Jan. 30, 1923. 1,443,736

G. H. GARRETT.
DOOR OPERATING DEVICE
FILED OCT. 11, 1921

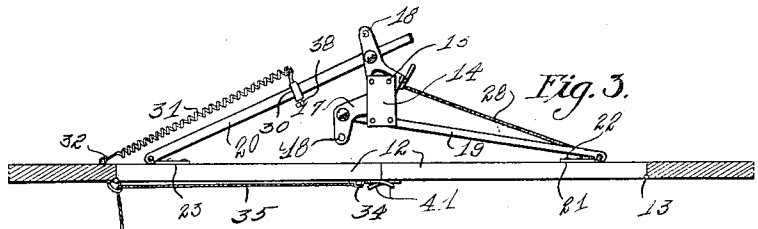


Fig. 3.

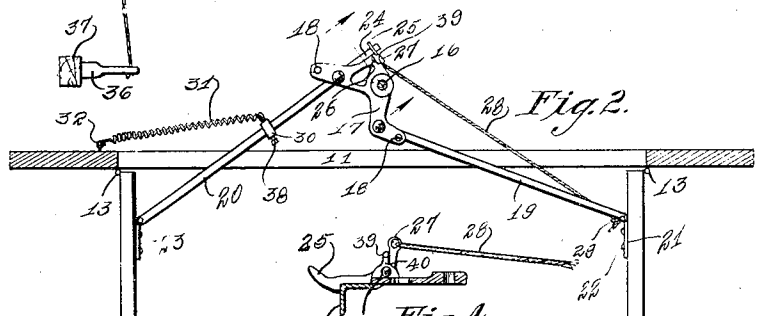
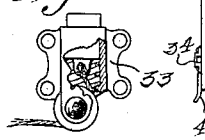


Fig. 2.

Fig. 4.

Fig. 5.



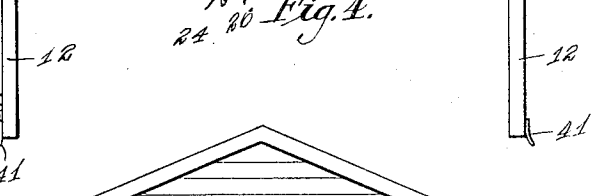


Fig. 1.

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UNITED STATES PATENT OFFICE.

GEORGE H. GARRETT, OF WINTERSET, IOWA, ASSIGNOR TO RAYMOND H. CROFT, OF WINTERSET, IOWA.

DOOR-OPERATING DEVICE.

Application filed October 11, 1921. Serial No. 507,155.

To all whom it may concern:

Be it known that I, GEORGE H. GARRETT, a citizen of the United States, and resident of Winterset, in the county of Madison and State of Iowa, have invented a certain new and useful Door-Operating Device, of which the following is a specification.

The object of my invention is to provide a door opening mechanism of simple, durable and inexpensive construction which is adapted to simultaneously open and close a set of doors when either of the doors of the said set is operated.

A further object is to provide a door opening and closing mechanism for a set of doors so arranged that the doors may be manually closed and locked in said closed position against the action of a yielding member, whereby the doors will automatically open themselves when the said doors are unlatched, the said latch being operated from a distance by a suitable device at a distant point from said door.

A further object is to provide in a door opening and closing mechanism adapted to simultaneously open and close a pair of doors, means operatively connected with said door opening and closing device for locking the said doors in an open position.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Figure 1 is a front elevation of a building in which is included a pair of hinged doors showing the manner in which my improved door operating device is connected therewith.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1 showing the manner in which my improved device is applied to a pair of doors and when the said doors are in an open position.

Figure 3 is a sectional view on the same line showing the doors in a closed position.

Figure 4 is a detail sectional view taken on the line 4—4 of Figure 2.

Figure 5 is a detail view of the catch device for holding the doors in a closed position.

The numeral 10 indicates the front wall of a building in which is included a door opening 11. The said door opening is provided with a pair of doors 12, each of which is hinged to the vertical edges of said door opening by means of suitable hinges 13.

The doors 12 are of a width substantially equal to one-half of the width of the said door opening, and so arranged that when closed they will enclose the said door opening. Doors constructed of this type are usually employed in garages and barns where it is necessary to move a vehicle or similar device into and out of the building, in which case both of the doors have to be opened and closed.

To simultaneously operate both of the doors by manually operating one of them, I have provided the following mechanism which comprises a plate 14, which may be secured to the ceiling beams on the inside of the building at a point midway between the vertical edges of the door opening, and substantially in line with the top edge of said door opening.

This plate 14 may be secured in position by suitable screws through the openings 15 in said plate. The plate 14 is provided with a downwardly extending pin 16 upon which is pivotally mounted a sort of bell crank lever 17 having its arms provided with a series of openings 18. Pivotally connected through each one of a corresponding set of openings 18, I have provided links 19 and 20.

The link 19 has its free end pivotally connected to a plate 21 which is secured to one of the door members 12 by means of rivets or bolts 22. This plate 21 is secured to the inner face of the door 12 and at a point a slight distance from the hinged edge of said door, as clearly shown in Figure 2.

The link 20 is provided with a similar pivoted plate 23 and secured to the corresponding position on the opposite door 12. The link 20, however, is made longer than the link 19 and has its inner end provided with an inwardly projecting portion 24 which is designed to be engaged by means of a latch member 25 pivotally secured to the member 17 by means of a pivot member 26.

This latch member 25 is provided with an upwardly extending arm 27 to which a cord 28 is attached. The said cord 28 is designed to pass through an eye bolt 29 mounted substantially beneath the pivot of the

plate 21 in such a manner that the free end of the cord 28 will hang downwardly adjacent to the inner face of the door 12, as clearly shown in Figure 2, so that it may be readily grasped by the operator when desired.

The link 20 is also provided with a hook 30 to which one end of a spring 31 is attached, and the other end being connected to an eye bolt 32 in the interior face of the wall of the building in such a manner that when the link 20 is moved to the position shown in Figure 3, a considerable tension will be applied to the spring so that the doors 12 may be automatically moved to their open position.

By this arrangement, it will be seen that if one of the doors 12 is grasped when in an open position, as shown in Figure 2, and it is desired to close the doors, the operator will pull the cord 28 which will cause the hook 25 to be elevated and to disengage the portion 24. The door may then be swung to a closed position, which I will assume is the right hand door, as shown in Figure 2.

This inwardly swinging movement of the door 12 will cause the link 19 to be moved endways which in turn will cause the bell crank lever 17 to be oscillated in a clockwise direction. This will cause the link 20 to be moved endways and inwardly and the left hand door 12 thereby moved to a closed position, as shown in Figure 3. This inward movement of the link 20 will cause the tension to be applied to the spring 31 which will have a tendency to open the doors, if the hand grip of the same is released.

To prevent the doors from coming open, I have provided a latch 33, operatively secured to the left hand door 12, the said latch being designed to engage a catch plate 34 secured to the upper edge of the door frame, the said latch being designed to lock the doors from opening against the action of the spring 31.

The latch 33 is provided with a cord 35 which extends forwardly and diagonally to the left to a bracket 36 supported on a post 37. This post 37 may be mounted in front of the doors at one side of the driveway a sufficient distance so that the downwardly extending end of the rope 35 may be grasped by the operator of a car or similar vehicle to release the latch 33. When this is done the spring 31 will move the doors 12 simultaneously to an open position, as shown in Figure 2.

The swinging movement of the doors 12 as they move to an open position will cause the projection 24 to swing through an arc of a circle about the pivot member of the said link 20, and when the said doors are in an open position, will move beneath the latch 25, as clearly shown in Figure 4, the said latch being designed to prevent the swinging movement of the inner end of the member 24 and thereby preventing the doors 12 from being either opened further or closed. This provides means for also supporting the doors 12 in parallel relation with each other when in an open position.

By providing a series of openings 18, I have provided means whereby the links 19 and 20 may be adjusted to swing the doors to a more or less open position when the bell crank 17 is in the position shown in Figure 2. The exact shape of this bell crank member 17 is immaterial any other than the placing of the openings of one member of the bell crank should be substantially at right angles with a line passing through the openings of the opposite member of said bell crank lever.

The member 30 is provided with an adjusted screw 38 whereby the tension of the spring 31 may be varied by sliding the hook member 30 back and forth on the link 20.

The hook member 29 is held against downward movement when disengaged from the portion 24 by means of a laterally projecting pin 39 extending from a lug 40 of the member supporting the pivot 26.

The top and outer faces of the inner edges of the doors 12 are provided with straps 41 which are designed to overlap each other and the ends of the adjacent doors when the doors are in a closed position, as shown in Figure 3. These straps 41 provide means whereby the doors will be brought to alinement with each other as they approach a closed position.

By this arrangement, it will be seen that I have provided a mechanism of simple, durable and inexpensive construction which may be easily and quickly attached to a building and to a pair of hinged doors in such a manner that when one of the doors is actuated the opposite door will be simultaneously actuated, and further provide means for automatically locking the doors at an open position, and also means whereby the doors may be automatically opened from a distance in front of the doors by merely pulling a cord or rope which is located at a suitable position situated at a point where it is desired to operate the doors.

I claim as my invention:

1. In combination with a wall having a door opening provided with a pair of oppositely swinging doors, a pivoted bell crank lever, a link pivotally connected to each member of said bell crank lever, the free end of each of said links being pivotally connected to the inner face of each of a corresponding door near the hinged edge thereof, the bell crank and links being so arranged that as one of the doors is moved to an open or closed position the opposite door will be correspondingly opened or closed, means for locking the doors in an

open position, yielding means for moving the doors to an open position, means for locking the doors to a closed position against the action of said yielding means, and means for releasing said locking means from a distance remote from the said doors.

2. A door operating device comprising a plate, a bell crank lever pivotally mounted on said plate, a link pivotally connected to each member of said bell crank lever, one of said links being provided with an inwardly extending portion, a latch carried by said bell crank lever to engage said inwardly extending portion when in one position of its movement, means for releasing said latch, a plate pivotally connected with the free end of each of said links, and a yielding member secured to one of said links.

3. A door operating device comprising a plate, a bell crank lever pivotally mounted on said plate having each of its members provided with a series of openings, and also provided with means for supporting a latch device, a link pivotally connected to one of the openings of each series of openings of said bell crank lever, one of said links being provided with an inwardly extending portion designed to rest adjacent to the pivot supporting portion of said bell crank when in one position of its movement, a latch pivotally connected to said pivot supporting member designed to engage the inwardly extending portion of said link to lock it against movement in either direction, means for releasing said latch, a plate pivoted to the free end of each of said links, yielding means for moving said links in one direction adjustably secured to one of said links.

Des Moines, Iowa, August 10, 1921.

GEORGE H. GARRETT.