

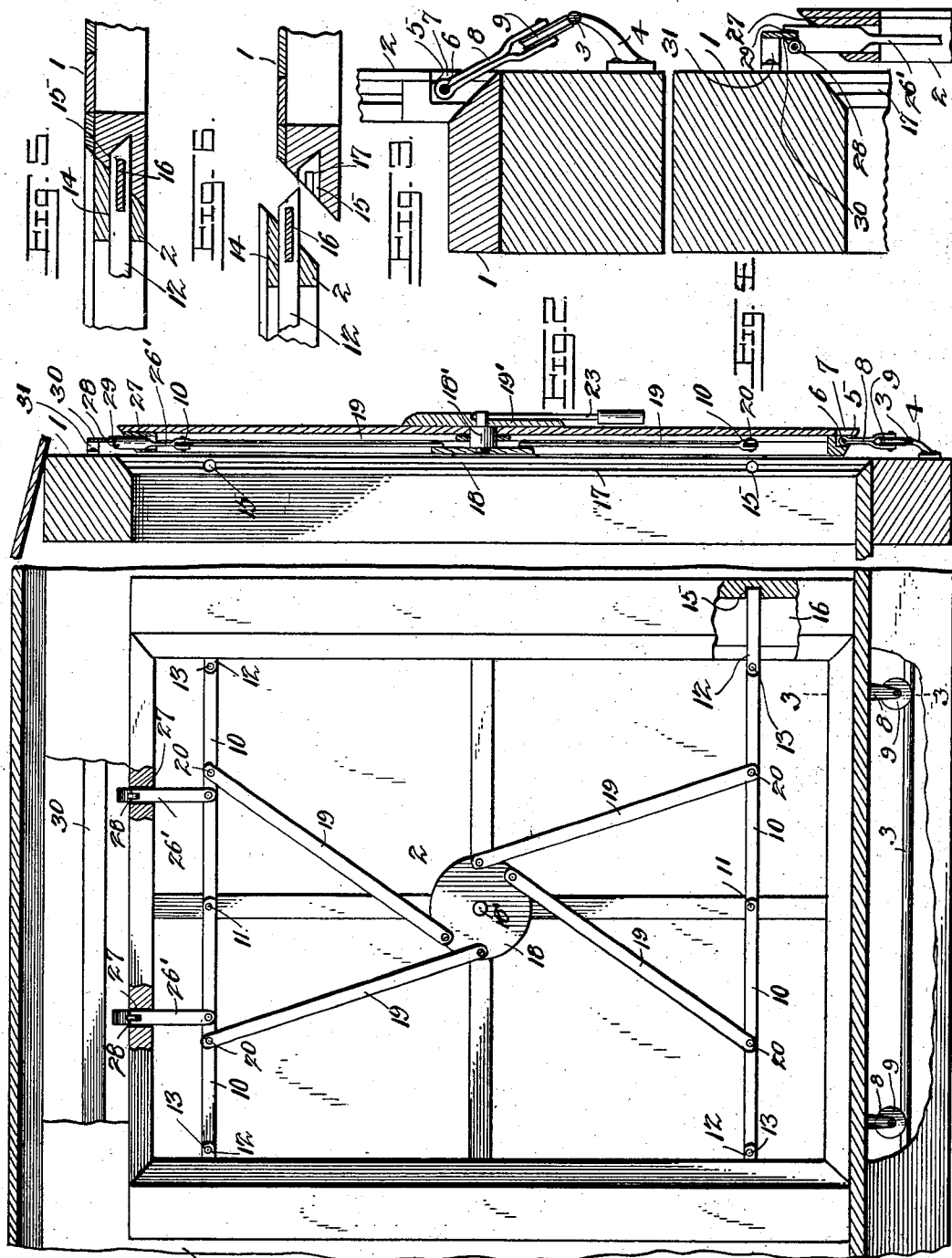
No. 700,259.

Patented May 20, 1902.

J. R. THOMPSON.  
CAR DOOR.

(Application filed Aug. 26, 1901.)

(No Model.)



Witnesses  
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FIG. 1

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# UNITED STATES PATENT OFFICE.

JOHN R. THOMPSON, OF AMERICUS, GEORGIA.

## CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 700,259, dated May 20, 1902.

Original application filed April 13, 1901, Serial No. 55,743. Divided and this application filed August 26, 1901. Serial No. 73,368. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ROBERT THOMPSON, a citizen of the United States, residing at Americus, in the county of Sumter and State of Georgia, have invented a new and useful Car-Door, of which the following is a specification.

The invention relates to improvements in car-doors.

The object of the present invention is to improve the construction of car-doors which slide in opening and closing and to enable the same to be flush with the outside of the car when closed and to be drawn laterally outward from the doorway by the operation of the locking mechanism in unlocking the door. It is further designed to render the edge joints between the door and the car both weather and fire proof and also to facilitate the locking and unlocking of the door, the latter being effectively sealed when closed, so as to plainly indicate when it has been opened.

With these and other objects in view the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is an inside elevation of a portion of a car, showing the improved door mounted therein, parts being broken away to show the connection between the door and the tracks therefor and also to show the locked connection between the door and the car-frame. Fig. 2 is a vertical sectional view thereof with the door open. Fig. 3 is a detail enlarged sectional view taken on the line 3-3 of Fig. 1. Fig. 4 is a similar view showing the door in the act of closing. Fig. 5 is a detail enlarged sectional view taken through the bottom of the door and the car with the former in its closed position. Fig. 6 is an enlarged detail sectional view taken through the top of the car and door with the latter open.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

1 designates the side of a car, and 2 an ordinary slidable car-door, which in the present invention is provided with a beveled marginal edge to fit snugly the correspondingly-beveled marginal edge of the doorway in order that the door may lie flush with the outer side of the car when closed. For the support of the door when the latter is open and drawn laterally out of the doorway there is provided a bottom track 3 in the form of a round rod, which is located below the lower edge of the door and is supported outwardly from the car by means of a plurality of brackets, one of which has been shown at 4. Each bracket is secured to the bottom sill or side of the car and engages the track from the rear side only, so that the top and inner side thereof may be free from obstructions. In the bottom edge of the door there is provided a longitudinal slot or opening 5 for the reception of a fixed rod 6, and in the outer side of the door there is provided a pair or more of vertical slots or openings, one of which has been illustrated at 7, to expose the rod. Upon this rod are hinged the hangers 8, which are introduced through the respective slots or openings 7 and project downwardly through the longitudinal slot 5, that opens outwardly through the bottom of the door, or only the opening 7 may open through the bottom of the door, as may be desired. This hanger is preferably formed in two opposite members, which have their upper ends provided with a detachable hinged or pivotal connection, so as to embrace the rod loosely and form a hinged connection therewith to permit of an outward swing of the hanger upon the rod as a center. The lower ends of the hanger members are spread so as to form a fork for the reception of a grooved roller or wheel 9 to travel upon the track 3. By this arrangement the hanger assumes an inwardly-inclined position, as shown in Fig. 3, when the door is closed into the doorway, and when the door is pulled laterally outward, so as to slide upon the track, the hanger springs outwardly upon the track as a center until it assumes a vertical position. (Shown in Fig. 2.)

To lock the door when closed, there is provided the top and bottom pairs of lock-bars 10, the members of each pair having their inner ends connected to the inner side of the door by means of a common pivotal connection 11, from which they extend laterally outward in opposite directions across the inner side of the door. The outer end of each member is provided with a locking-bolt 12, which has its inner end pivotally connected to the adjacent bar, as at 13, and works freely through a slot or opening 14, formed transversely through the adjacent side edge of the door, and is designed to be shut outwardly, so as to take into a socket 15, formed in the adjacent edge of the doorway in the car, whereby the door is locked. The locking-bolts at one or rather each edge of the door carry a vertical plate or metal strip 16, which is connected to both top and bottom bolts, so as to move therewith, and normally lies within a vertical slot in the edge of the door, so as to be carried outwardly with the bolts and into a corresponding slot or groove 17, formed in the edge of the doorway, as illustrated in Figs. 3 and 4, the strip being partly in the door and partly in the car when the door is closed, whereby the joint is effectually closed and rendered weatherproof and fireproof. As shown in Fig. 2, the outer end of the locking-bolt is beveled at substantially right angles to the bevel of the door edge and doorway, so that when the bolt is shot outwardly and the door is moving laterally inward the beveled end of the bolt will strike the outer edge of the socket 15 in the edge of the doorway, and thereby aid in drawing the door into the doorway. The lock-bars are simultaneously operated by means of a tumbler 18, pivotally mounted at about the center of the inner side of the door, and to which are pivotally connected the links 19, which have their outer ends pivotally connected, as at 20, to the intermediate portions of the respective lock-bars 10, there being a link for each bar. When the tumbler is rotated in one direction, the links are moved longitudinally outward, thereby swinging the lock-bars outwardly upon their pivotal mountings 11, whereby the bolts 12 are drawn inwardly and out of the sockets or keepers in the edge of the doorway to release the latter and permit of it being drawn laterally outward and supported on the lower track.

For the convenient manipulation of the lock-bars from the exterior of the car there is provided a rotatable shaft or spindle 18', (shown in Fig. 2,) said spindle being fixed to the center of the tumbler and passing rotatably through the door, the outer end of the spindle being mounted in a central opening in a plate 19', fixed to the outer side of the door, and constructed as set forth in application No. 55,743, filed by me April 13, 1901, and of which the present application is a divisional application.

It is designed to automatically force the

door laterally outward by the withdrawing of the locking-bolts, and to accomplish this feature there is provided a pair or more of vertical shifting arms or members 26', (best shown in Figs. 1 and 4,) having their lower ends pivotally connected to the intermediate portions of the respective upper lock-bars and working loosely through vertical slots or openings 27, formed through the top edge of the door. At the inner upper edge of the respective shifting-arms there is mounted an antifriction-roller 28, which projects slightly above the top edge of the arm, and adjacent to the outer side of the arm there is provided a longitudinal bifurcation or slot 29 in the upper end of the arm, thereby forming a fork to slidably embrace the lower edge of a flat upper track 30, hung from the upper portion of the outer side of the car by means of suitable brackets 31. By this arrangement the upper end of the door is guided upon the upper track when the door has been drawn outwardly. When the locking-bolts are shot outwardly to lock the door and the latter is within the doorway, the shifting-arms are drawn downwardly by the movements of the upper locking-bars, and when the locking-bars are raised by the unlocking of the door the shifting-arms will be thrust simultaneously upward, whereby the antifriction-rollers strike the upwardly and outwardly inclined upper edge of the doorway, and thus automatically force the door laterally outward until the lower edge of the upper track is embraced by the fork portions of the shifting-arms, the lower hinged hangers 8 accommodating themselves to the lateral movement of the door. When the door has thus been moved out of the doorway, it is free to be slid endwise upon the tracks to uncover the doorway in the car. To close the door, the handle 23 is swung to its opposite limit, thereby drawing the guiding and shifting arms downwardly below the upper edge of the door to permit of the latter being pushed laterally into the doorway and the locking-bolts being shot into the keepers or sockets on the car. It will be understood that the movements of the shifting-arms and the locking-bolts are so proportioned that the arms will disengage from the tracks before the bolts project beyond the door edge in order that the door may enter the doorway before the bolts are projected.

What I claim is—

1. The combination of a doorway or frame having a beveled inner marginal portion, a laterally-movable door, and a lock having a slidable frame-engaging door-shifting device, which is constructed for frictional engagement with the beveled portion of the frame to force the door laterally outward, during the unlocking of the lock, substantially as described.

2. The combination of a door-frame, a track carried thereby, a laterally-movable door, and a lock provided with a shiftable device arranged when moved outward to engage the

door-frame to force the door outward and to engage the track, said device when moved inward being withdrawn from the track, substantially as described.

5 3. The combination of a door-frame having a beveled inner marginal portion, a track carried by the frame and arranged adjacent to the beveled portion, a slidable and laterally-movable door, a lock upon the door, and a  
10 frame-engaging door-shifting device operatively connected with the lock and having an antifriction-roller for engagement with the beveled portion of the frame during the un-  
15 locking of the door, and a forked portion constructed for automatic slidable engagement with the track when the door has reached the outward limit of its movement, substantially  
as described.

20 4. The combination of a door-frame having a beveled portion, a laterally-movable door having a swinging locking-bar, and a frame-engaging door-shifting device pivotally connected to the swinging locking-bar and constructed for engagement with the beveled  
25 portion of the frame during the outward swing of the locking-bar to force the door laterally outward, substantially as described.

30 5. The combination of a door-frame, a track, a laterally-movable door, a swinging locking-bar, and a frame-engaging door-shifting device operated by the locking-bar and arranged to engage the frame during the outward  
movement of the locking-bar to force the door

outward, said device being also carried by such movement into engagement with the  
35 track, substantially as described.

6. The combination of a door-frame, a slidable and laterally-movable door provided at its bottom with a recess, a track located be-  
40 neath the door, a hanger hinged in the recess and arranged to run on the track at the bottom of the door, an upper track, and a device arranged to move inward and outward to and from the upper track and adapted in its out-  
45 ward movement to engage the door-frame to move the door outward, substantially as described.

7. The combination with a door-frame having a keeper, of a laterally-movable door, a lock thereon having a slidable locking-bolt  
50 provided with a beveled outer end constructed for engagement with the keeper during the outward movement of the bolt to draw the door laterally inward, and a frame-engaging door-shifting device slidably mounted on the  
55 door and operatively connected with the lock for engagement with the frame to force the door outward, substantially as described.

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

JNO. R. THOMPSON.

Witnesses:

A. R. BROWN,  
C. A. CHAMBLISS.