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C. A. HENNICKE

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DOOR CONTROL

Filed June 16, 1925

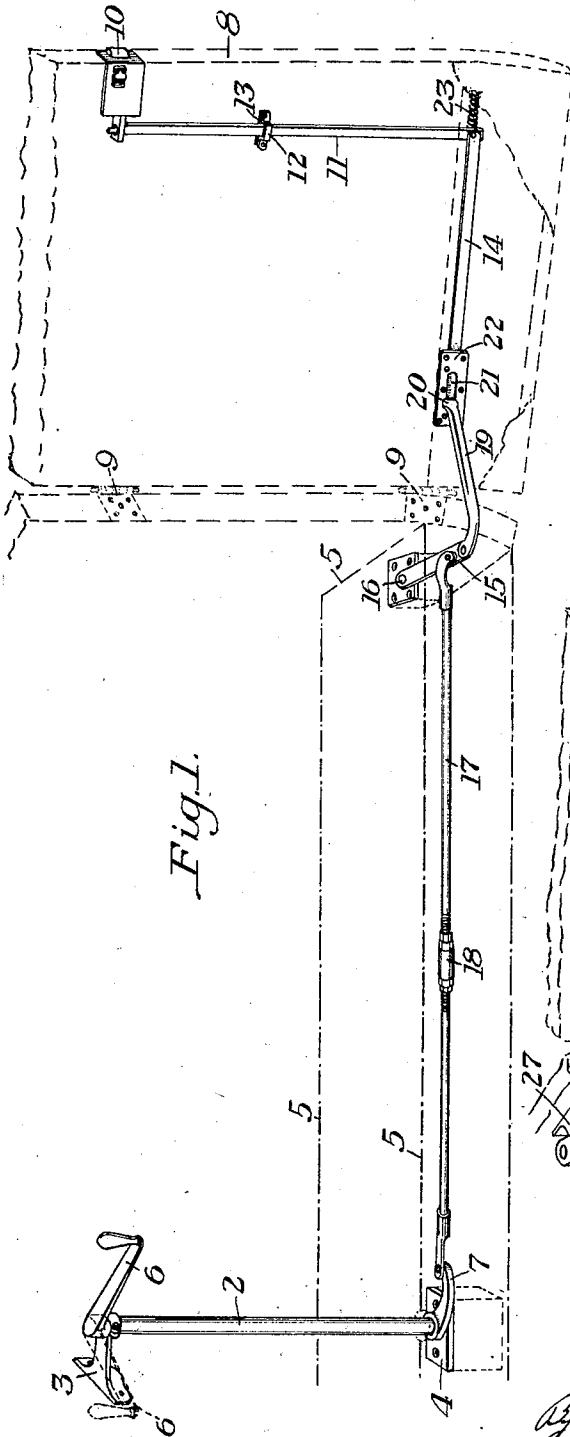
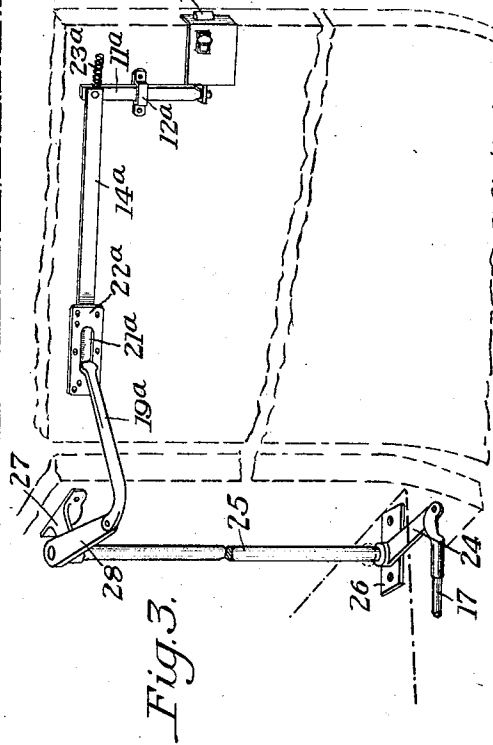
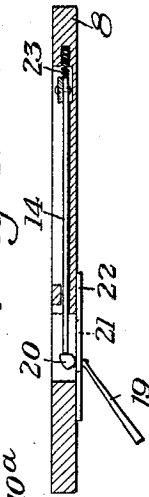


Fig. 2.



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UNITED STATES PATENT OFFICE.

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DOOR CONTROL.

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The present invention relates to door operating means, and more particularly to means for opening and closing the doors of vehicle bodies, such as those of the "pay as you enter" type of busses.

I have provided a door operating mechanism certain of the principal operating parts of which are adapted to be concealed under the upper surface of the floor of the body and operatively connected to the door either at a point adjacent where it touches the floor of the body when the door is closed, or at a point higher up on the door by employing a secondary post, thereby leaving the front of the body free of rods and other devices that would obstruct the working of gear shift and other levers used in connection with the operation of the vehicle.

The invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a view showing the parts which are concealed under the floor connected to the door at a point adjacent where the door touches the floor of the body;

Figure 2 is a detail sectional view of the door showing certain of the working parts of the control mechanism, and

Figure 3 is a view illustrating the use of the secondary operating post.

Referring to the construction shown in Figures 1 and 2, 2 designates a vertical operating post having its upper end journaled in a bracket 3 attached to the vehicle body, and having its lower end journaled in a plate 4 adapted to be secured to the body beneath the floor, the floor level being designated in Figure 1 by the chain lines 5. The post 2 has an operating handle 6 connected to its upper end and an arm 7 connected to its lower end.

The door 8, which is hinged at 9 to swing outwardly, has a latch bolt 10 adapted to engage a suitable keeper on the vehicle body. A vertical latch bolt operating bar 11 is fitted in a clevis 12 attached to the door and having a spring 13 adapted to exert pressure on the bar. The clevis and its spring form an anti-rattle pivotal mounting for the bar 11. The upper end of the bar 11 is connected to the inner end of the latch bolt, while its lower end is pivotally connected to the outer end of a slide rod 14.

A lever 15 is pivoted at one end to a plate 16 adjacent the door, the plate and lever being arranged below the floor line. A connecting rod 17 is arranged below the floor line

and is connected at one end to the arm 7 and at its other end to the lever 15. This connecting rod has a turn buckle 18 whereby the length of the rod can be adjusted. The lever 15 is pivoted at its other end to a lever 19. The lever 19 is formed at its outer end with a T-head 20. The neck of the T-head engages in a slot 21 in a plate 22 secured to the inner face of the door. The inner end of the slide rod 14 is normally maintained in engagement with the T-head 20 by a spring 23 which is arranged to bear against the lower end of the latch operating bar 11. In Figure 1 the door is shown in open position. It will be apparent that to close the door it will only be necessary to swing the operating handle 6 from the full line position to the dotted line position. When the beveled end of the latch bolt 10 engages its keeper as the door closes, thereby forcing the bolt inwardly, the inner end of the slide rod 14 will move away from the T-head 20 of the lever 19. This construction therefore permits the latch bolt to operate independently of the control mechanism, thereby avoiding undue strain on the door lock when the door is closed.

In opening the door the operating handle 6 is moved from the dotted line position to the full line position. The initial movement of the operating mechanism causes the T-head 20 to force the slide rod 14 to the right, thereby compressing the spring 23 and swinging the latch bar 11 about its pivot to withdraw the latch bolt from its keeper. Further movement of the operating handle 6 then moves the door to the open position.

In the modified construction shown in Figure 3 the inner end of the connecting rod 17 is connected to an arm 24 carried at the lower end of a secondary operating post 25. This operating post is journaled at its lower end in a plate 26 secured beneath the floor, and at its upper end in a bracket 27 secured to the vehicle body. An arm 28 is carried by the upper end of the post 25 and is pivoted to the lever 19^a which has a T-head on its outer end operating in a slot 21^a in a door plate 22^a. The T-head of this lever bears against the inner end of a slide rod 14^a which has its outer end pivotally connected to the upper end of a latch operating bar 11^a. The bar 11^a is pivoted in a clevis 12^a and has its lower end connected to the inner end of the latch bolt 10^a. A spring 23^a bears against the upper end of the bar 11^a and normally maintains the inner

end of the slide bar 14^a in engagement with the T-head on the outer end of the lever 19^a.

The arrangement shown in Figure 3 is particularly desirable for operating large and heavy doors as it avoids the heavy strain or twist caused by operating the door from the bottom.

It will be noted that in either form of the invention illustrated the principal operating parts carried by the door are adapted to be concealed within the door.

While I have shown and described certain preferred embodiments of my invention, it will be understood that the invention is not limited to its illustrated embodiments but that it may be otherwise embodied within the scope of the appended claims without departing from the spirit of the invention.

I claim:

1. The combination with the body and door of a vehicle, of a door latch on the door, a vertically extending lever on the door for moving the latch, an axially movable push rod for operating the lever, and a horizontal movable operating lever for opening and closing the door having one end thereof slidably connected with the door, said push rod terminating adjacent the slidable end of the lever whereby the push rod is operated by movement of the operating lever in one direction.

2. The combination with the body and door of a vehicle, of a door latch on the door, a lever on the door for moving the latch, a reciprocable push rod for operating the lever, a horizontal movable operating lever for

opening and closing the door having one end thereof slidably received in a slot in the door and having a terminal portion for slidably connecting the lever with the door, said push rod terminating adjacent to said terminal portion of the operating lever in the path of movement thereof, and means for urging the push rod into engagement with said terminal portion.

3. The combination with a vehicle body and door, of a vertically rotatable shaft having an operating handle at its top and a lever at its bottom, a second lever pivotally mounted on the body adjacent the door, an adjustable connecting rod having one end secured to the lever and having its other end secured to said second lever, and a link pivoted to said second lever having one end thereof operatively connected with the door through a lost motion connection.

4. The combination with a vehicle body and door, of a vertically rotatable shaft having an operating handle at its top and a lever at its bottom, a second lever pivotally carried on the body adjacent the door, an adjustable connecting rod having one end secured to the lever and having its other end secured to said second lever, a link pivoted to said second lever having a terminal, and a slotted door plate on the door, said terminal of the link engaging the slot in said plate whereby it has a limited sliding movement with respect to the door.

In testimony whereof I have hereunto set my hand.

CHARLES A. HENNICKE.