July 1, 1930. J. A. PENNER 1,769,273

AUTOMOBILE DOOR HINGE

Original Filed March 5, 1927 4 Sheets-Sheet 1

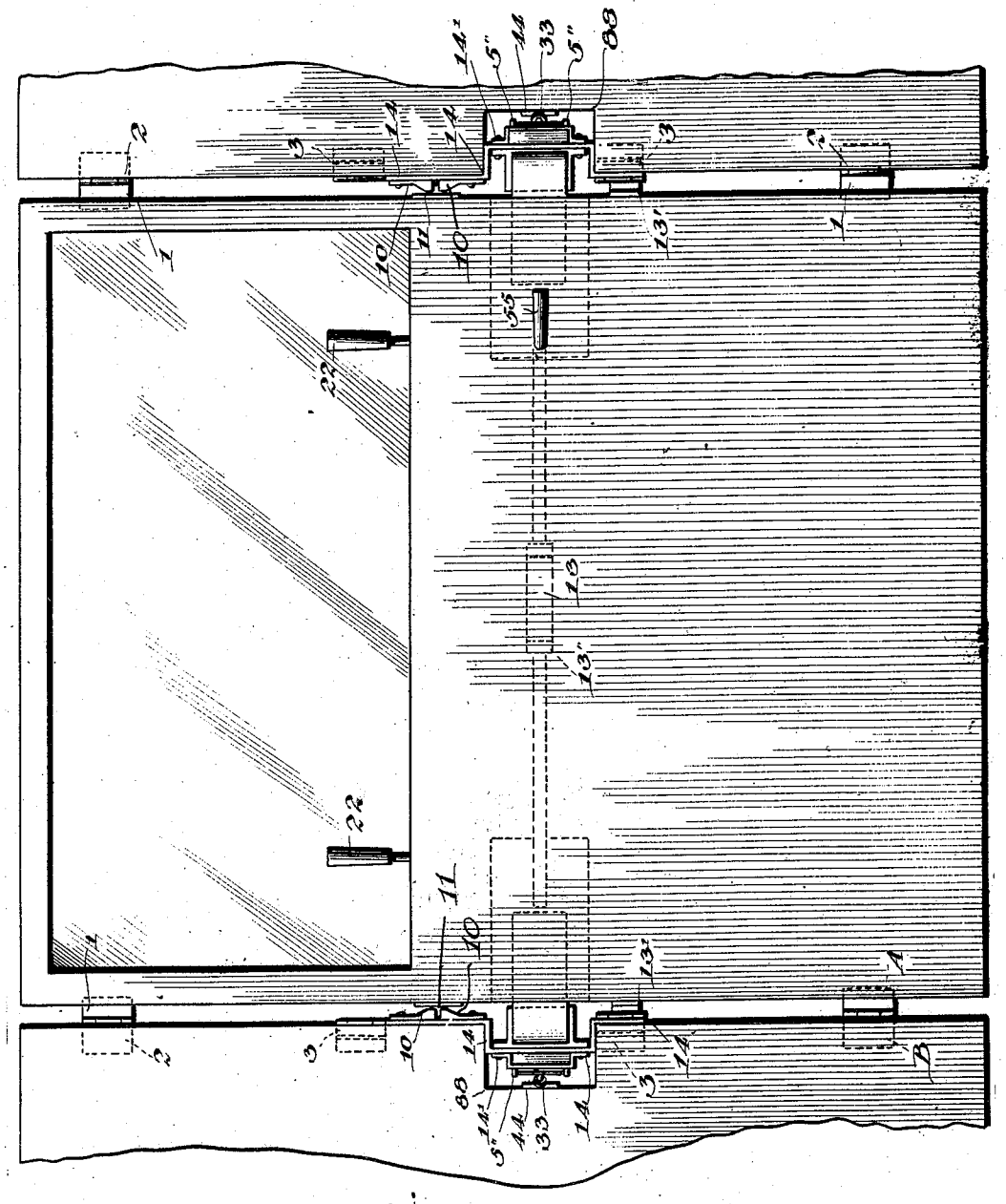


Fig. 1.

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Fig. 2.

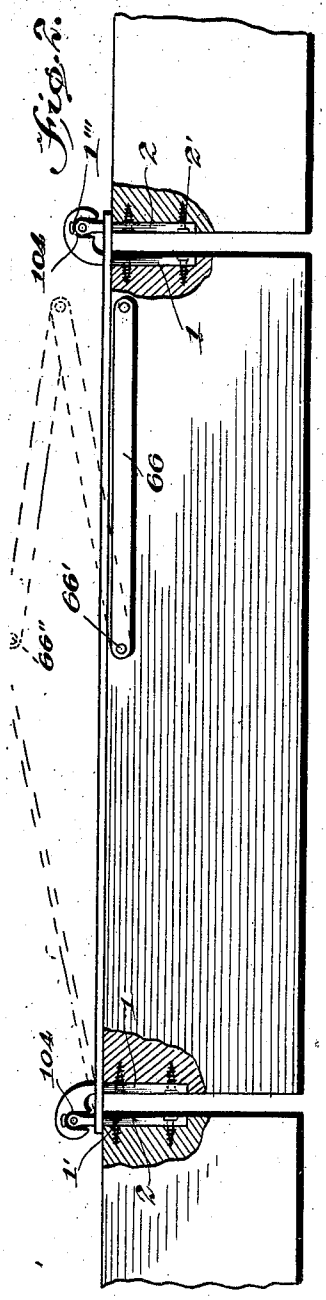
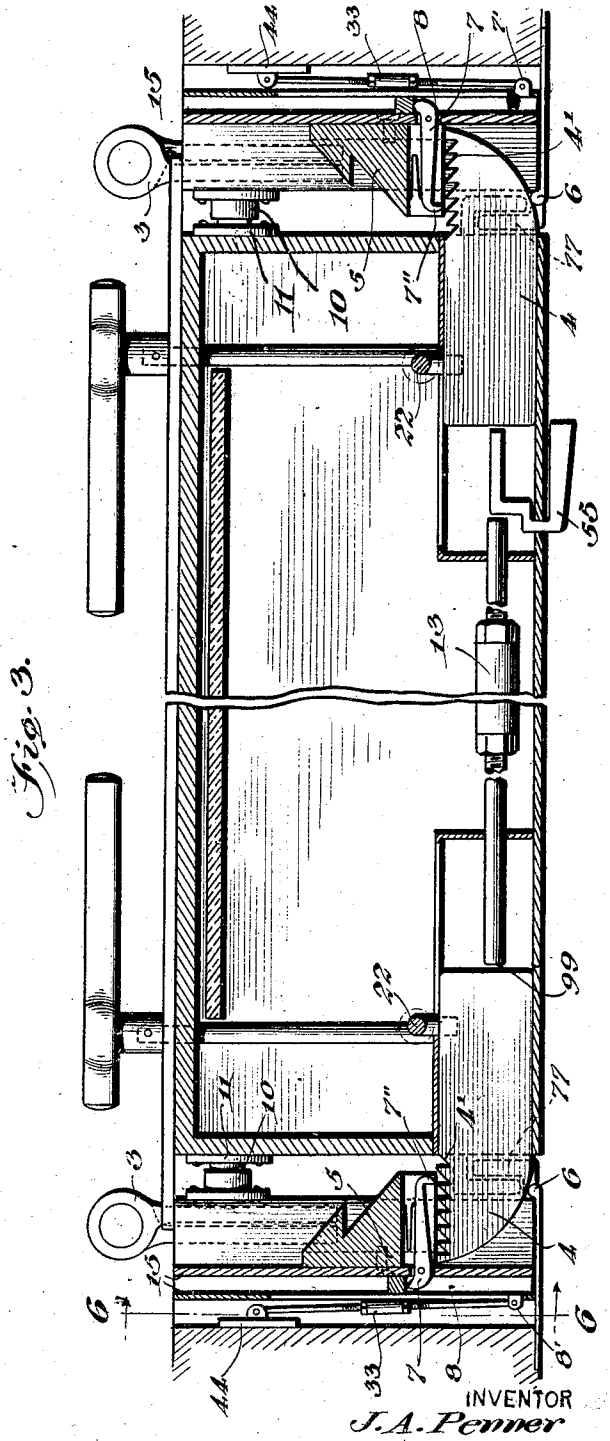


Fig. 3.



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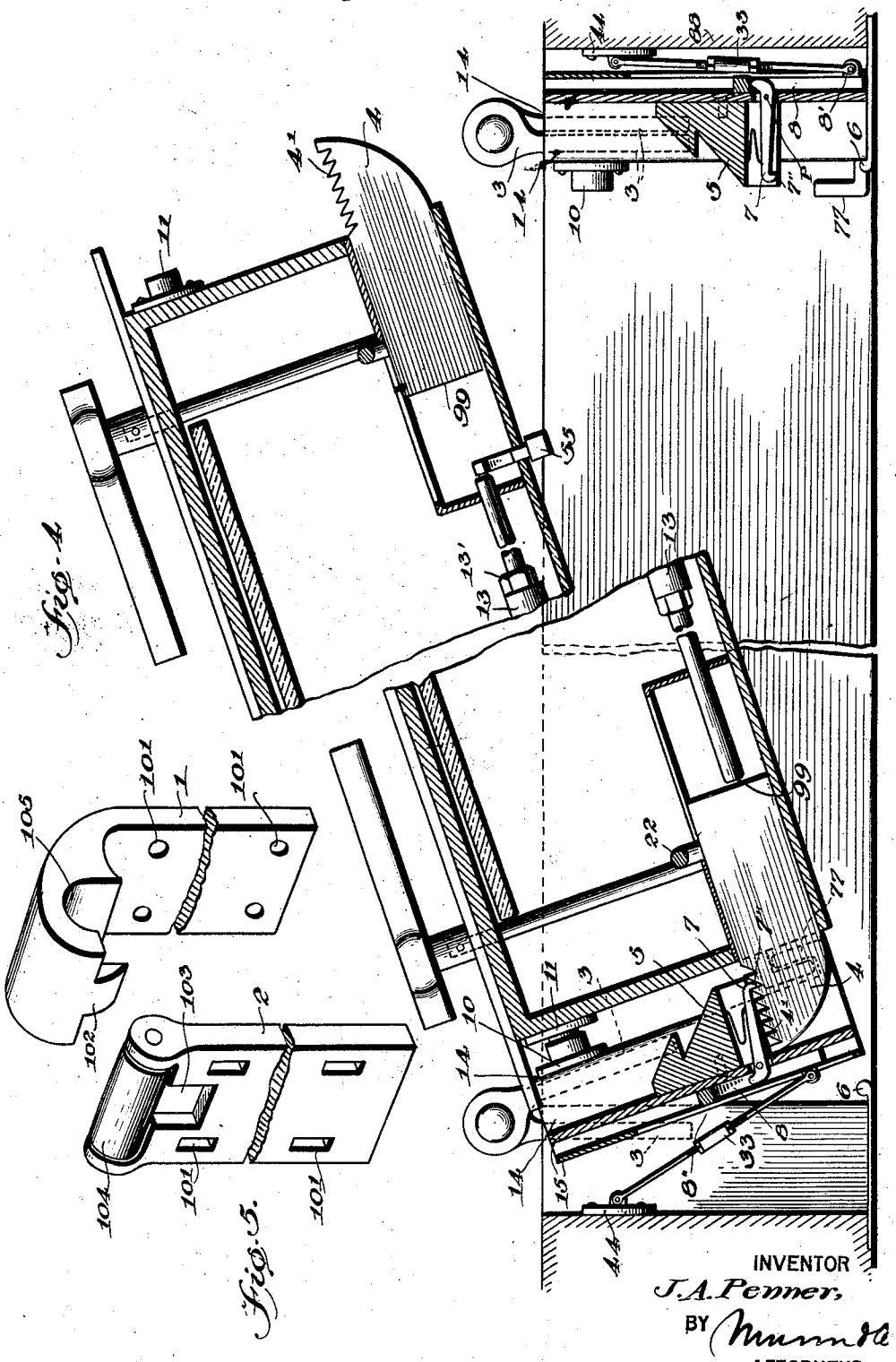


Fig. 4.

Fig. 5.

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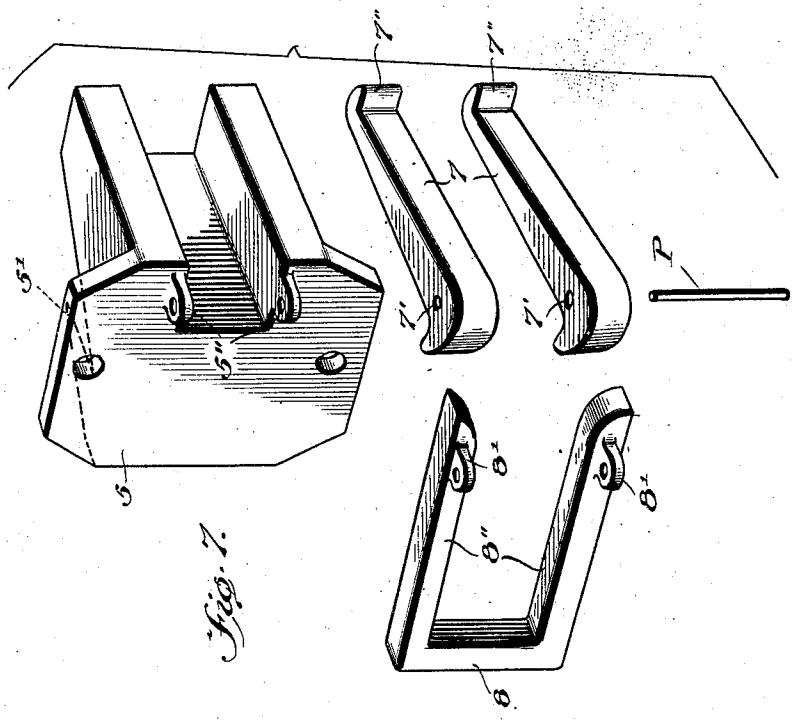


Fig. 7.

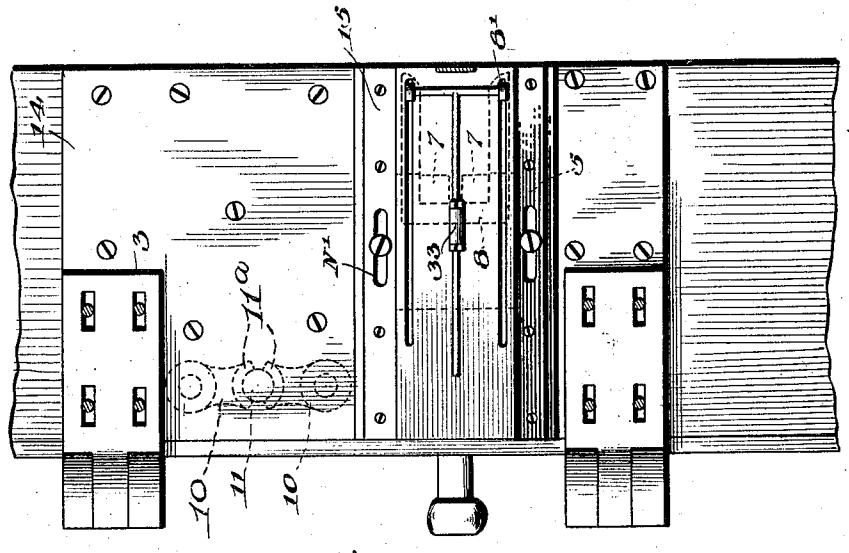


Fig. 6.

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UNITED STATES PATENT OFFICE

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AUTOMOBILE DOOR HINGE

Application filed March 5, 1927, Serial No. 173,063. Renewed April 24, 1930.

This invention pertains to doors, particularly with respect to doors for automobiles and other vehicles. More specifically it pertains to a door peculiarly adapted for closed automobiles wherein entrance to the front and rear seats is had by way of a single door, and the invention particularly resides in the provision of such a door which is capable of being opened on both the front and rear edges, whereby the inconveniences resulting from the usual one way door are avoided. It will be seen that the door of the present invention can be swung open upon hinges attached to the front or rear edges of the door as may be desired, thus facilitating ease of entrance and exit from the rear seat of the machine as well as from the front seat.

No alteration of the usual operating mechanism between the handles and the latch, and in the means for raising the glass in the door is contemplated, the present invention being adaptable to whatever such system may be employed in any particular make of automobile.

It is considered that the invention will be readily understood by reference to the accompanying drawings and description thereof, in which:—

Figure 1 is a perspective view partially in section, of a door embodying the present invention, looking from the inside of said door,

Figure 2 is a partial top view of the door, showing the arrangement of the top most hinges,

Figure 3 is a plan section through the door about midway down, showing the invention adapted to one of the intermediate hinges of the door,

Figure 4 is a plan section, similar to Fig. 3, but showing the door partially open, the door being broken for convenience,

Figure 5 shows in detail one of the hinges illustrated in Fig. 2, the hinge being taken apart for purposes of illustration,

Figure 6 is a section along the line 6—6 of Fig. 3, looking in the direction of the arrows, and

Figure 7 shows the details of the keeper member with the latch and also for a sliding member which operates the latch in the keeper as will hereinafter become apparent.

Referring specifically to the drawings, attention is directed first to member 13 shown in Figs. 1, 3 and 4, in connection with the statement above made that the connection between the handles and the latch or the system for raising the glass of the doors are not shown, it will be noted that the said member 13 is facing the latch on each side of the door. The member, or rod, 13 in this position might fit some of the doors of certain makes of machines, yet in the case of doors of other makes having the rod 13 in this position might interfere with the system of operating the door. Should this be the case, member 13 must be positioned to avoid such interference and a contact member must be properly affixed to the latch to engage the member or rod 13. The same thing applies with respect to the element 55, Fig. 3, which is in a locked position and 55 in Fig. 4, which is in open position. There is only one lock 55 to each door and as will be seen in Fig. 3, this will lock both sides at the same time. It is sometimes a provision that when some cars are locked from the outside the lock is installed within the handle of the door while in others the lock is installed close to the handle of the door. For this reason the lock on the outside of the door and a connection between the element 55 in Fig. 3 and the outside lock of the door are not shown. These connections depend entirely upon where the lock is installed.

Referring to Fig. 2, the numeral 1 represents the part of the hinge that is attached to the door. Member 1''' is a rubber bumper serving to act as a silencer when the door is being closed and is inserted within the hinge 1. From the different positions of the hinge in Figs. 2 and 5 it will be seen how the hinge is placed on the swinging side of the door. On the open side of the door the hinge will lift out and will remain attached to the door. Numeral 2 is the other half of the hinge. This part of the hinge is attached to the frame of the body.

Numeral 2′ shown in Fig. 2 represents the point of attachment of the hinge to the body of the car, and at the same time serves to adjust the hinge to bring it further in or out.

A further detail of the hinge is shown in Fig. 5, the hinge being shown as detached from the door and body and separated into parts. It will be seen from this figure that the portion of the hinge attached to the door is provided with a curved portion at the operating end, this curved portion being recessed at 105, this recess fitting over roller 104 affixed in the operating end of the part of the hinge attached to the body of the car. The aforesaid curved portion is further provided with a curved tongue 102, which is designed to operate in recess 103. Numeral 101 designates the various holes through which the attachments to the respective parts of the car are made. It will thus be seen that as the door of the car is opened one of the hinges just described will be operated so that member 1 swings on roller 104 as a pivot, on one instance, whereas in the corresponding hinge the two members 1 and 2 will become separated thus permitting the opening of the door. Further in Fig. 2, numeral 66 represents a strap of sheet metal in a closed position and open position of this strap being also indicated, 66′ being attached to the top of the frame of the body and 66″ being attached to the top of the door. This strap serves as a means for limiting the movement of the door upon opening.

It will be noticed that there are four hinges on each side of the door, the invention forming the subject matter of this application being applied particularly to the second and third hinges. One side of each hinge, as shown at 3, is attached to the frame of the body and can be adjusted to bring the hinge further in or out. The other part of the hinge is attached to member 14. Attention is called to how the hinge is attached to the element 14, as shown in Fig. 6.

In Figs. 3 and 4, the latch is represented by element 4, the grooves of the latch being indicated at 4′ and are towards the center so as not to interfere with the keeper.

In Figs. 3, 4 and 7, the keeper of the door is represented by numeral 5. The structure of this keeper will be seen from Fig. 7. It will be seen from this last named figure that hooks 7 are insertable in the lugs 5″ and are retained in position by the insertion of the pin P. There are shown two hooks to each keeper, this being in the event that one fails to operate.

In Figs. 3 and 4, reference 6 designates a spring attached to the inside of the body. In this connection attention is also called to element 14, this element being attached to the second and third hinge as indicated. In Fig. 3, it will be seen that on the right hand side of the figure the spring 6 is holding the element 14 together with the keeper in its place, whereas on the left hand side of Fig. 4, it will be seen that the spring 6 has released element 14 because the hook 77 cause the element 14 together with the keeper to spring with the door.

Numeral 7 represents the hook instead of the keeper. Attention is called to hook 7″ in Fig. 3 where it will be seen that the latch on either side is free of the hooks. It will also be seen that on the left hand side of Fig. 4, the hook 7 is caught in the latch whereas on the right hand side of Fig. 4, the hook 7 comes even with the keeper as in Fig. 3.

Element 8, Figs. 3, 4, 6 and 7 fits into the element 15. Attention is called to the position of the element 8 in Fig. 4 on the left hand side. In Fig. 6, it will be seen that the element 8 will cause the hook 7 to raise when the door is closed and to leave the latch free as is illustrated in Fig. 1.

In Figs. 4 and 6 attention is called to element 33, this element or rod operates on the same principle as the rod 13 above mentioned. It has a right and left hand thread and can be adjusted to whatever length required. Attention is called to the position of the rod 33 on either side of Figs. 4 and 6. The rod being attached to the frame of the body at one end and to the element 8 at the other end will cause the element 8 to slide in member 15 when the door is opened. In Fig. 3, member 44 indicates where the rod 33 is attached to the frame of the body, 8′, indicating where it is attached to the element 8. For the purpose of supporting the door each end of the latter is provided with a laterally projecting stud 11 which is normally held between a pair of opposed pivoted keepers 10 attached to each element 14. As particularly illustrated in Fig. 6 the cooperating keepers 10 are formed with semicircular opposed faces 11ª which normally hold one of the studs 11 therebetween. The cooperating keepers are pivotally mounted with sufficient friction as to prevent free movement of the keepers. Thus when one end of the door is opened the stud carried by such end will move the cooperating keepers at this end of the door forwardly until the stud has moved out of the same. This will leave the keepers in substantially divergent relation so that upon closing of the door this stud will move between the keepers and swing them back to the normal position disclosed in Fig. 6.

Member 13, shown in Figs. 1, 3 and 4 is a rod provided with right and left hand threads and is to be so adjusted as to leave just enough space between the end of the rod and the latch of the door to clear one

keeper only at a time. In this connection attention is called to element 99 in Fig. 4 on the left hand side where it will be seen that the rod 13 is up against the latch of the door. On the right hand side of Fig. 4 it will be seen that there is a space between the rod 13 and the latch of the door. That space must be no more than just sufficient to clear that one keeper.

Numeral 88 indicates where the frame of the body is sunk in order to make space for the element 14 when the door is closed.

One hook is attached to the element 14 and the other hook is attached to the door. In Fig. 4 the hook 77 will lift out on the open side of the door where on the swinging side of the door it will cause the element 14 together with the keeper to swing within the door.

Reference 14′ in Fig. 6 shows where the keeper is attached to the element 14, and serves to adjust the keeper to bring it further in or out as desired.

From the above it will be seen that a two way door is provided, with hinge and latching means adapted to permit a free and easy swing either on the front or rear edge of the door as desired while at the same time positively acting to secure the door in position when the same is closed, and also to prevent the door from being removed from all its hinges when the door is opened in the desired direction. It will be seen that by this provision, the inconveniences attendant upon the opening and closing of the doors usually employed will be avoided, especially in such case where entrance and exit from both the front and rear seats of the vehicle are effected by means of a swinging door, as is now a common practice. It is believed that the construction and operation of the invention will be clear from the above description and the scope of the invention is defined by the appended claims.

I claim:—

1. In combination a door, hinged keepers supported adjacent opposite ends thereof, latches carried by the opposite ends of the door and normally engaging the keepers to sustain the door against movement, and either one of which being disengageable from the keeper to permit swinging movement of the door from either edge thereof, and a longitudinally shiftable rod interposed between the latches and operable to prevent disengagement of either latch from its keeper.

2. In combination a door, hinged keepers supported adjacent opposite ends thereof, latches carried by the opposite ends of the door and normally engaging the keepers to sustain the door against movement, and either one of which being disengageable from the keeper to permit swinging movement of the door from either edge thereof, and a common means for normally holding the latch means against disengagement from the keepers, but operable to permit disengagement of the latch means at either end of the door, at will.

3. In combination a door, hinged keepers supported adjacent the ends of the door, slidable tumblers carried by the door and normally received in the keepers, means for disengaging either of the tumblers from its keeper, and means operable by the swinging movement of the door to latch the other tumbler to its keeper.

4. In combination a door, hinged keepers supported at opposite ends thereof, tumblers slidably carried by the opposite ends of the doors and engageable with the keepers to hold the door against movement, a longitudinally movable rod interposed between the tumblers, and a manually operable abutment normally disposed between one of the tumblers and one end of the rod to retain the tumblers against retraction from the keepers and operable to a position to permit either tumbler to be retracted from such keepers when it is desired to swing the door from either end thereof.

5. In a combination a door, slidable toothed tumblers carried by the opposite ends thereof, keepers hingedly supported at the opposite ends of the door and normally receiving the tumblers, normally inoperative latch elements carried by each keeper and operable to engage the teeth of one of such tumblers to latch the latter to its keeper when the other tumbler has been retracted from its keeper.

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