Sept. 22, 1925. 1,554,700

F. A. ANDERSON

DOOR LATCH OPERATING DEVICE

Filed March 2, 1922

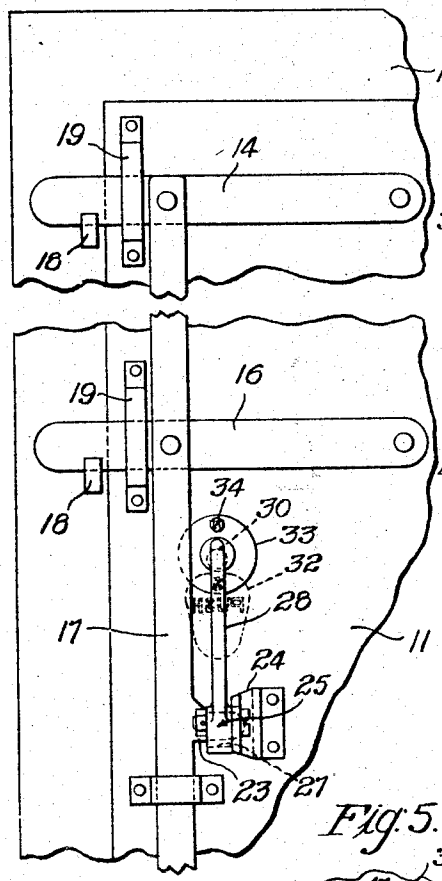


Fig. 1.

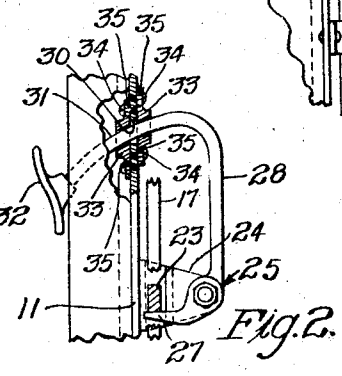


Fig. 2.

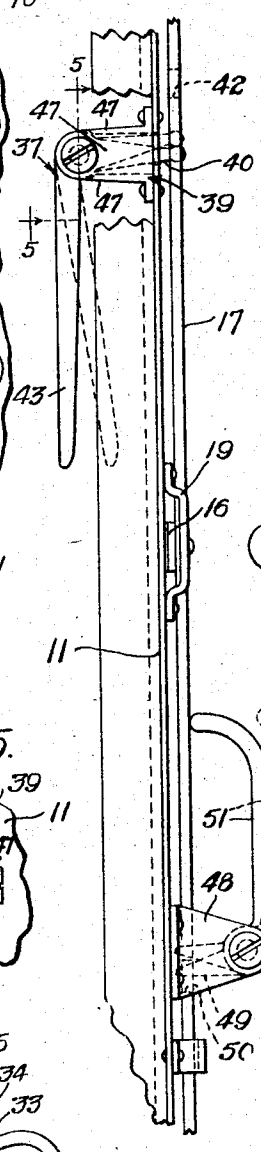


Fig. 4.

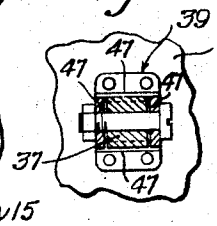


Fig. 5.

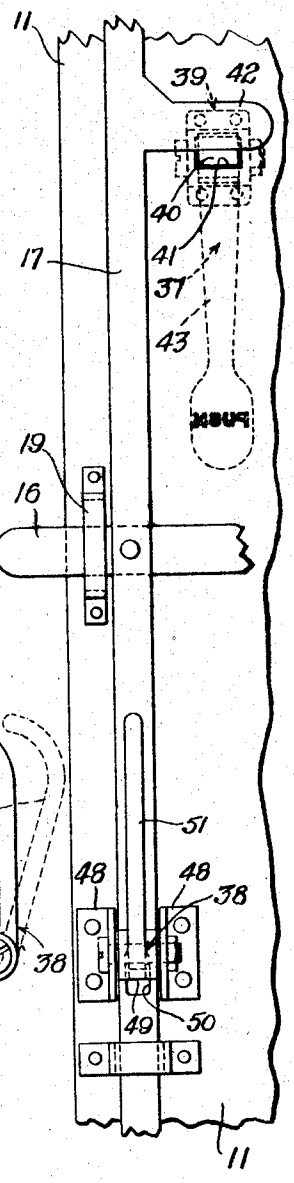


Fig. 3.

Inventor

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UNITED STATES PATENT OFFICE.

FREDERICK ADOLPH ANDERSON, OF CHICAGO, ILLINOIS.

DOOR-LATCH-OPERATING DEVICE.

Application filed March 2, 1922. Serial No. 540,444.

To all whom it may concern:

Be it known that I, FREDERICK ADOLPH ANDERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Latch-Operating Devices, of which the following is a full, clear, concise, and exact description.

This invention relates to operating devices for hinged and latch secured doors, and has for its object to provide means by which doors may be expeditiously unlatched and opened with a minimum expenditure of energy and without confusion, thereby providing against undue physical strain upon an operator in releasing the latch and opening the door.

The preferred form of the invention comprises a unitary pivotal member mounted upon the door and adapted to be moved from either side thereof about its pivot in the direction in which the door opens to release the latch and thereafter by pulling or pressing thereon in the same direction to serve as a means for opening the door.

Another form of the invention provides for the use of a pivotal member upon each side of the door, each member operable in the same manner as the preferred form of the invention to release the latch and to serve as a means for opening the door.

In the drawings in which the invention has been illustrated in connection with a steel fire door:

Figure 1 is a fragmentary front elevation of one side of a door showing the operating device applied thereto;

Fig. 2 is a fragmentary side view thereof partly in section looking from the left-hand side;

Fig. 3 is a fragmentary front elevation of a similar door with a modified form of the invention embodied thereon;

Fig. 4 is a side view thereof looking from the left-hand side, and

Fig. 5 is a vertical section taken upon the line 5—5 thereof and looking in the direction indicated by the arrows.

As illustrated in the drawings, the invention has been applied to a heavy steel fire door, but it will readily be understood that its usefulness need not be confined alone to such doors.

Referring to Fig. 1, 10 represents a door frame with a door 11 hinged thereto (the hinged side thereof not shown). The latch mechanism illustrated comprises top and lower latches 14 and 15 and a central latch 16, all pivotally supported upon one face of the door and suitably connected together by a common latch bar 17. Latch keepers secured to the door frame 10 are indicated at 18, 18 and retaining and guiding straps 19, 19 for the latches 14, 15 and 16 are suitably positioned upon the door with the lower strap adapted to act as a stop for the latches in their downward movement. The lower strap 19 is also provided with a screw 22 suitably positioned therein to limit the movement upward of the latches after they have been released from their keepers 18, 18. Upon the latch bar 17 between the latches 15 and 16 and at a suitable distance from the floor is formed or welded a lug 23 which projects from the latch bar 17 toward the hinged side of the door. A bracket 24 is secured to the door opposite the end of the lug 23 and pivotally supported thereon is a lever 25 provided with a horizontally disposed arm 27 adapted to engage the under side of the lug 23. (See Fig. 2.) A vertical arm 28 of preferably circular cross section projects upwardly from the pivotal point of the lever 25 a suitable distance to form a handle and at its top is curved forward and downwardly upon a radius drawn from the pivot point of the lever 25 to pass through an opening 30 formed in the door to form an operating arm 31 for the opposite side of the door. Upon the end of the arm 31 is secured a head 32 of any suitable shape for moving the lever 25 about its pivot when the door is to be unlatched and opened from the side opposite to the side upon which the lever 25 is pivoted.

Upon each side of the door and surrounding the arm 31 of the lever 25 are circular plates 33 adapted to fit the arm snugly. The plates 33 are secured to the door by screws 34 passing through slots 35 formed in the plates and when mounting the lever 25 upon the door the arm 31 with a plate 33 thereon is passed through the opening in the door and another plate is then put on the arm and both plates are then moved up upon opposite sides of the door and screwed in place, the threaded holes for the screws already being formed in the door within the range of the slots 35 in the plates. The purpose of the plates 33 is to effectively seal the opening in the door, which is larger than

the cross section of the arm 31, from the passage of flame, which feature is vital when the operating device is used upon fire doors. The head 32 is suitably secured to the arm 31 after the lever 25 is properly mounted upon the door.

In operation, by pulling on the arm 28 in the direction in which the door opens, the arm 27 will lift the latch bar 17 upward, thereby causing the latches 14, 15 and 16 pivotally connected thereto to be released from their keepers 18, 18 and by continuing to pull on the arm 27 after it has released the latches and has come to a stop, due to the latch 15 engaging the screw 22 positioned in the lower strap 19, the door may be opened. By pressing on the arm 31 in the direction in which the door opens, the latches will be released in the same manner as is done by pulling on the arm 28, thereby allowing the door to be opened from the opposite side thereof.

Figs. 3, 4, and 5 illustrate a modified form of the invention in which levers 37 and 38 are mounted upon opposite sides of the door. The lever 37 is pivotally supported upon a bracket 39 secured to the door above the latch 16. A horizontally disposed arm 40 of the lever 37 passes through a rectangular shaped opening 41 formed in the door and engages the underside of a lug 42 on the latch bar 17. A downwardly projecting arm 43 of suitable shape on the lever 37 forms a handle therefor. The opening 41 in the door is large enough to allow for the maximum travel upward of the arm 40 (see Fig. 4) when the lug 42 is moved upward, and to effectively seal the opening 41 in the door from the passage of flame the bracket 39 is formed with enclosing horizontal and vertical walls 47, 47 (see Figs. 4 and 5) which form a housing around the arm 40 and the opening 39, thereby effectively sealing the opening 41.

The lever 38 is pivotally supported upon the door directly in front of the latch bar 17 and below the latch 16 by a pair of brackets 48 secured to the door upon each side of the latch bar 17. A horizontally disposed arm 49 on the lever 38 engages the upper side of a rectangular shaped opening 50 formed in the latch bar 17. An arm 51 of suitable shape and length projects upwardly from the pivotal point of the lever 38 to form a handle therefor and by pulling thereon in the direction in which the door opens, the arm 49 will lift the latch bar 17 upward and thereby release the latches from their keepers, and by continuing to pull on the arm 49 the door may be opened. The depth of the opening 50 in the latch bar 17 is such that when the arm 43 of the lever 37 is pressed in the direction in which the door opens to lift the latch bar 17 the under side of the opening 50 will not engage the arm 49 of the lever 38. This allows the door to be opened from the side opposite the lever 38 without any movement of the lever 38 about its pivot. And vice versa, when the lever 38 is used to open the door, the movement of the latch bar upward will not cause any movement of the lever 37. A suitable inscription may be formed on the head 32 of the lever 25 and the arm 43 of the lever 37, as indicated in dotted outline in Figs. 1 and 3, to notify an operator in which direction they are to be moved.

It will readily be seen that in case a door is provided with a single latch that the arm 27 on the lever 25 may be positioned on the door to engage directly under the latch to cause its release and also in case two levers, like the levers 37 and 38 upon opposite sides of the door, are used in connection with a single latch that the latch may be formed with a suitable portion for engagement with the arm 40 of the lever 37 and the arm 49 of the lever may be engaged in a suitable opening formed in the latch to cause its release.

The invention provides an operating device for hinged and latch secured doors which may be readily and easily applied and one which requires a minimum of physical energy to operate.

What is claimed is:

1. A device for operating latch secured doors, comprising a handle member mounted solely on one side of the door and having a portion thereof movable back and forth through the door, said handle member being operatively disposed with respect to the latch and operable from either side of the door solely by the application of force thereto in the direction in which the door opens.

2. A device for operating latch secured doors, comprising a latch engaging member mounted solely on one pivotal axis and having a portion thereof movable back and forth through the door, said member operable from either side of the door to release the latch and operable solely by the application of force thereto in the direction in which the door opens.

3. A device for operating latch secured doors, comprising a latch engaging member pivotally mounted solely on one side of the door and having an arcuate portion movable back and forth through the door, said member operable from either side of the door to release the latch and operable by the application of manual force thereto in the direction in which the door opens.

In witness whereof, I hereunto subscribe my name this 27th day of February A. D., 1922.

FREDERICK ADOLPH ANDERSON.