(No Model.) 2 Sheets—Sheet 1.

H. PRIES & J. W. MEYER.

CAR DOOR.

No. 590,074. Patented Sept. 14, 1897.

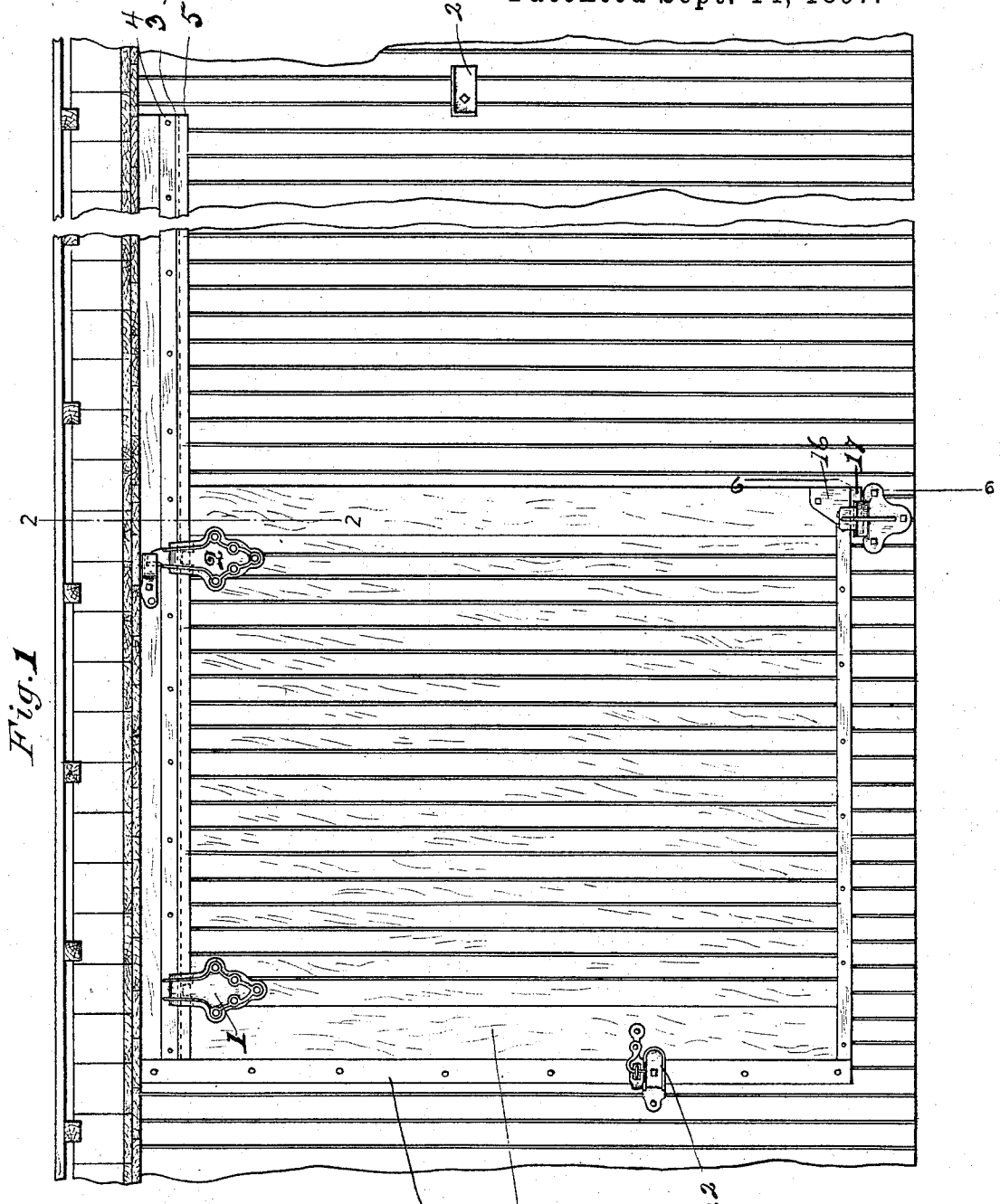


Fig. 1

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4

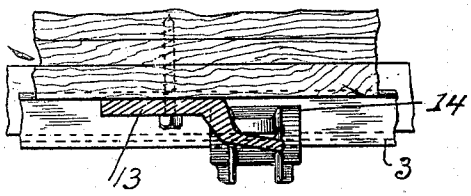


Fig. 7

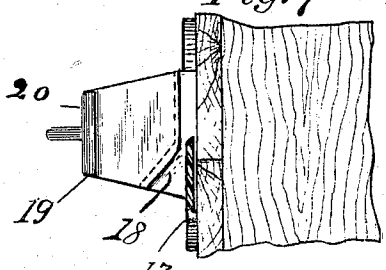


Fig. 3

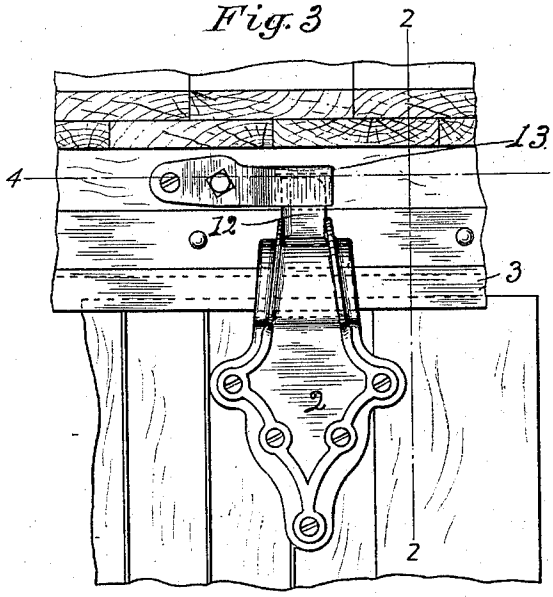


Fig. 2

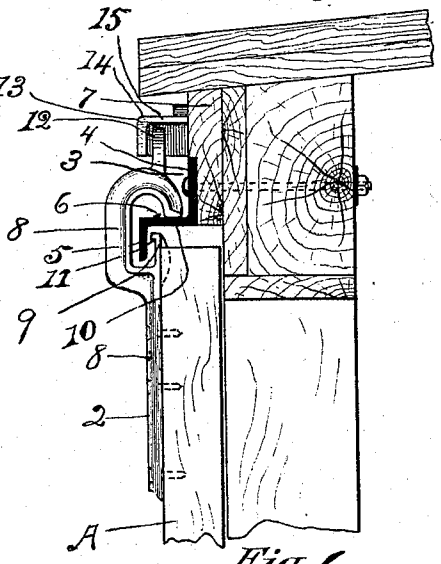


Fig. 5

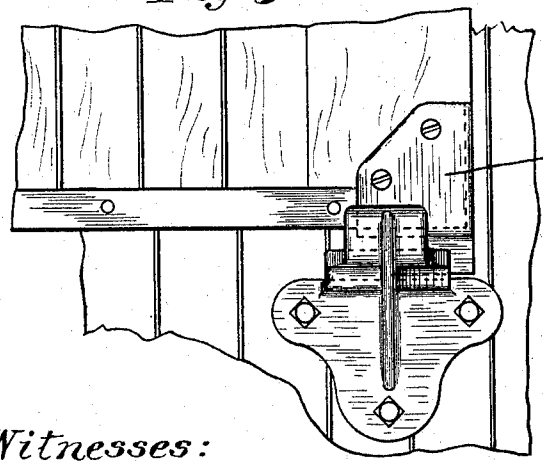
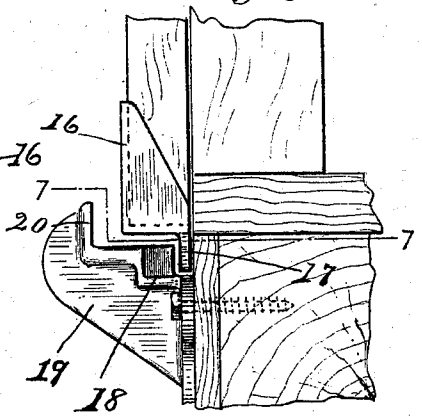


Fig. 6



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HERMAN PRIES AND JOHN W. MEYER, OF MICHIGAN CITY, INDIANA.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 590,074, dated September 14, 1897.

Application filed June 3, 1897. Serial No. 639,320. (No model.)

To all whom it may concern:

Be it known that we, HERMAN PRIES and JOHN W. MEYER, citizens of the United States, residing at Michigan City, in the county of La Porte and State of Indiana, have invented certain new and useful Improvements in Car-Doors; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to a novel construction in a car-door for freight-cars, the object being to provide a device of this kind which can be easily operated and which when closed will fit so closely against the frame or the car-body as to leave no space through which dust, cinders, or rain can penetrate; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

One feature of our invention consists in the construction of the hangers and the guide-rail upon which said hangers move whereby the door is easily moved without the use of antifriction-rollers and is prevented from leaving the guide-rail.

Another feature of our invention consists in mounting upon the car-body in the path of the rearmost hangers guide-plates which are adapted to be engaged by lugs on the hangers and which will force said hangers and consequently the car-door inwardly, so as to cause the latter to hug the sides of the car-body so closely as to leave no opening for the passage of dust, cinders, or rain.

Another feature of our invention consists in so shaping the guide-rail and arranging it with reference to the door so that it covers the upper edge of the door and protects it from rain, thus enabling us to dispense with the extra overhanging side plate depending from the roof-frame now generally used.

Another feature of our invention consists in providing a downwardly-extending projection on the lower end of the door which is adapted to be engaged by a groove in a guide-plate in which the lower end of the door moves and which is adapted to coact with the upper hanger and guide-plate to cause the rear end of the door to closely hug the side of the car-body.

In the accompanying drawings, illustrating our invention, Figure 1 is a fragmentary side elevation of a car provided with a door constructed in accordance with our invention. Fig. 2 is a detail sectional view, on an enlarged scale, taken on the line 2 2 of Figs. 1 and 3. Fig. 3 is a fragmentary detail view in elevation, on an enlarged scale, showing the upper rearmost hanger and the guide-plate engaging the same. Fig. 4 is a sectional view on the line 4 4 of Fig. 3. Fig. 5 is a view in elevation, on an enlarged scale, of the lower guide-plate and the projection on the lower end of the door adapted to be engaged by said guide-plate. Fig. 6 is a sectional view on the line 6 6 of Fig. 1, showing the parts shown in Fig. 5 in end elevation. Fig. 7 is a sectional view on the line 7 7 of Fig. 6.

Referring now to said drawings, A indicates a car-door which is provided at its upper end with hangers 1 and 2, which are adapted to slide upon and to engage a guide-rail 3, secured to the car-body above said door A. Said guide-rail 3 consists of a **Z**-bar the flanges 4 and 5 of which extend at right angles to the web 6 thereof. Said **Z**-bar is secured to a beam 7, interposed between the same and the side of the car-body by its flange 4, so that the web 6 thereof lies horizontally, and the flange 5 extends downwardly therefrom and overlaps the upper edge of the door. Said hangers 1 and 2 consist of plates adapted to be secured to the door and have upward extensions 8 and 9, said extension 8 extending outwardly and upwardly and at their upper ends inwardly and downwardly like an inverted **U**, the inner ends being provided with flat faces 10, which rest and slide upon the webs 6 of said guide-rails 3, while said projections 9 are provided with outwardly-extending projections 11, which are adapted to engage the inner faces of the flanges 5 to prevent said hangers from slipping off of said guide-rails.

In order to avoid excessive friction between the hanger and the guide-rail, we have found that it is necessary to avoid the contact of sharp corners, and to this end have so constructed our hangers and so arranged the guide-rail as to prevent the corners of the slide-face 10 of the former to engage a corner of the latter, the inward limit of movement

of the door being adapted to limit the inward movement of the hanger to prevent the corners of guide-rail from engaging any portion of the hanger. In this manner we reduce the friction to such an extent as to enable one man to move our door with ease, whereas in the constructions now generally used and in which antifriction-rollers are omitted it generally takes two men to operate a door. Said hanger 2 is provided with an upwardly-extending projection 12, cast integral therewith, which is adapted to be engaged by a guide-casting 13, secured to said beam 7 in the path of said projection 12. Said guide-casting 13 consists of a plate having a wedge-shaped recess 14, covered by an overhanging flange 15, which answers the purpose of a reinforcing-rib. Said guide-casting 13 is adapted to receive said lug 12 as the door approaches the forward limit of its movement, the inclined face of said recess being adapted to force said lug 12 inwardly, so that when said door has reached the forward limit of its movement its rear edge is pressed closely against the side of the car-body. Said guide-casting 13 is situated at a sufficient height to enable the hanger 1 to pass freely underneath the same. Said door A is provided at its lower rear end corner with a corner-plate 16, provided with a downwardly-extending lug 17, which is adapted to enter a guide-groove 18 in a guide-casting 19, secured to the side of the car-body below said door and in which the lower end of said door is adapted to move. Said guide-casting 19 is provided with an upwardly-extending lug 20, which is adapted to engage and to limit the outward movement of the lower end of said door. Said guide-groove 18 consists of a narrow portion parallel with the side of the car-body and an enlarged wedge-shaped portion running into said narrow portion and adapted to cause said lug 17 to move inwardly and into said narrow portion, thus obviously causing the lower end of said door to hug the side of the car-body. As said lugs 12 and 17 come into engagement with their respective guide-castings simultaneously it will be obvious that the door will be thrown into close contact with the side of the car-body along its entire rear edge.

The forward end of the door is adapted to fit against a strip or door-stop 21, secured to the side of the car-body, with which it is held in close contact by means of a suitable locking device. To hold said forward end of said door in close contact with the side of the car-body projecting inwardly of said strip, however, we have provided an outwardly-inclined lip 22, cast integral with one member of the lock, which projects inwardly from said strip 21 and is adapted to guide said forward end of said door inwardly and hold the same in close contact with said inwardly-projecting portion of said side of said car. Said door A is mounted upon said car by passing guides 1 and 2 upon the guide-rail 3 and the lower end of the door into the guide-casting 19 from the end, and to prevent the door from being moved too far rearward thereafter a stop 23 is secured to the side of the car against which the rear edge of the door is adapted to abut to limit the rearward movement of the door.

By means of our construction it will be obvious that a slight warping of the door will not interfere with its working, since our guides will not keep it jammed against the side of the car-body, as is the case with most constructions now generally in use, but permit it to swing away from the side of the car-body sufficiently to allow for such warping, which is seldom very great.

We claim as our invention—

1. In a car, the combination with a car-door hanger and a guide-rail, and a lug on said hanger, of a plate mounted above said guide-rail and located in the path of said lug, provided with an inwardly-inclined inner face adapted to engage said lug and guide the same inwardly, whereby said door is caused to hug the side of the car-body, substantially as described.

2. In a car, the combination with a car-door hanger, a guide-rail upon which said hanger is laterally movable, and a lug upon said hanger, of a plate mounted above said guide-rail and located in the path of said lug, provided with an inwardly-inclined inner face adapted to engage said lug and guide the same inwardly, whereby said door is caused to hug the side of the car-body, substantially as described.

3. In a car, the combination with a door and a guide-rail above the same comprising a Z-bar one of whose flanges overlaps the upper edge of said door, of hangers on said door having upwardly-extending overhanging projections adapted to rest and slide upon the web of said Z-bar, a lug on one of said hangers, and guide-casting mounted in the path of said lug and adapted to engage the same to force said door inwardly into close contact with the side of the car-body, substantially as described.

4. In a car, the combination with a door and a guide-rail above the same comprising a Z-bar one of whose flanges overlaps the upper edge of said door, of hangers on said door having upwardly-extending overhanging projections adapted to rest and slide upon the web of said Z-bar, a projection inwardly and below said overhanging projection adapted to engage the inner face of said overhanging flange of said Z-bar, a lug on one of said hangers, and a guide-casting mounted upon the car-body in the path of said lug and adapted to engage the same when said door approaches the forward limit of its movement to force said lug inwardly, whereby said door is forced into close contact with the side of the car-body when closed, substantially as described.

5. In a car, the combination with a door provided with a downwardly-extending guide-

lug at its lower end, and hangers at its upper end, one of which is provided with an upwardly-extending guide-lug, of guide-castings located in the paths of said guide-lugs and adapted to engage the same to force said door into close contact with the side of the car-body when said door reaches the forward limit of its movement, substantially as described.

6. In a car, the combination with a door provided with a downwardly-extending guide-lug at its lower end, and hangers at its upper end, one of which is provided with an upwardly-extending guide-lug, of guide-castings located in the paths of said guide-lugs and adapted to engage the same to force said door into close contact with the side of the car-body when said door reaches the forward limit of its movement, and an outwardly-inclined lip situated in the path of said door and adapted to engage the forward end of the same to force it inwardly, substantially as described.

7. In a car, the combination with a door provided with a guide-lug at its lower end, hangers at its upper end, one of which is provided with a guide-lug, of a guide-rail upon which said hangers are adapted to slide and to move laterally, said guide-rail having an overhanging flange adapted to overlap the upper edge of said door, and guide-castings situated in the paths of said guide-lugs and adapted to engage the same and to cause said door to move laterally inwardly into close contact with the sides of the car-body as it reaches the forward limit of its movement, and a guide-casting situated in the path of said door and adapted to coact with said other guide-castings to cause said lateral inward movement of said door, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

HERMAN PRIES.
JOHN W. MEYER.

Witnesses:
HARRY M. BARNES,
T. D. HAMRICK.