June 19, 1934. J. W. YOWELL 1,963,321

GARAGE DOOR OPERATING MECHANISM

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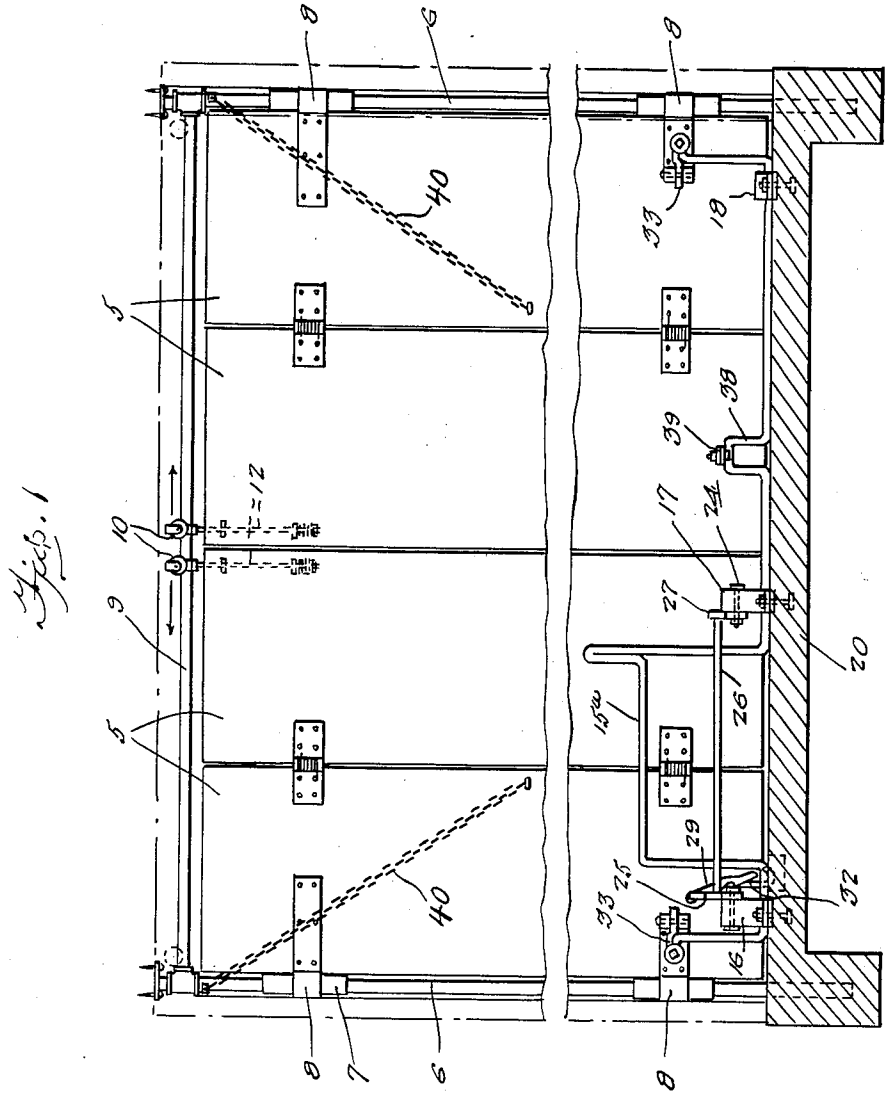


Fig. 1.

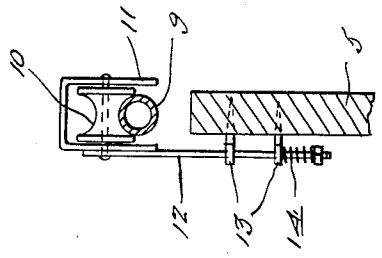


Fig. 1A.

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Fig. 2.

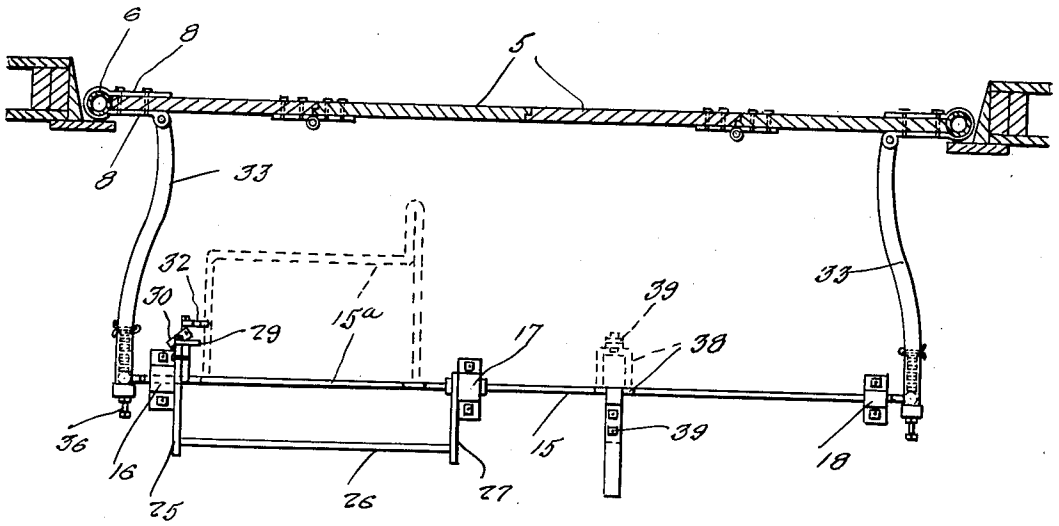


Fig. 7.

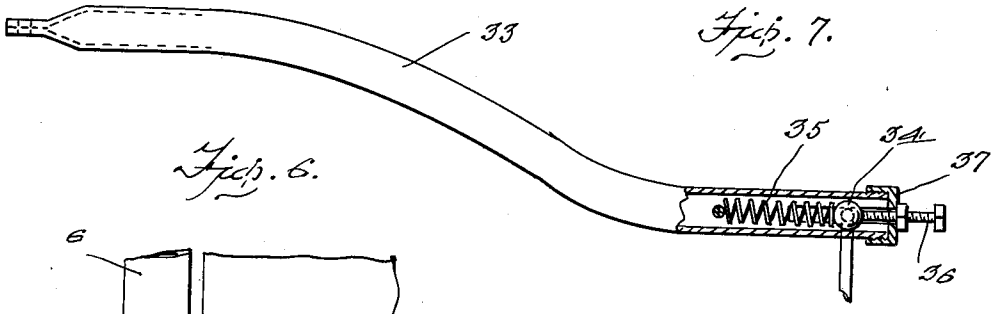
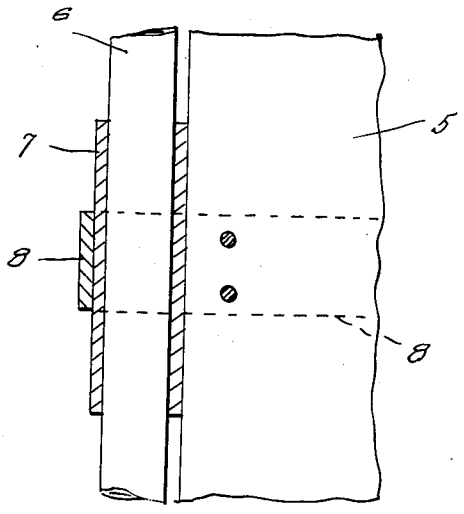


Fig. 6.



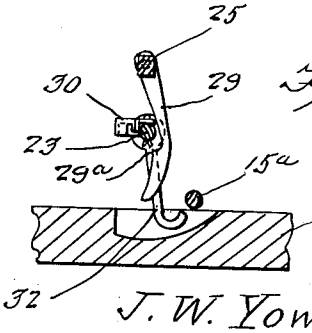


Fig. 8.

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Fig. 3.

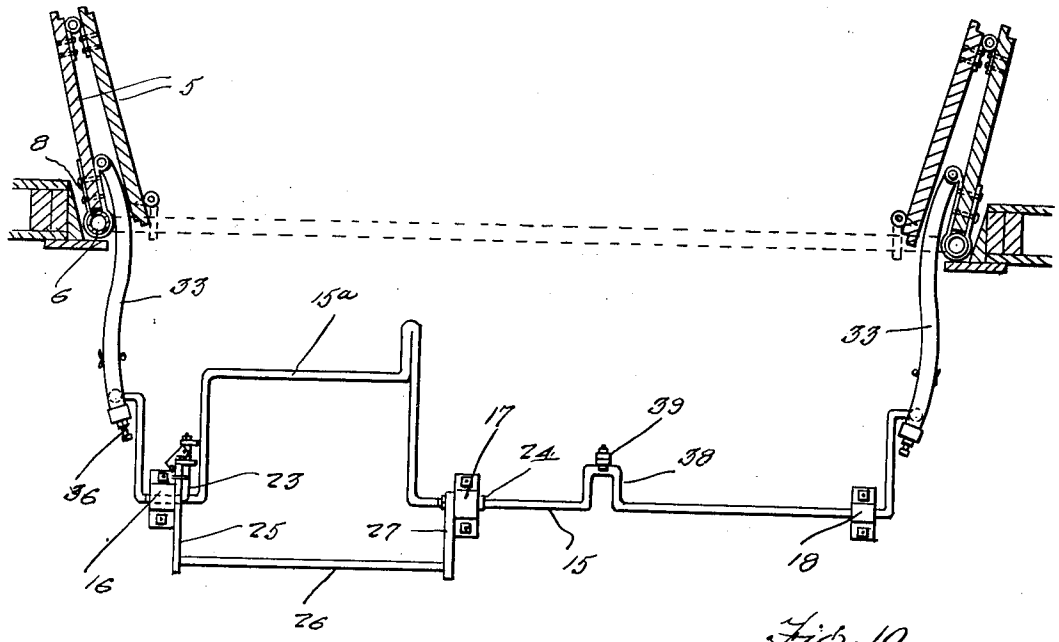


Fig. 10.

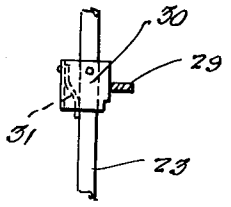
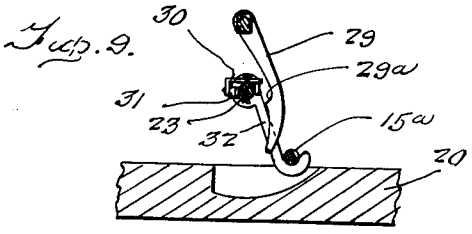


Fig. 5.

Fig. 9.



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Fig. 4.

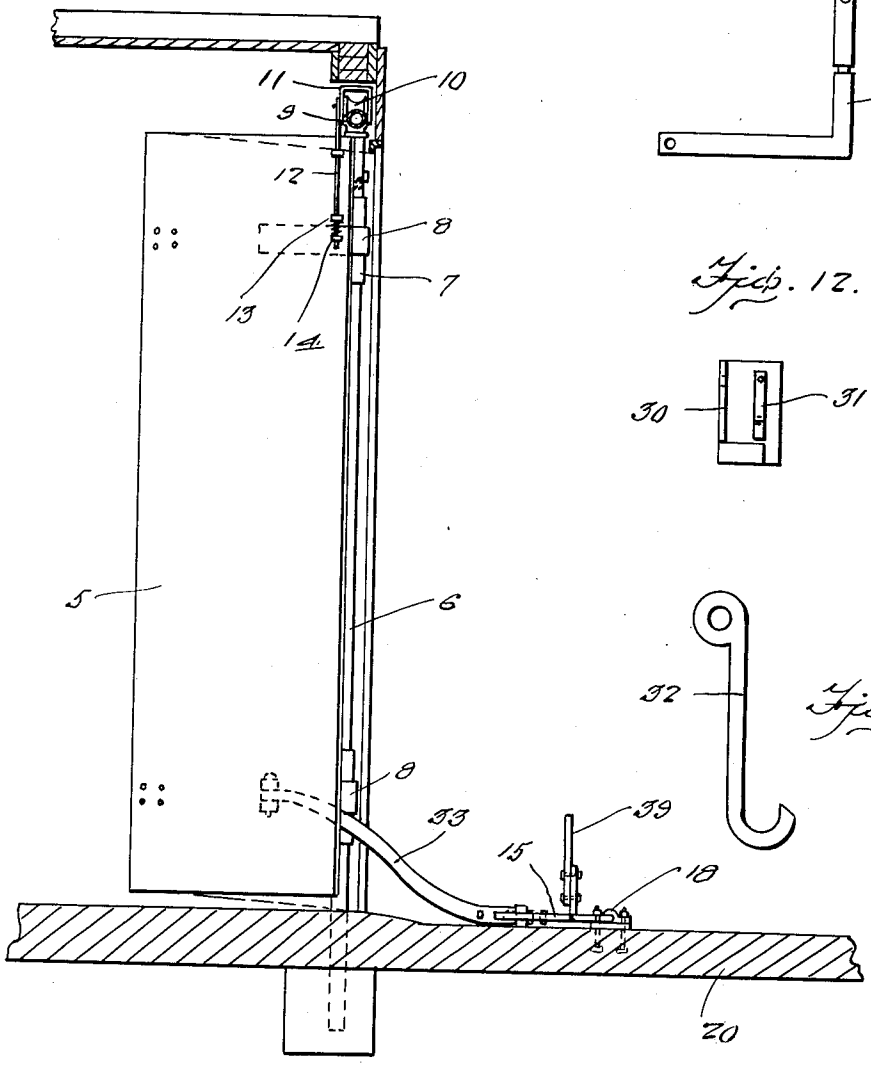


Fig. 11.

Fig. 12.

Fig. 13.

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UNITED STATES PATENT OFFICE

1,963,321

GARAGE DOOR OPERATING MECHANISM

John W. Yowell, Troup, Tex.

Application April 13, 1933, Serial No. 666,009

3 Claims. (Cl. 268—35)

This invention relates to the class of closure operators and has particular reference to a mechanism for opening and closing garage doors.

In accordance with the present invention, a mechanism of the character above mentioned is provided whereby the garage doors may be either manually opened or closed, or may be moved to such open or closed position in an automatic manner to permit ingress or egress of the automobile without requiring the operator to leave his position within the automobile.

The invention, together with its numerous objects and advantages, will be best understood from a study of the following description taken in connection with the accompanying drawings, wherein:—

Figure 1 is an elevational view illustrating the mechanism and showing the garage doors in closed position.

Figure 2 is a plan view of the mechanism, with the doors in closed position.

Figure 3 is a plan view of the mechanism, with the doors in open position.

Figure 4 is a vertical sectional elevational view, showing the doors in open position.

Figure 5 is a sectional elevational view showing two positions of the operating shaft.

Figure 6 is a sectional elevational view through a hinge structure provided for the garage doors.

Figure 7 is an elevational view of a connecting link, certain parts being broken away and shown in section.

Figure 8 is a sectional elevational view showing the hook member disengaged from the crank or throw of the operating shaft.

Figure 9 is a view similar to Figure 8, showing the hook engaged with the said throw of the crank or operating shaft.

Figure 10 is a fragmentary horizontal sectional elevational view showing a trigger and hook mechanism to be hereinafter more fully referred to.

Figure 11 is a plan view of a shaft to be hereinafter more fully referred to.

Figure 12 is a bottom plan view of the trigger.

Figure 13 is a side elevational view of a bumper rod engaging hook, and

Figure 14 is a fragmentary sectional elevational view showing the guide mechanism for the doors.

Referring to the drawings by reference numerals, it will be seen that 5—5 indicate the folding doors of a garage; 6—6 posts to which the doors are hinged, and in the present instance each hinge consists of a sleeve 7 disposed about a post 6 and embraced by a strap 8, the ends of which are riveted or otherwise secured to a door section, as clearly suggested in Figure 6. Suitable means in the form of tracks 9, over which are rideable rollers 10 journaled in brackets 11 carried by rods 12 operating in vertically spaced guide eyes 13 carried by the doors 5 are provided for said doors to insure smooth operation of the same. The rods 12 are normally urged downwardly through the medium of a suitable spring device 14 which serves to yieldably maintain the rollers 10 in contact with the rails 9.

The improved mechanism for opening and closing the doors includes an operating shaft 15 that is disposed across the roadway leading to the garage and is journaled in bearings 16, 17 and 18 respectively. As shown in Figure 5, each of the bearings 16 and 17 include a bearing plate 19 sunk within the roadway 20 and secured to the plate 19 is a bearing cap 21, suitable bolt and nut means 22 being provided for securing said parts in assembled relation. The caps 21 of the aforementioned bearings 16, 17 have upstanding portions in which are journaled respectively shafts 23, 24 respectively as will be clear from a study of Figure 3.

Rotatably mounted on the shaft 23 is a rocker arm 25 that is connected by a rod 26 with an arm 27 secured to the shaft 24 for rotation with the latter shaft.

The rocker arm 25 is of the shape shown in Figure 5 and adjacent the free end thereof, the said arm 25 is connected with the free end of the shaft 23 through the medium of a spring 28. At said free end, the arm 25 has pivotally connected therewith a dog 29 which, under certain conditions, upon rocking movement of arm 25, is engageable with a flat plate trip 30 pivoted to the free end of the shaft 23 at the top 5 of said shaft and normally urged to rotate in one direction laterally of the shaft through the medium of a leaf spring 31 that is anchored to a depending flange provided at one end of the trip 30; said spring having a free end bearing against an adjacent side of the shaft 23, (see Figures 8, 9, 10 and 12). Adjacent one end thereof, the crank or operating shaft 15 is provided with a relatively large crank or throw 15^a which is arranged in the path of the wheels on the left side of a vehicle; and adapted to be engaged with said crank or throw 15^a is a hook 32 pivotally connected with the free end of the shaft 23 and arranged to engage the crank 15^a in a manner clear from a study of Figures 8 and 9. It will thus be seen that with hook 32 engaged with throw or crank 15^a of said shaft 15 and dog 29 engaged with trip

30, a rocking of the shaft 15 in a clockwise direction will be effected upon rotation of the arm 25 in a corresponding direction.

The ends of the shaft 15 are operatively connected with the doors 5 through the medium of curved tubular connecting links 33.

Each of the links 33, at one end, is hingedly connected to a lower one of the hinges 8 and at a relatively opposite end slidably receives a ball head 34 provided on the end of the shaft 15. Engaging the ball 34, on one side thereof, is a spring 35 suitably anchored within the link 33 while engaging the ball on the side thereof opposite to the spring 35 is an adjusting screw 36 that is threaded to a cap 37 provided on the end of the link 33, and obviously by manipulation of the screw 36, the tension of the spring 35 may be varied at will. (See Figure 7). It will thus be seen that through the medium of the links 33, movement of the shaft 15 is transmitted to the doors 5 for opening and closing the latter.

The shaft 15 is also provided with a second and relatively small throw or crank 38 with which is hingedly connected an adjustable arm or abutment 39 adapted to be engaged by the axle of the vehicle for rocking the shaft 15 in a clockwise direction for closing the doors 5 after the automobile has passed outwardly from the garage.

The operation of the device may be briefly explained as follows:—

Let it be assumed that the automobile is within the garage and the doors are closed, under which condition the parts will be as suggested in Figure 1, wherein it will be noted that the crank 15ª is in vertical position. To open the doors, the operator manually rotates the shaft 15 for moving the crank 15ª from said vertical position to the horizontal position suggested in Figures 3 and 5. This rocking movement of the shaft in an anti-clockwise direction will, through the medium of the links 33, transmit movement to the doors 5 for folding or swinging the doors to the open position shown in Figure 3.

The next operation is to then set the device for automatically closing the doors after the automobile has passed from the garage. In performing this operation, the operator, against the action of spring 31, swings the trip 30 laterally relative to the shaft 23 and across the shaft from the position suggested in Figure 3 to the position suggested in Figures 9 and 10. The trigger 30 is now in set position and the operator next engages the hook 32 with the crank arm 15ª, as suggested in Figure 9.

The driver or operator now proceeds to back the automobile from the garage, and in so doing the rear wheel at the left side of the vehicle first passes over the rod 26, depressing the latter and causing the arm 25 to swing upwardly. As left end of arm 25 swings upwardly or in a clockwise direction, dog 29 engages the trip 30, lifting the trip out of frictional engagement with the shaft 23, whereupon the trip, under action of spring 31 will be caused to rotate in an anti-clockwise direction (see Figures 9 and 10) and return to its normal position, or to the position suggested in Figure 8.

The trip 30 is now in a retracted or "sprung" position, permitting the dog 29 to swing into lateral engagement with the shaft 23. Manifestly, as the aforementioned wheel of the vehicle passes over the rod 26 and out of engagement therewith, arm 25, under action of spring 28, will return to its normal position or to the position shown in Figure 5, so that the projection 29ª of the dog 29 is now below the shaft 23 and in substantial vertical alignment therewith.

As the vehicle proceeds, the front wheel of the vehicle, on the left side thereof, will move over the rod 26 again depressing the latter for swinging the arm 25 in a clockwise direction. This swinging of the arm 25 in a clockwise direction will cause the projection 29ª of the dog 29 to engage the shaft 23 and, it being remembered, hook 32 is engaged with the crank arm or throw 15ª of shaft 15, upward swinging movement of the shaft 23 will transmit movement to the shaft 15, swinging the latter in a clockwise direction for moving the doors 5 to a closed position. This movement of the shaft 15 for closing the doors will, of course, result in a movement of the crank 15ª thereof to the dotted line position shown in Figure 5. The parts are now left in this position until it is desired to re-enter the garage.

On re-entering the garage, crank arm 15ª being in the dotted line position shown in Figure 5, it will be apparent that the front wheel at the left side of the car will engage said crank arm, depressing the latter and causing the shaft 15 to rotate in an anti-clockwise direction for opening the doors 5 and permitting the vehicle to pass into the garage.

With the doors thus open, it will be understood that trip 30 is still in its retracted position; that hook 32 is out of engagement with the crank arm 15ª; and that accordingly the car may pass into or out of the garage while these parts remain so without effecting an opening or closing of the door. In this connection it will be noted that the re-setting of the trigger 30 and the re-engagement of the hook 32 with the crank arm 15ª must be manually accomplished before the device is set to operate for automatically closing and opening the doors.

Referring again to the details of construction it will be noted that the post 6 and rod 9 are formed of piping suitably coupled together and provide a supporting frame for the doors. Also, as a further means of sustaining the weight of the doors there are provided chains 40 which are secured at their upper ends to the upper end portions of the post 6, and at their lower ends through the doors 5 intermediate the ends of the door as will be clear from a study of Figure 1. These chains sustain the weight of each pair of doors as the latter are swung to open or shut position.

Even though I have herein shown and described the preferred embodiment of the invention, it is to be understood that I do not wish to limit myself to the precise embodiment herein shown, and accordingly claim all such forms of the invention to which I am entitled in view of the requirements of the prior art and the scope of the appended claims.

Having thus described my invention, what I wish to claim as new is:—

1. A garage door operating mechanism comprising in combination with swingably mounted garage doors, a rockably mounted crank shaft, operating connections between said crank shaft and the doors, a member pivotally mounted in operative position to the crank shaft and adapted to be rotated in one direction when engaged with the wheels of a vehicle entering into or passing outwardly from the garage, and manually set motion transmitting means operatively connecting the pivoted member with the crank shaft operable to transmit movement of the pivoted member to the crank shaft only upon a second successive depression of the pivoted member in one direction.

2. An operating mechanism for garage doors comprising in combination, swingably mounted doors, a rockably mounted crank shaft having a crank portion arranged to be engaged by the wheels of a vehicle, operating connections between the crank shaft and the doors, a shaft rockably mounted above the crank shaft adjacent said one crank portion thereof, a rocker arm mounted on the second named shaft, a hook on the second named shaft adapted to be engaged with said crank portion of the crank shaft, a spring pressed trip device pivotally associated with the second named shaft, and a dog pivotally mounted on said rocker arm and engageable with the trip device to permit rocking movement of the rocker arm independently of the second named shaft, said dog being also engageable, upon tripping said trip device to engage the second named shaft for rocking the latter with the rocker arm and transmit movement to the crank shaft for swinging the doors.

3. In a device of the character described, the combination with swingably mounted doors, a rockably mounted crank shaft, links pivoted at one end to the doors, ball members on the ends of the crank shaft having sliding engagement with the free ends of said links, said crank having a crank portion arranged to be operated by a vehicle and also to be manually operated, a member mounted in operative position to the crank shaft to be operated by a vehicle, and motion transmitting means connecting said vehicle actuated member with the crank portion of said crank shaft whereby provision is made for manually actuating the crank shaft to open the doors, and to automatically operate the crank shaft for closing the doors and to position the parts for subsequent opening of the doors upon engagement of a vehicle wheel with the said crank portion of the crank shaft.

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