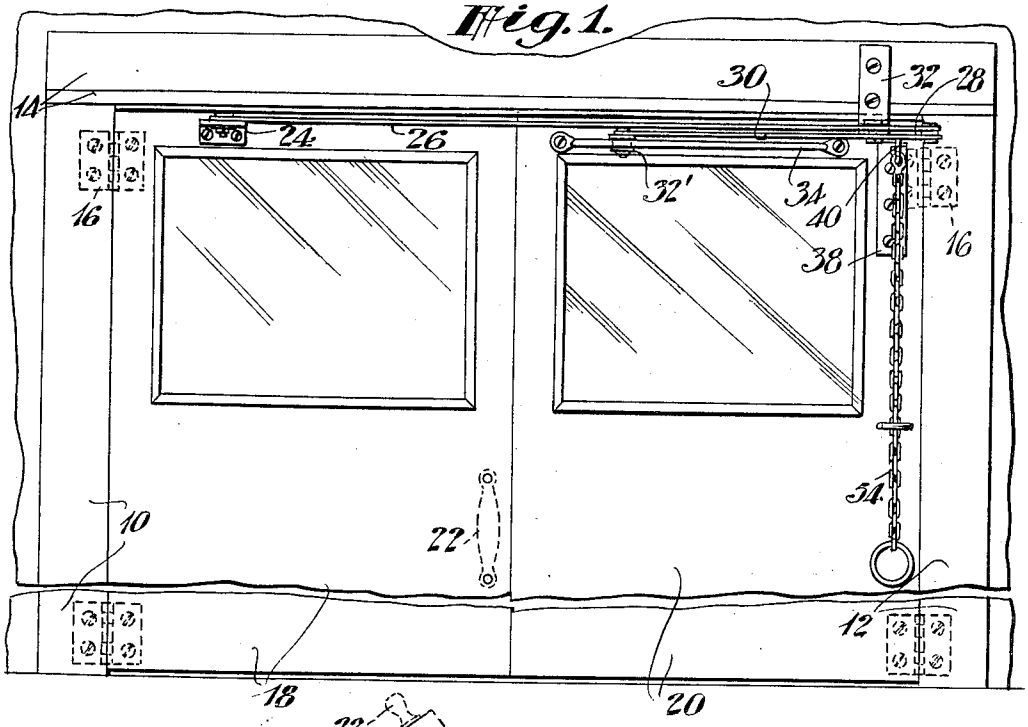
Jan. 2, 1934. R. CALABRESE 1,941,969

DOOR CONTROL AND OPERATING DEVICE

Filed Sept. 23, 1931 2 Sheets-Sheet 1

Fig. 1.



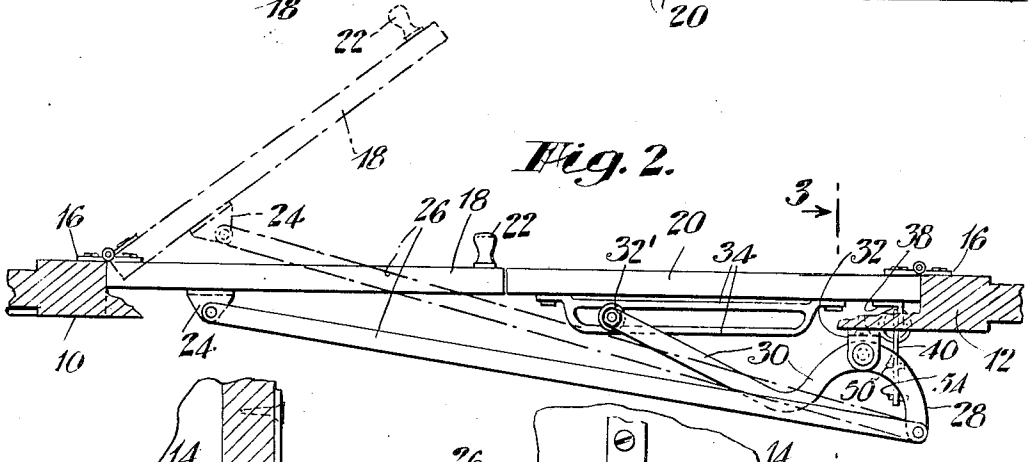


Fig. 2.

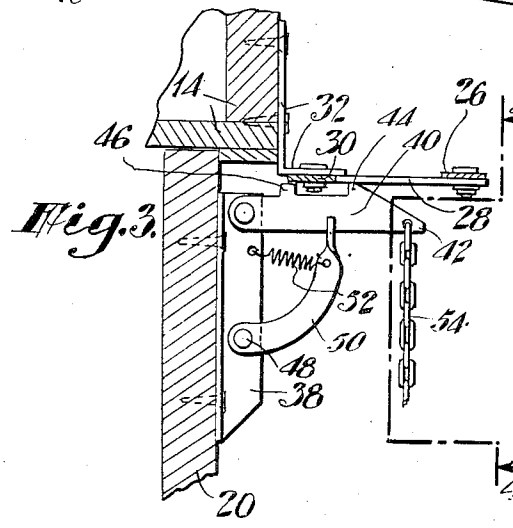


Fig. 3.

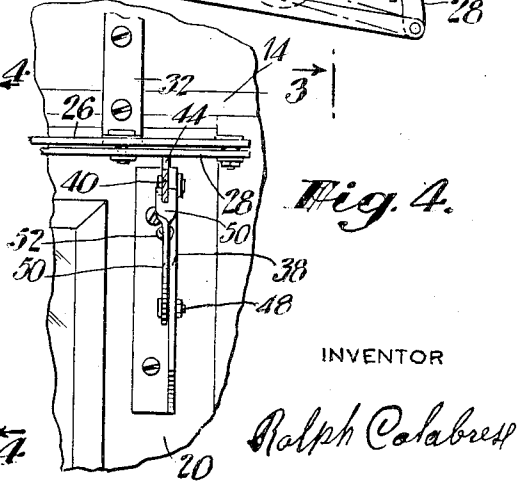


Fig. 4.

INVENTOR

Ralph Calabrese

Jan. 2, 1934. R. CALABRESE 1,941,969

DOOR CONTROL AND OPERATING DEVICE

Filed Sept. 23, 1931 2 Sheets-Sheet 2

Fig. 5.

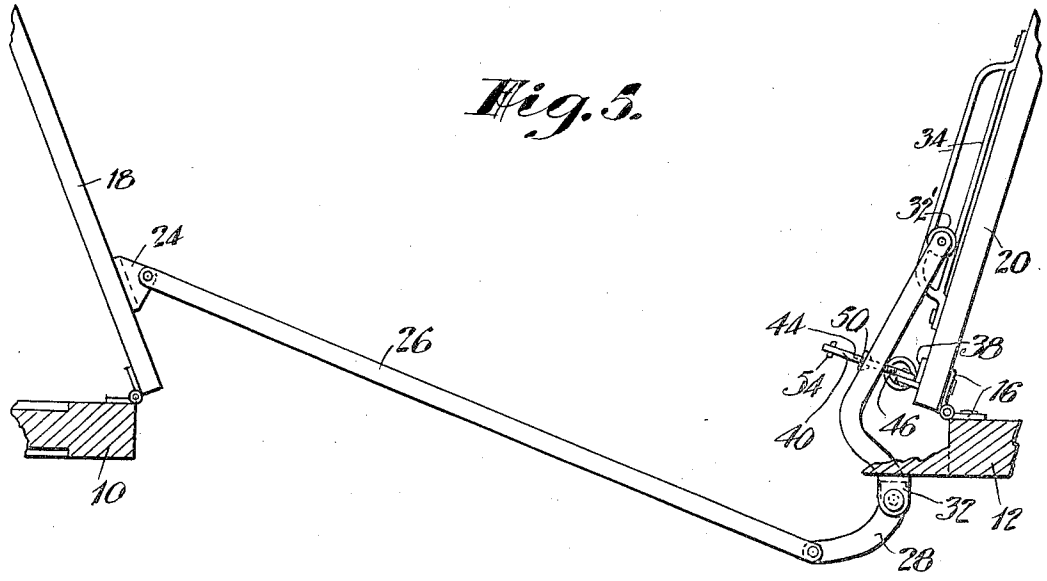


Fig. 6.

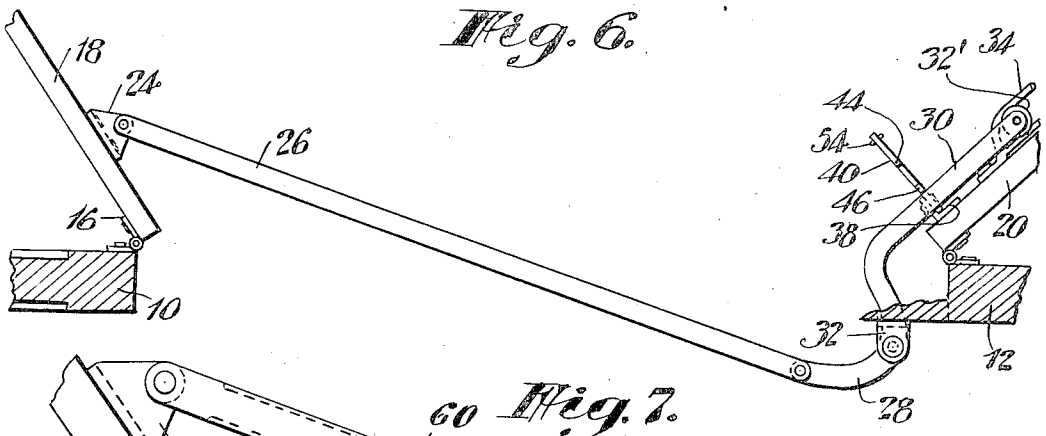
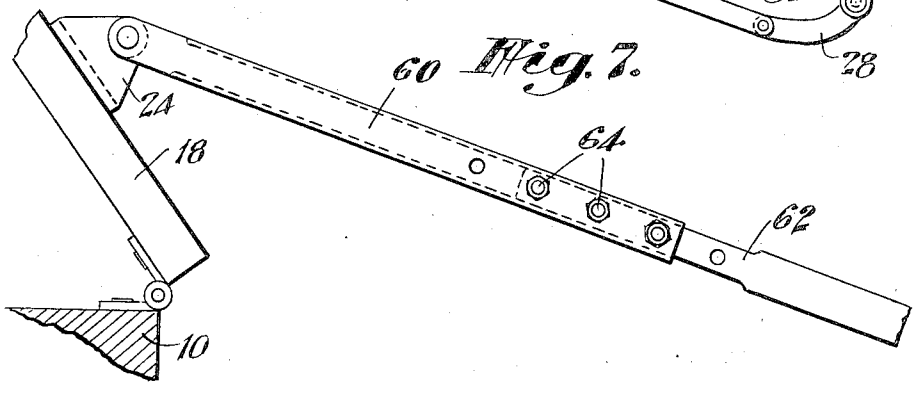


Fig. 7.



INVENTOR

Ralph Calabrese

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UNITED STATES PATENT OFFICE

1,941,969

DOOR CONTROL AND OPERATING DEVICE

Ralph Calabrese, Brooklyn, N. Y.

Application September 23, 1931
Serial No. 564,605

3 Claims. (Cl. 268—62)

My invention relates to a double door control and operating device. More particularly my invention deals with a device for operating the opening of one door which in turn operates the other.

The primary object of my invention is to provide novel means for being connected to double doors which are hinged on opposite edges whereby the partial swinging of one will effect the swinging of the other.

Another object of my invention is to provide means which can be easily attached to doors and which can on movement of one door swing the other and securely retain both doors in open and fixed position.

With the above objects and features in view, the invention in its preferred form consists in providing a bracket on the inside of an outwardly swingable door and to which is pivoted a link member, while to the inside of another outwardly and oppositely swinging door and substantially in alignment with the bracket on the first door is a trolley guide for a trolley having a horizontal bar or arm which is arcuately curved and is pivotally connected to the other end of the link member. The middle of the arcuate portion of the horizontal bar is pivoted to a bracket plate attached to a frame for said doors and in a position above the hinged end of the door carrying the trolley guide. The link member, arm, and trolley guide are adjusted horizontally and in parallel planes one above the other. In order to keep the doors securely fixed in position after they have been swung open, I provide automatic locking means on the second door to engage the horizontal bar or arm.

From the above and the hereinafter detailed description, taken in connection with the accompanying drawings, the invention resides in the novel combination hereinafter described and claimed, it being understood that various modifications as to form and size and materials can be made without departing from the spirit and scope of the invention.

Referring to the drawings wherein I have shown one preferred embodiment of my invention and in which similar reference characters refer to corresponding parts in the several views:

Fig. 1 is an elevation view from the inside of a garage showing the device engaging the doors.

Fig. 2 is a plan view of my device showing closed position of the garage doors and the device and the partially open position of one of the doors and its traction effect on one of the members, as indicated by the dotted lines.

Fig. 3 is an enlarged section on 3—3 of Fig. 2.

Fig. 4 is a section on line 4—4 of Fig. 3.

Figs. 5 and 6 are top plan views of my device with the doors being partly and fully opened respectively, and

Fig. 7 is an enlarged fragmentary plan view of an adjustable link of my device attached to the garage door.

Referring in detail to the drawings wherein I have shown various detail views of my invention, I show a garage door frame consisting of the upright beams 10 and 12 and the connecting cross beam 14, resting on the upper end of said beams. Each of the beams 10 and 12 has hinged thereto by means of hinge 16, a door 18 and 20. One of the doors 18 contains a handle 22 at one end of the middle portion thereof whereby to swing the door outwardly of the garage proper.

Secured to the inside wall of door 18 and toward the upper edge thereof is a bracket 24. It will be further noted that bracket 24 is attached to the door near the upper hinge 16 and has one of the plates extending outwardly at right angles to the door wall. The bracket 24 has the end of a link or bar 26 pivoted by any well known means to its extending plate and thru its vertical axis.

The link 26 also has its other end pivotally mounted onto the arcuate end portion 28 of a horizontal plate arm 30. The middle of the arcuate portion 28 of arm 30 is pivoted to a bracket 32, at its vertical axis, said bracket being fastened or mounted on to the inner face of the cross beam 14, and preferably at a position adjacent the top corner of door 20. This position of the bracket has been found most preferable in order that it act as a pivoting fulcrum whereby the stresses can be easily transmitted from link 28 in effecting the arcuate outwardly swinging motion of arm 30.

The other end of arm 30 carries a trolley 32′ pivotally mounted thereon by means of washers and a bolt and nut. Said trolley is adapted to move between the tracks of a trolley guide frame 34 secured to the top end of the inner wall of door 20. The trolley or roller 32′ is pivoted through its longitudinal axis and mounted on the under side of the arm 30. The trolley guide may be attached to the inner wall 20 of the door by any suitable means such as screws or bolts and is adapted to guide the movement of trolley 32′ on arm 30. It will be noted by referring to Fig. 2 that the trolley guide frame 34 has one of its guide rods extending inwardly toward the other at its ends. The trolley guide 34 is set in a horizontal plane below that of the link

26, while the arm 30 is set in a plane intermediate that of the trolley guide 34 and the link 26. Furthermore, the ends of tracks of guide 34 are closed as shown in Figs. 2 and 5 so that the trolley cannot become disengaged from the tracks and also to limit the space within which the trolley can move in order to control the arc through which the door will be outwardly swung.

In order to keep the doors in full open position as shown in Fig. 6, I provide means for engaging the horizontal arm 30. Said locking means include a bracket 38 secured to the inside of door 20. The bracket is preferably placed in a position on the upper right hand corner of door 20 so as to be adjacent the horizontal arm 30 as shown in Figs. 1 and 2. The bracket 38 has a latch 40 pivoted at one of its ends to the extending plate thereof so that the latch can be moved to describe an arc in a vertical plane. The latch 40 also has its other end partly cut away and tapering to a point indicated at 42 to allow arm 30 to slide over the upper edge of the latch when the doors are being swung open. The upper edge of latch 40 is cut away to provide lugs or flanges 44 and 46 respectively thereon. Said lugs 44 and 46 are so spaced apart that the cutaway space between them is sufficiently large to accommodate the arm 30. The bracket 38 has an arc bar plate 50 pivoted at 48 thereto whose other end is twisted through 90° and grooved as shown in Fig. 4 to provide a guideway along which the lower edge of latch 40 slides during the opening of the doors 18 and 20. The groove of the arc bar 50 is sufficiently deep to provide a space between the cutaway edge and the lower edge of the latch 40, whereby the latch may be pivotally swung downward.

Arc plate bar 50 is controlled by means of a rectractile spring 52 whose ends are connected respectively to the bracket 38 and to bar 50. Said spring 52 normally exerts a tension action on the bar 50 so as to normally draw the upper end of the same toward bracket 38.

In order to release engagement of latch 40 from arm 30, a chain 54 is connected at the tapering end of the latch. The chain 54 is pulled downwardly whereupon the latch 40 is pivotally swung downwardly in the direction of the pull, and the arm 30 is released from engagement and the doors are swung inwardly toward the garage. When the latch 40 has been pulled downwardly through an arc, the retractile spring 52 yields to the pull on the said latch, and after the pull on the latch has been released, the spring 52 tends normally to raise one end of the latch member and act as a catch when the doors are to be re-opened.

If I wish to increase the arc through which both doors are to be outwardly swung, I provide horizontal link bars 60 and 62 as shown in Fig. 7. Bar 60 is channeled and has openings at one end to be in axial alignment with the flat bar 62. Both bars are then fastened together by means of nuts and bolts 64, indicated in Fig. 7. It will be observed that the bars may be adjusted to any length to control the arc through which the doors may be moved.

In opening garage doors containing the embodiment of my invention herein described and illustrated, it will be noted that upon outwardly swinging door 18 leverage forces are transmitted to the horizontal link 26. Thence the forces are transmitted to the pivoted arm 30 which in turn causes pivoted trolley 32 at the other end to slide along the trolley guide 34. The force of the trolley 32 along guide 34 tends to force the other door 20 outwardly. It will be noted that it is only after door 18 has been slightly opened that forces are transmitted therefrom to the arm 30 pivoted to the link 26. By the curved or arched portion 28 of arm 30 being pivoted to the bracket 32 on the frame 14 of the garage, leverage forces are transmitted upon opening one door to automatically open the other door.

When the doors have been swung open, a latch is provided on the automatically opening door to engage the arm 30, thus maintaining both doors in a fixed open position. Said latch may be easily moved downwardly to release control of the same with the leverage means above disclosed, when it is desired to close the doors again.

While my device has been described in connection with garage doors, it is to be fully understood that I do not limit the use of the same but may apply said device on doors of vans, wagons, or other vehicles. Furthermore, said device is useful for doors which are oppositely hinged and which can be oppositely swung open. While I have described a preferred embodiment of my invention in detail in connection with the drawings herein shown, it is to be understood that various alterations and modifications may be made as to form and size without departing from the spirit and scope of the invention as defined by the herein appended claims.

Having described the invention, what I claim as new is:

1. In a garage, having a pair of swingable doors hinged on their outer edges to a door frame, a door control and operating device comprising a bracket secured to the inner face of one door thereof, a trolley guide bracket on the face of the other door and substantially in the same horizontal plane as the bracket on said first door, a trolley movable horizontally along said guide, a horizontal fulcrum bar with an end pivoted to said trolley and having an arcuate end portion, a link rod with one end pivotally connected to said fulcrum bar and the other end connected to the bracket of the first door, a bracket secured to the upper part of the door frame at the second door and pivotally connecting the arcuate end portion of the fulcrum bar whereby to facilitate the swinging of the second door after the first door is partly swung open, and means for locking the horizontal fulcrum bar to retain the doors in open position, said fulcrum bar being adapted upon actuation by the link rod to transmit power to the trolley to slide in the trolley guide track and swing open said second door.

2. In a door control device, the combination with a trolley guide mounted on one of the doors and having a trolley therein, of a horizontal bar with one end pivoted to said roller and the other end arcuately formed, a link member pivoted to said arcuate end, a bracket member mounted on the door frame in a horizontal plane above the guide for pivotally engaging the middle of the arcuately formed end of said horizontal bar, and a bracket on the other door in pivotal connection with the link member, said link member being adapted on traction of the second door to cause arcuate movement of said horizontal bar whereby the pivoted trolley slides along said trolley guide with the pivot of the middle arcuate portion acting as a fulcrum to swing the first door outwardly of the door frame.

3. In a control mechanism for a pair of oppositely hinged doors, a bracket secured to the inner face of one of the doors, a horizontal link

with one end pivotally connected to said bracket, a fulcrum arm with an arcuate end portion pivoted to the other end of said link, the arcuate portion of said arm being pivoted to a bracket engaged to a frame for said doors, a trolley on the other end of said fulcrum arm, a trolley guide for said trolley secured to the inner side of the second door, said first door being adapted on partially opening to transmit stresses to said arm with the pivoted arcuate portion as a fulcrum and cause the trolley to move along said guide and outwardly swing said second door, and automatically engaging means on the second door for the fulcrum arm whereby to keep the doors in fixed and rigid open position, said first door transmitting tractive effort to the trolley on the second door only after the first door has been partially opened, whereupon the second door is swung outwardly.

RALPH CALABRESE.