

(No Model.)

2 Sheets—Sheet 1.

H. C. HATCHER.  
CAR DOOR.

No. 551,439.

Patented Dec. 17, 1895.

FIG. 3.

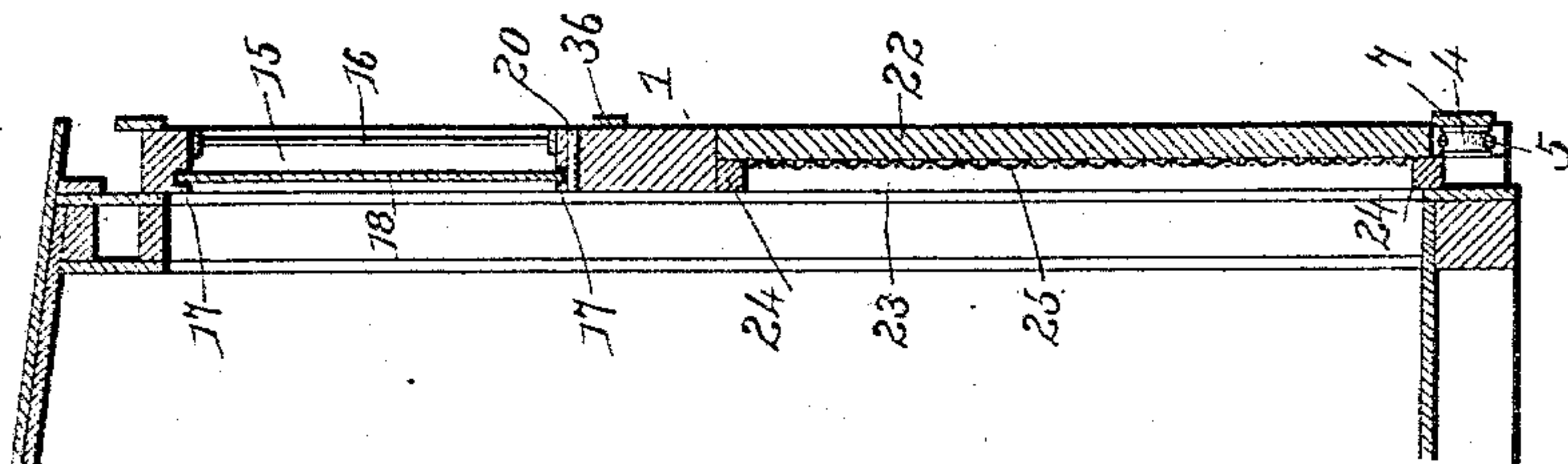


FIG. 1.

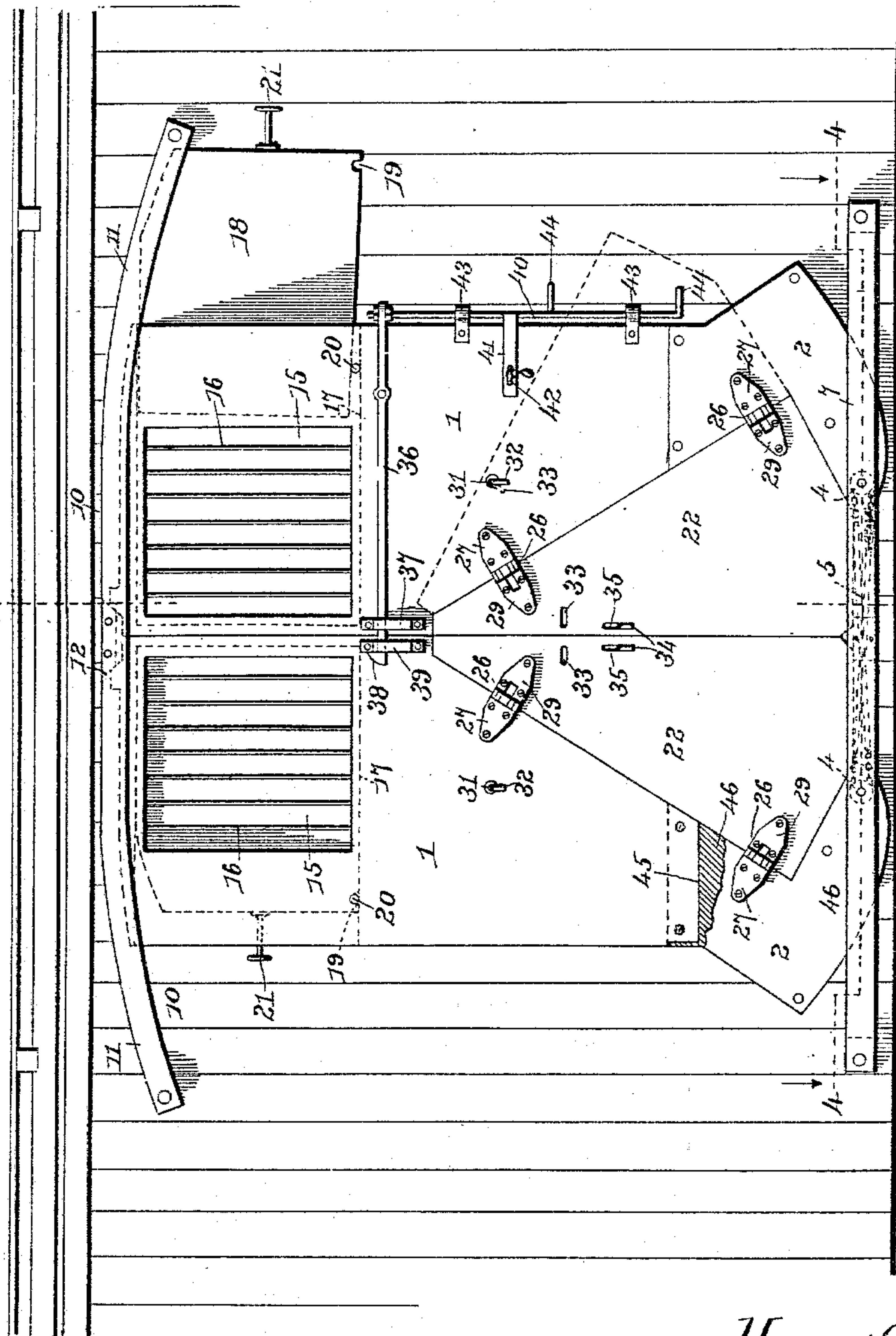
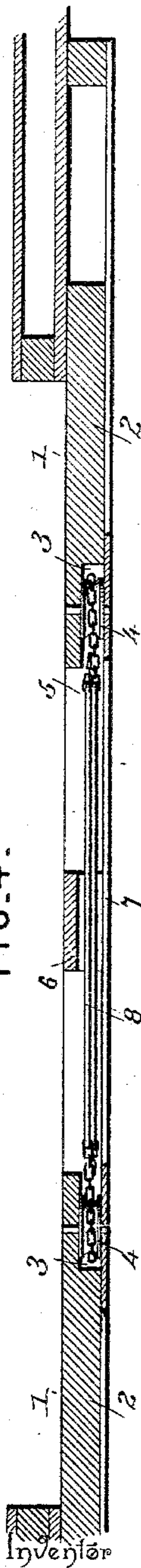


FIG. 4.



Witnesses

Jas. H. McLaughlin  
*[Signature]*

By his Attorneys,

Henry C. Hatcher  
*[Signature]*  
C. A. Snow & Co.

H. C. HATCHER.  
CAR DOOR.

No. 551,439.

Patented Dec. 17, 1895.

FIG. 2.

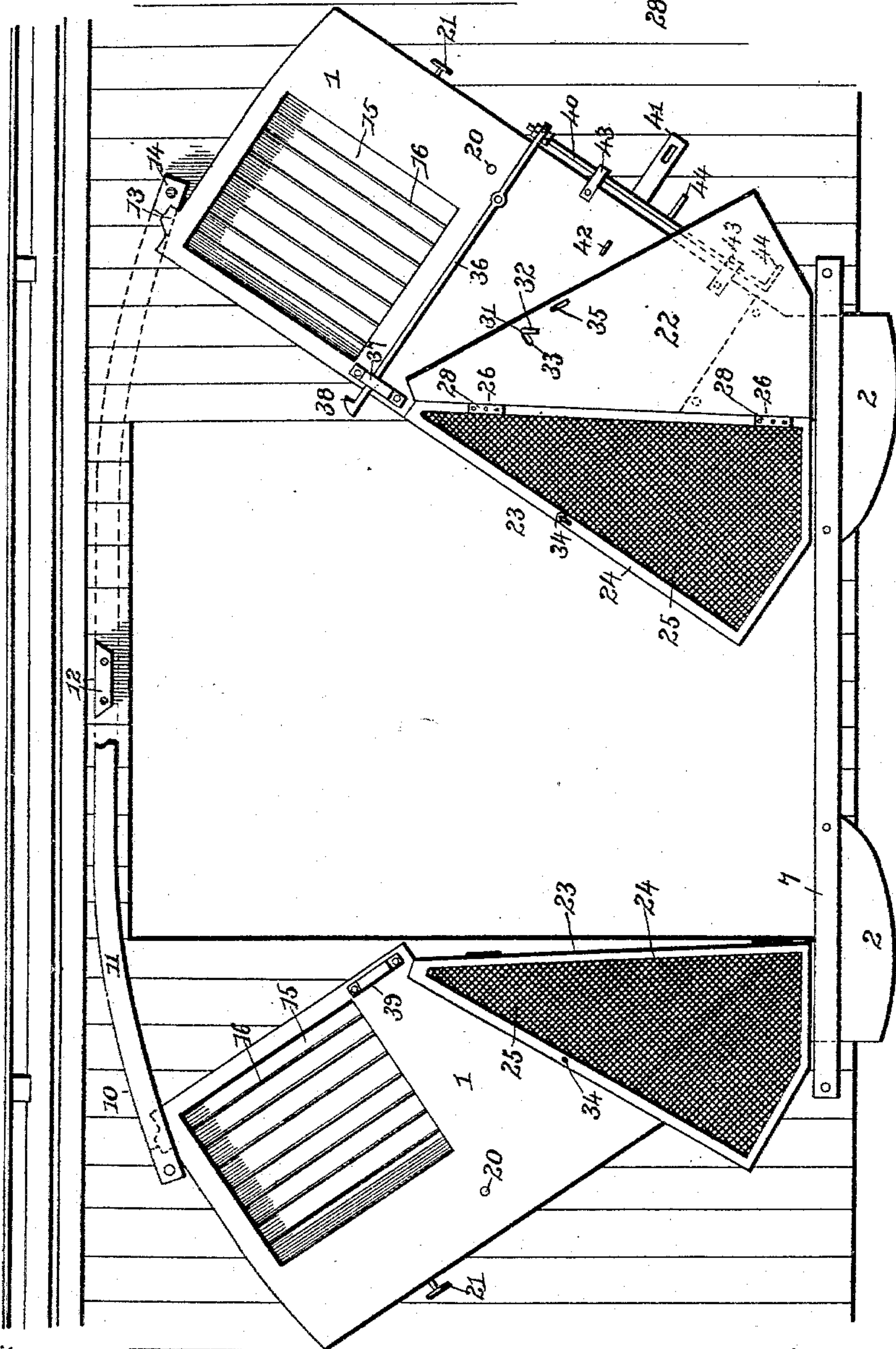


FIG. 6.

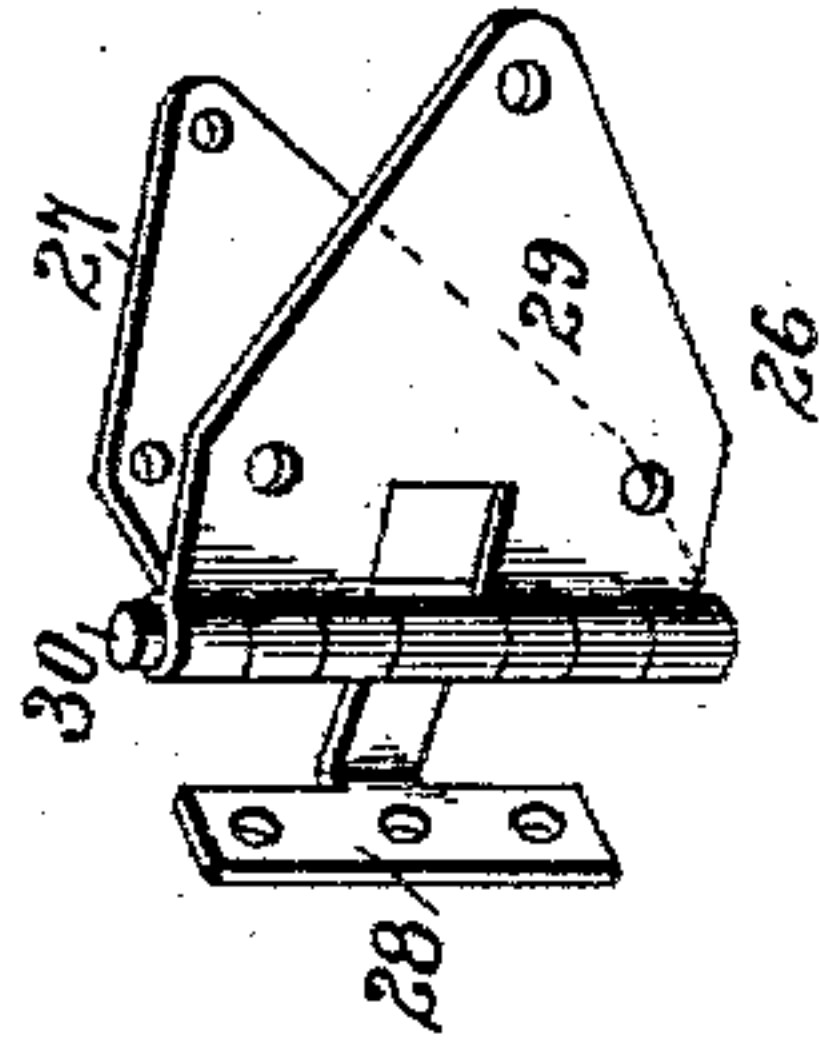
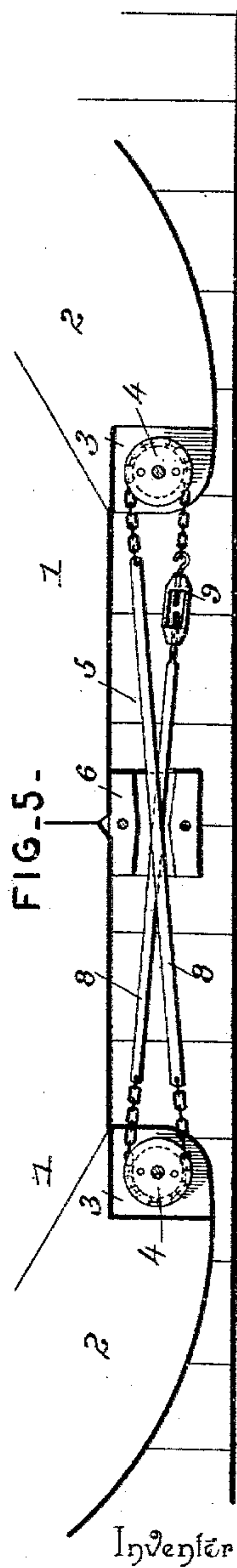


FIG. 5.



Inventor

Witnesses

James K. McLaughlin  
*[Signature]*

By his Attorneys, Henry C. Hatcher

*Chas. Snow & Co.*



# UNITED STATES PATENT OFFICE.

HENRY C. HATCHER, OF MILTON, NORTH CAROLINA.

## CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 551,439, dated December 17, 1895.

Application filed August 21, 1894. Serial No. 520,921. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY C. HATCHER, a citizen of the United States, residing at Milton, in the county of Caswell and State of North Carolina, have invented a new and useful Car-Door, of which the following is a specification.

My improvement relates to car-doors, and has for its object to provide means for securing free circulation of air through the car without opening the door or doors, to provide improved means for mounting the door to facilitate the opening and closing thereof, and, furthermore, to provide improved devices for securing a door or door members and the various parts thereof in their several positions.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view of a door constructed in accordance with my invention, the same being closed with the exception of one of the upper slides. Fig. 2 is a similar view showing the door open with one of the auxiliary ventilating-doors arranged in its normal position with relation to the main portion of the door. Fig. 3 is a vertical section on the line 3 3 of Fig. 1. Fig. 4 is a horizontal section on the line 4 4 of Fig. 1. Fig. 5 is a detail view of the means for connecting the doors for simultaneous operation. Fig. 6 is a detail view of one of the double hinges for supporting the auxiliary ventilating and covering doors.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The improved door comprises twin opposite parts or members 1 approximately rectangular in form, adapted to meet at their inner or adjacent edges to close the door-opening, and provided at their lower ends with bearing-pivots by which they are connected with the sill of the door-opening at different points within the doorway, so that the door members meet on a vertical line in the center thereof. The pivotal points of said members are arranged at points between the inner and outer edges of said members and preferably adjacent to the inner edges, whereby the major

portion of the weight of each member is outside of the pivotal point. To add to this increased weight of the outer portion of each member, I may, and preferably do, employ a weight 2, whereby when the inner edges of the members are disengaged the door is automatically opened, as shown in Fig. 2. The bearings of the door members are constructed in the inner ends of these weights 2, as shown in the drawings, the inner ends of said weights being rabbeted or cut away, as shown at 3, for the reception of chain-wheels 4, which are permanently secured to the members. Traveling upon the chain-wheels of the two members is a flexible connection 5, which may consist of a chain with the sides thereof crossed at the center of the door-opening. The operation of this connection is to communicate the motion of one door member to the other to cause a simultaneous and corresponding movement of both parts. The intermediate portions of the sides of said flexible connection cross, and at the points where said sides intersect I arrange a recessed block 6, which serves to brace and support the center of the metal guide-strip 7, between which and the sill the lower edges of said door members are fitted. The intermediate portions of the flexible connection are preferably constructed of strap metal, as shown at 8, inasmuch as such an arrangement provides for the free movement of said side portions in opposite directions as the members of the door are closed or opened, and in connection with this construction I employ a tightening device 9 for taking up slack or loosening the chain to provide for the proper operation of the parts.

The upper ends of the door members fit and operate in a guide 10, attached to the framework of the car, and having a face-strip 11, which prevents deflection of the ends of the members. At the center of this guide is arranged a stop-block 12 adapted to be engaged by a detent 13 on the upper end of each door member, the contacting-faces of said stop-block and detent being beveled, as clearly shown in Fig. 2. At the extremities of the guide 10 are arranged terminal stop-blocks 14, adapted to be engaged by the detents 13 to limit the outward movement of the members.



The upper portions of the door members are provided with ventilating-openings 15, fitted with gratings or bars 16, and above and below these grated openings are horizontal guides 17, in which fit the upper and lower edges of the metal slides 18. These slides are provided in their lower edges and adjacent to their outer ends with locking-notches 19, to engage pins 20 in the lower guides 17, and to the outer ends of the slides are attached handles 21, whereby they may be opened or closed. The terminal stop-blocks 14 at the ends of the guide 10 which form continuations of the upper guide 17 are adapted to limit the outward movement of the slides 18 when the members of the door are in the position shown in Fig. 1.

The lower portion of each door member adjacent to its inner edge is cut away to form an angular opening in which is fitted a correspondingly-shaped auxiliary door or independently-movable section 22, which in the construction illustrated is hinged to the main or body portion of the member, thus providing means for completing the rectangular shape of the door member. The hinged or outer edge of this auxiliary door or section is arranged on a line approximately coincident with the edge of the main door-opening when the door member is in the open position shown in Fig. 2. It is obvious that inasmuch as the pivotal point of the door member is set back from the inner edge of the member the inner and lower angle of the member will rise in front of the door-opening as the member tilts outward at its upper end; but by arranging the said inner and lower corner or angle of the door member on hinges, or by forming a small auxiliary door 22, as above described, this obstruction may be removed by folding the auxiliary door outward against the main or body portion of the door member when the latter is in its open position. This is clearly shown in Fig. 2. In addition to this auxiliary door 22, which in the following description I will refer to as an "auxiliary" closing-door, I employ an auxiliary screen-door 23, consisting of a framework 24 and a metallic or other screen 25 of any desired construction. This auxiliary screen-door corresponds in shape and size with the auxiliary closing-door 22, and is arranged adjacent to and parallel with the inner surface of the latter, said doors 22 and 23 being preferably mounted upon the same hinges 26, as shown in detail in Fig. 6. The construction of this hinge embodies a fixed leaf 27, which is adapted to be secured to the main or body portion of the door member contiguous to the edge of the angular opening formed therein, and an inner leaf 28 and an outer leaf 29, mounted upon a common pintle 30. The inner leaf 28 is secured to the contiguous edge of the auxiliary screen-door, while the outer leaf 29 is secured to the auxiliary closing-door, the shank of said inner leaf 28 being angular in order to provide for the closing of the outer door 22 against the outer surface of the door 23.

When the door members are in their normal or closed positions, as shown in Fig. 1, either or both of the auxiliary doors 22 and 23 may be opened. When it is desired to secure free circulation of air through the car the outer or closing door 22 may be thrown back, as indicated in dotted lines in Fig. 1, the same being held in its open position by means of a crank-pin or button 31 swiveled upon the main or body portion of the door member, and having a short arm 32 adapted to pass through a slot 33 in the auxiliary door, as shown in Fig. 2. When, as in Fig. 2, it is desired to secure both of the auxiliary doors attached to each door member in their open position, the above-described locking device may be employed to engage the door 22, and the auxiliary doors are held together by a similar locking device 34, which is attached to the screen-door 23 and engages a slot 35 in the outer door 22. When the door members are in their normal or closed position the lower edges of the auxiliary doors extend into the lower guide, or between the strip 7 and the sill of the door-opening, and thus lock said auxiliary parts in their closed position. If it is desired to open one or both of the outer or closing doors 22 in order to provide for the ventilation above referred to, the door members must first be released and inclined outward sufficiently to disengage said lower edges of the auxiliary doors from the guide.

Inasmuch as the door members are provided with gravity-opening devices, whereby when the said members are released they are automatically opened, the necessity for simple and automatically-operating locking devices will be seen. Such a locking device is shown in the drawings, and consists of a pivotal locking-bolt 36 mounted upon one of the door members, fitting at its free end in a keeper 37 on said member, and having a terminal shoulder or hook 38 to fit into and engage a similar keeper 39 on the inner edge of the other door member, and a vertical rod 40 attached to the outer end of said locking-bolt and carrying a hasp 41 for engagement with a staple 42 on the outer surface of the door member. This vertical rod operates in guides 43 and is preferably provided with one or more lateral handles or grips 44. It will be seen that inasmuch as the hasp is secured permanently to the operating-rod 40 the engagement thereof with the staple 42 will secure said rod against longitudinal movement, and, therefore, prevent accidental disengagement of the locking-bolt 36 from the keeper on the other door member. The weight of the rod 40 is sufficient to counterbalance the locking-bolt and hold its free or shouldered extremity elevated.

The operation and advantages of the construction will be readily seen from the foregoing description, and it will be obvious that various changes in the form, proportion, and minor details of the construction may be re-



sorted to without departing from the spirit or sacrificing any of the advantages of this invention.

In the construction illustrated in the drawings the above-described weight 2 consists of a shoe, the upper portion of which is hollow, as shown at 45, for the reception of the lower ends of the timbers comprising the main or body portion of the door. The object of this construction is to strengthen that portion of the main door which under ordinary circumstances would be weakened by the reduction of width due to forming the openings for the auxiliary doors. The narrower or neck portion 46 of the shoe being of solid metal provides against weakness at this point. The upper hollow portion of the shoe forms a convenient socket or receptacle by which the lower ends of the door-timbers may be secured to the weight.

Having described my invention, what I claim is—

1. A car door having duplicate approximately rectangular door members pivoted at their lower ends adjacent to their inner edges, whereby the preponderance of weight is outside of the vertical planes of the pivots to cause the door members to swing outward or open by gravity when released and movable auxiliary means for completing the rectangular shape of the door-members, substantially as specified.

2. A car door having duplicate approximately rectangular door members pivoted at their lower ends near their inner edges, whereby the preponderance of weight is outside of the vertical planes of the pivots to cause the door members to swing outward or open by gravity when released, movable auxiliary means for completing the rectangular shape of the door-members, guides for the upper ends of the door-members, and connections between the members whereby they move simultaneously in opposite directions, substantially as specified.

3. In combination with guides arranged above and below the door-opening, a car-door constructed of duplicate door-members adapted to meet at their inner edges when the door is closed, said door-members having movable sections, and weights secured to the lower edges of the door-members and pivoted near their inner ends to the lower guide in which the weights operate, the upper ends of the door-members moving in and limited by the upper guide, substantially as specified.

4. A car door having an approximately rectangular member pivoted at its lower end near one side edge whereby it swings toward the other side edge by gravity, and a movable section carried by said member to complete the rectangular shape of the door, substantially as specified.

5. A car door having twin members mounted at their lower edges on horizontal pivots and weighted to swing outward or from each other at their upper ends, chain wheels mount-

ed on the pivots of said members, and an endless flexible connection traversing said wheels and having its sides crossed, whereby said members move simultaneously and equally in opposite directions, substantially as specified.

6. A car door having twin members mounted at their lower ends on horizontal pivots and weighted to swing outward or from each other at their upper ends, chain-wheels mounted on the pivots of said members, an endless flexible connection traversing said wheels and having its sides crossed at their centers, the intersecting portions of the connection comprising rods 8, and a guide block having an opening through which said rod passes, whereby said members move simultaneously and equally in opposite directions, substantially as specified.

7. A car door having twin substantially rectangular members pivoted at their lower ends at different points within the door-way so that the door-members meet on a vertical line in the center thereof, a guide for the upper ends of the door-members, central and terminal stop-blocks arranged in said guide, and a detent carried by each door-member to engage either the central or a terminal stop-block and limit the movement of the member, substantially as specified.

8. A car door provided near its upper end with a grated opening, guides arranged above and below said opening, a slide fitted at its upper and lower edges in said guides, means for securing the slide in its closed position and a guide provided on the car for the upper end of the car door, said guide forming a continuation of the upper guide on the car door, and limiting and guiding the movement of the slide in its extended position, substantially as specified.

9. A car door pivoted at its lower end adjacent to its inner edge and weighted at its outer edge, whereby when released it swings laterally at its upper end, an auxiliary door arranged in an opening or cut-away portion at the inner edge of the main or body portion of the door, and means for securing said main or body portion and the auxiliary door in their closed positions, substantially as specified.

10. A car door pivoted at its lower end adjacent to its inner edge, upper and lower guides for receiving the upper and lower edges of the door, means for securing the same in its closed position, and an auxiliary door carried by the main or body portion of the door and arranged in an opening at the inner edge thereof, said auxiliary door being adapted to fit at its lower edge in the lower guide, whereby it is locked in its closed position, substantially as specified.

11. A car door having a main or body portion pivoted at its lower end, means for securing the door in its closed position, and inner and outer parallel auxiliary doors, one of which is reticulated, carried by the main or body portion of the door and arranged in an



opening formed in the inner edge thereof, and means for securing said auxiliary doors in their closed and open positions, substantially as specified.

5 12. A car door having twin members pivoted at their lower ends adjacent to their inner edges and provided outside of their pivotal points with operating weights, said door-members having main or body portions provided at their inner or adjacent edges with  
10 angular openings, auxiliary inner and outer doors carried by the main or body portion and arranged in said openings, the inner doors being reticulated, and means for securing the  
15 inner edges of the main or body portions of the door-members together, substantially as specified.

13. A car door having twin pivotal members adapted to swing outward or from each  
20 other at their upper ends, a pivotal locking bolt 36 carried by one of the door-members and provided with a shoulder to engage a keeper on the other door-member, a vertically-disposed operating rod 40 mounted in guides  
25 to move vertically as well as rotatably and connected to the opposite end of said locking bolt and adapted by its weight to normally hold the shouldered end thereof in its elevated or locking position, and a hasp rigidly  
30 secured to said operating rod and adapted to engage a staple on the door-member to lock the rod from movement, substantially as specified.

14. A car door having a main or body portion, a metallic shoe arranged at the lower  
35 end thereof and provided with a hollow upper portion to receive the lower ends of the door timbers, said shoe being provided with an extension toward the inner edge of the door, and such extension being pivoted to the  
40 car sill, an auxiliary door arranged in an opening of and carried by the main door, and locking devices for said main and auxiliary doors, substantially as specified.

15. A car door having a pivoted main or  
45 body portion of substantially rectangular shape, and an approximately sector-shaped auxiliary door hinged to the main or body portion to complete the rectangular construction thereof, substantially as specified. 50

16. A car door comprising two sections or members pivoted at their lower edges, gearing connecting the two members at their lower  
ends to cause them to move in unison, guides  
55 for the members to move in, and a sector-shaped auxiliary door for each member arranged in a cut-away portion of the same, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affix my signature in  
60 the presence of two witnesses.

H. C. HATCHER.

Witnesses:

E. G. SIGGERS,  
J. H. SIGGERS.