said active door, and a linkage within the casing operatively connecting said bolt and said bolt control button, whereby downward movement

of the bolt into the casing causes outward movement of the bolt control button out of the casing and whereby inward movement of the bolt control button into the casing causes upward movement of the bolt out of the casing, said casing comprising front and back walls, a pair of end walls, and top and bottom walls, said casing being adapted to be mounted on the inactive door with its front wall abutting the inner side of said inactive door as well as the inner side of the active door when the latter is in closed position, said common door frame having an overhead lintel and a pair of side frame members on which said active and inactive doors are hingedly mounted, a hole being formed in the top wall of said casing, said hole being formed intermediate the two end walls, the vertically movable bolt being disposed within said hole and movable therethrough into and out of engagement with said lintel, the front wall of said casing being provided with a pair of end holes in either of which said bolt control button may be mounted for inward and outward movement relative to said casing, said control button being engageable with said linkage irrespective of which of said latter two holes it occupies, the selection of said holes being determined by whether said latching device is installed on either a right hand or a left hand door, spring means being connected to said linkage to cause downward movement of the bolt and outward movement of the bolt control button when the active door is in open position, thereby unlatching the inactive door from the common door frame, said bolt control button being movable inwardly against the action of said spring when engaged by the active door moving into closed position, thereby causing the bolt to move upwardly into latching engagement with the common door frame.

References Cited in the file of this patent

UNITED STATES PATENTS

395,540	Borchard	Jan. 1, 1889
1,345,031	Smith	June 29, 1920
2,034,570	Flavin	Mar. 17, 1936

FOREIGN PATENTS

602,708	Great Britain	June 1, 1948