

No. 786,178.

PATENTED MAR. 28, 1905.

N. F. ARBLE.

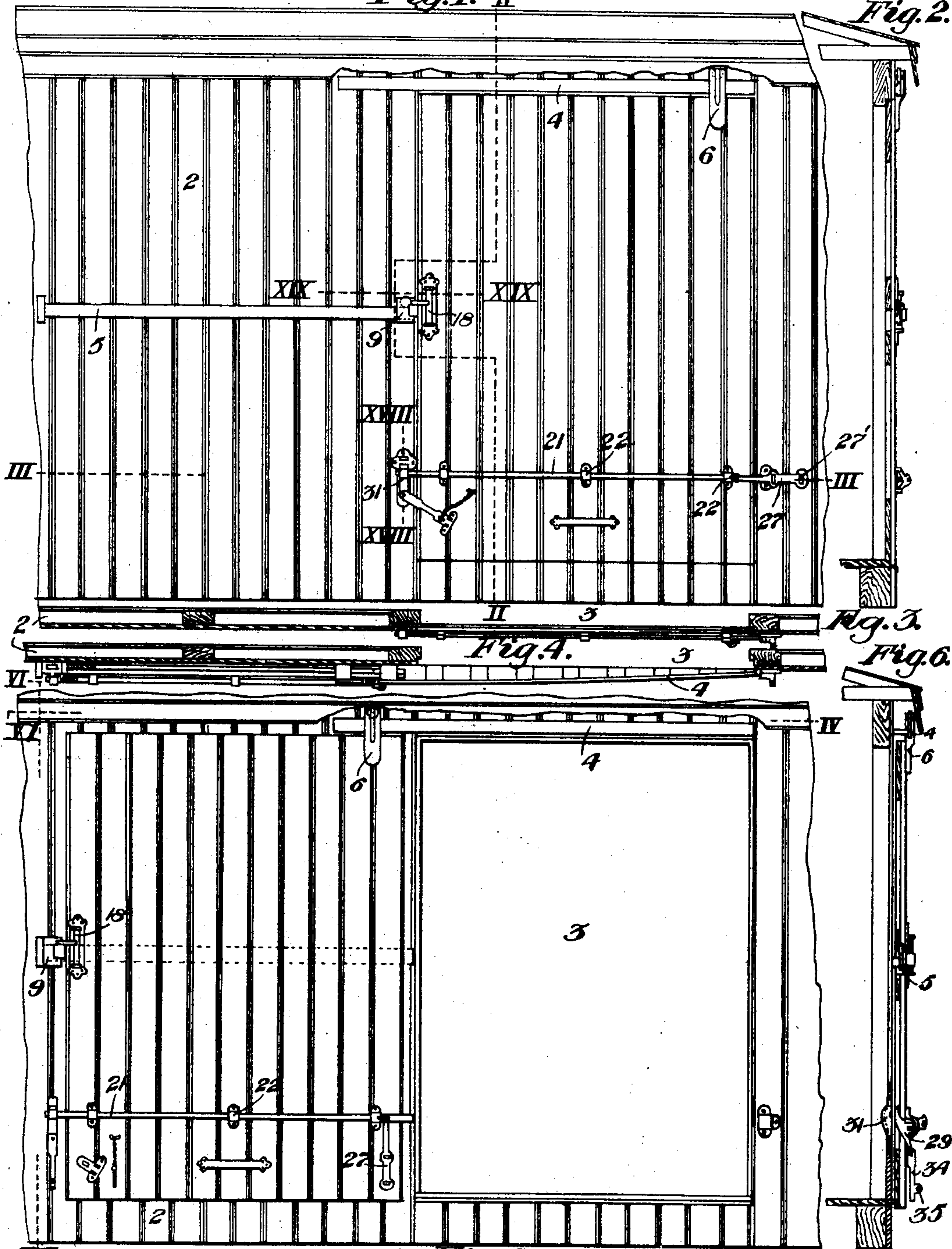
CAR DOOR.

APPLICATION FILED MAY 25, 1904.

2 SHEETS—SHEET 1.

Fig. 1. II

Fig. 2.



VI Witnesses:
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Fig. 5.

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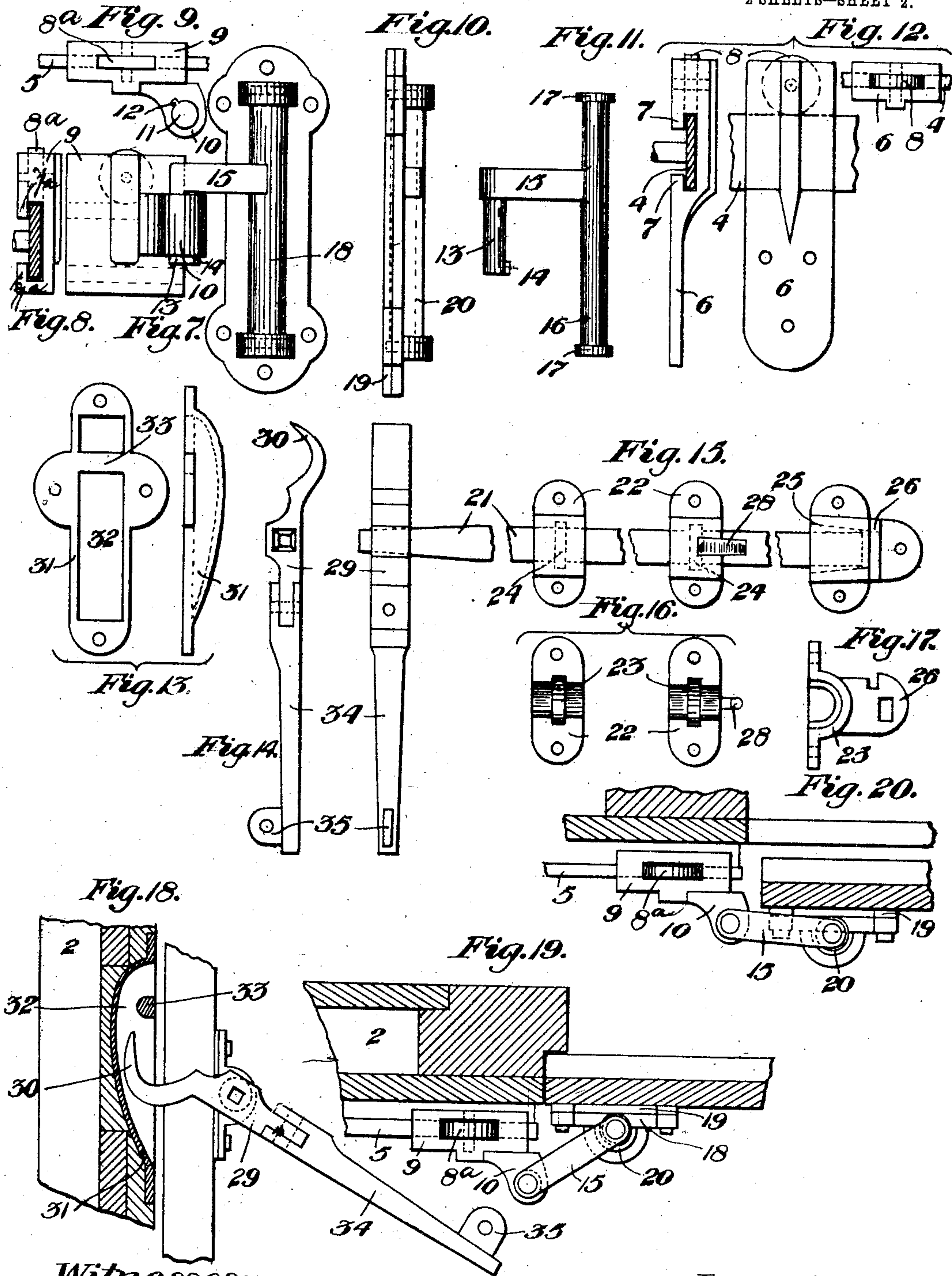
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Witnesses:
Eben V. MacKenzie,
Chas. S. Depley

Inventor:
Newton F. Arble.
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UNITED STATES PATENT OFFICE.

NEWTON F. ARBLE, OF PITTSBURG, PENNSYLVANIA.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 786,178, dated March 28, 1905.

Application filed May 25, 1904. Serial No. 209,809.

To all whom it may concern:

Be it known that I, NEWTON F. ARBLE, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Doors, of which the following is a specification, reference being had therein to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a portion of a car provided with my improved door, showing the door closed. Fig. 2 is a vertical section on the line II II of Fig. 1. Fig. 3 is a horizontal section on the line III III of Fig. 1. Fig. 4 is a similar view on the line IV IV of Fig. 5. Fig. 5 shows the door open. Fig. 6 is a vertical section on the line VI VI of Fig. 5. Fig. 7 is a face view of the sliding hinge-joint. Fig. 8 is an end view of the sheave-bracket of the hinge. Fig. 9 is a plan view of the sheave-bracket and part of the slide-rail. Fig. 10 is an edge view of the hinge-shank keeper. Fig. 11 is a detail view of the hinge-shank. Fig. 12 shows different views of the top sheave-bracket. Fig. 13 shows different views of the locking-arm keeper. Fig. 14 is an edge view of the locking-arm. Fig. 15 is a view assembled, partly broken away, of the locking-arm, its connected shaft, and the shaft-bearings and end socket. Fig. 16 shows inner views of the shaft-bearings. Fig. 17 is an end view of the end socket for the shaft. Fig. 18 is an enlarged vertical sectional view on the line XVIII XVIII of Fig. 1, showing the locking-arm and door-shaft raised away from the keeper. Fig. 19 is an enlarged horizontal sectional view on the line XIX XIX of Fig. 1 through the sliding hinge-joint. Fig. 20 is a similar view showing the door raised away from the car for ventilation or preparatory to being opened.

My invention refers to improvements in doors for freight-cars; and it has for its objects to provide a door which is capable of being firmly secured in place either tightly or with sufficient clearance for ventilation, insuring against displacement or breakage from the car, providing for ease of operation and prevention of jamming due to sagging

of the door, together with various other advantages incident to its construction and mode of operation, as shall be more fully hereinafter set forth.

Referring to the drawings, 2 is the body of the car, provided with the usual door-opening 3 and provided at the top, above the opening, with a door-rail 4, upon which the door is hung at its upper portion. A similar door-rail 5 is secured upon the face of the car about half way down and to one side of the opening, both rails projecting out beyond the car in the usual manner and mounted upon securing studs or bolts. The upper rail 4 is inclined, as shown, leading inwardly toward the car at the front end—*i. e.*, the end toward which the door travels in closing. The object of this construction is to lead the door inwardly to a seat by the guiding-wheel bracket 6, secured to the top of the car and embracing the rail 4 by means of flanges 7 7 above and below. A wheel 8 is rotatably mounted in the bracket and bears on the rail to support the weight of the door, while the flanges 7 securely prevent the door from leaving the rail at any point. A similar sliding rail-bracket 9, provided with a wheel 8^a and flanges 7^a, engages the lower rail 5 in the same manner, the flanges 7^a effectually holding the bracket into engagement with the rail at all points of its length. This bracket is provided with a hinge-lug 10, having a bolt-opening 11, with an interior spline or key-cavity 12 located at one side to admit of insertion of the hinge-bolt when in register. The hinge-bolt 13 is provided with a lug 14 at its lower end adapted to register with said slot in one position and to prevent disengagement with the hinge-lug when turned round to operative position. The bolt 13 is connected by an integral cross-arm 15 with an elongated hinge-pintle 16, provided with bearing-flanges 17, mounted within the keeper 18, secured upon the door at its back edge, as shown.

The keeper is preferably made of two pieces, comprising an inner plate 19 and the outer cylindrical part 20, between which the pintle is embraced when secured in place by proper holding-bolts, as shown, a lateral clearance-slot for arm 15 being provided, as shown.

When thus mounted, as in Figs. 1 and 7, it will be seen that the door may be thrown outwardly bodily from the face of the car, swinging out upon the upper bracket-bearing 6 a distance limited by the length of the arm 15, as shown in Fig. 20. It will be understood that sufficient clearance is provided in bracket 6 around the rail 4 to admit of such movement, which thus opens the back edge of the door, leaving a vertical space corresponding to the throw of arm 15. This movement is necessary in first opening the door, releasing it from the jamb, so that it may be slid back, and is also of advantage in providing ventilation when desirable, as with shipments of fruit or other perishable goods.

For the purpose of locking the door securely in position I employ a rod 21, mounted in keepers 22, having interior annular recesses 23 for corresponding collars 24 on the shaft, thus allowing of rotation, but preventing end movement of the shaft. The front end of shaft 21 enters an interiorly-tapered socket 25, secured upon the side of the car, provided with an extended staple 26, adapted to be engaged by a hasp 27 of usual construction, secured at the other end to eye 28 of one of the rod-keepers 22. This hasp is provided with an extra staple-opening 27', so that when the door is slightly opened to admit ventilation said opening may be used to engage the staple 26 instead of the first opening of this hasp, as ordinarily used with the door closed, as shown. In such use the hasp 27 is sealed, as the other hasps will not be in engagement. By this means the door is locked or sealed against opening. At the other end the rod 21 is provided with a locking and manipulating lever 29, secured on the end of shaft 21 in any suitable way, as by squaring the shaft, the end of said lever being hooked, as shown at 30. A receiving-socket 31 is set into a countersunk recess in the face of the car, having a cavity 32 and a cross-bridge 33, adapted to receive and retain the hook 30, as indicated in dotted lines in Fig. 18, when the door is forced back into closed position. The lever 29 has a pivoted extension-arm 34, provided with a terminal staple 35 and adapted to swing laterally to locking or sealing position, as shown in Fig. 1, or to be straightened out, as in Figs. 14, 15, and 18, to constitute an extended operating-arm of greater leverage. By this construction upon engaging the bridge 33 by the hooked terminal 30 considerable pressure may be exerted inwardly upon the door to clamp it firmly down in position, and when the arm 34 is then deflected, as in Fig. 1, and locked the

lever 29 and hooked terminal will be retained against disengagement. Upon releasing arm 34 and straightening it the door may be pried open at its edge, the sliding hinge-joint 18 also swinging out at the same time and allowing the door to swing out to clear track 5, as shown in Fig. 20. The door may now be slid open, as in Fig. 5, being supported on tracks 4 and 5 and maintaining a positive holding engagement with said tracks at all times. By reason of these tracks being located at different heights and in different vertical planes the door is positively held in all positions. It cannot swing outwardly or become loosened, and thus avoids accidents frequently due to swinging or loose doors.

It will be observed that by reason of the location of the sliding brackets, they being diagonally arranged, the door is capable of adjusting itself to any sagging of the car, and it is therefore impossible to cause binding from such sources. When the door is closed, it is run in on inclined track 4 and fits in flush with the outer surface of the car and is forced in tightly by the rod entering tapered socket 25 and the lever 29 at the other end. Thus an absolutely tight joint is made and maintained, so that cars equipped with my improved doors can be used for transporting grain, ore, and other granular material. It will be observed that I avoid the necessity of a bottom track of any kind, thereby permitting the cutting off of the lower edge of the door at any time necessary to insure fitting.

The advantage of my invention will be appreciated by all those familiar with this class of devices. It is very efficient and strong, simple in construction, durable, and not liable to get out of order. Changes and variations may be made in the various details of construction by the skilled mechanic; but all such changes are to be considered as within the scope of the following claim.

What I claim is—

The combination with a car provided with a recessed socket having a retaining-bridge at one side of the door-opening, and a tapered socket at the other side thereof; of a shaft carried by the door and having one of its ends fitting in the socket when the door is closed; and a hooked lever on the opposite end of the shaft to engage under the retaining-bridge.

In testimony whereof I affix my signature in presence of two witnesses.

NEWTON F. ARBLE.

Witnesses:

JAS. J. McAFEE,
C. M. CLARKE.