

(No Model.)

W. O. HARLOW.
CAR DOOR.

No. 604,899.

Patented May 31, 1898.

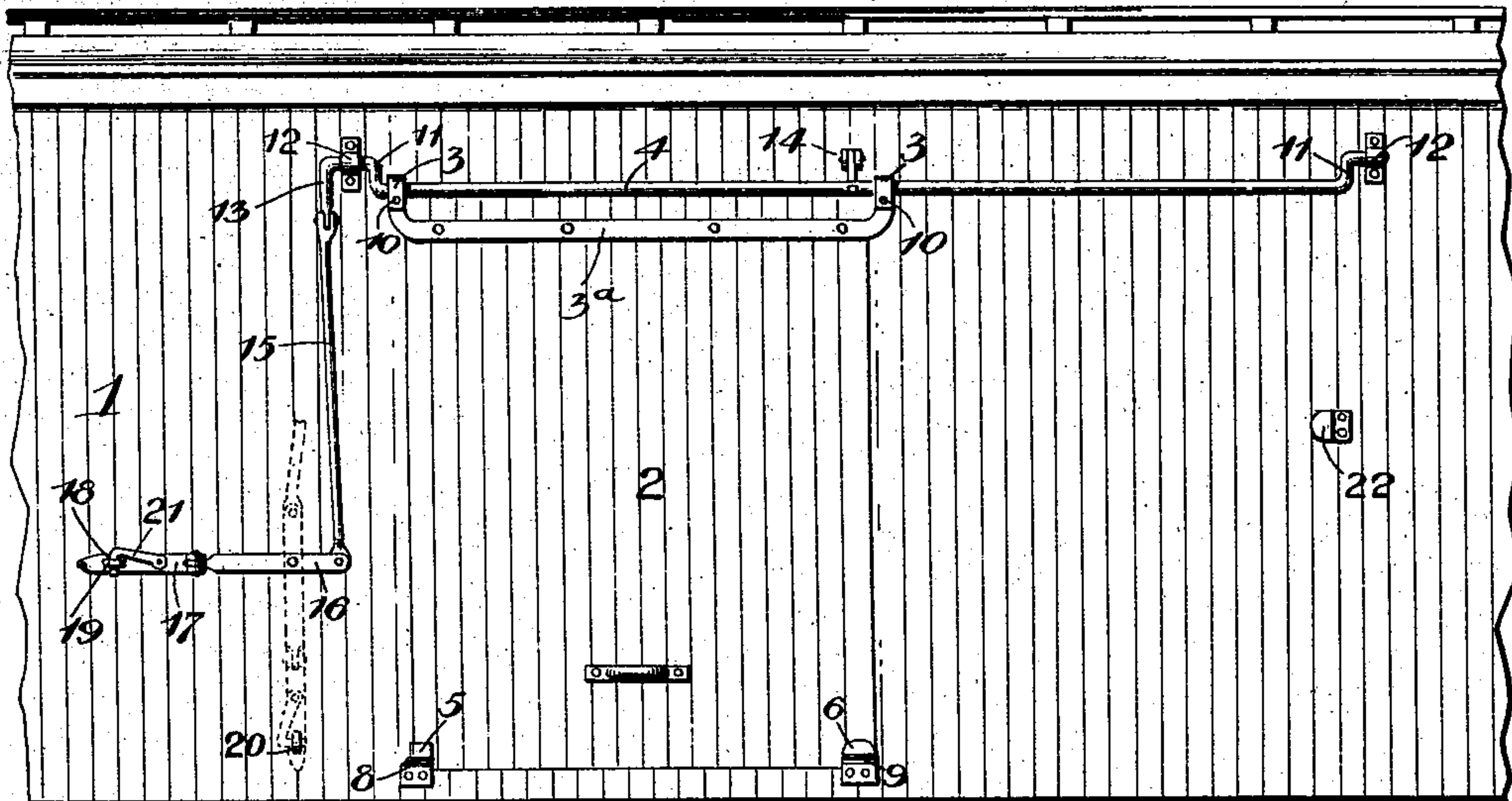


Fig. 1.

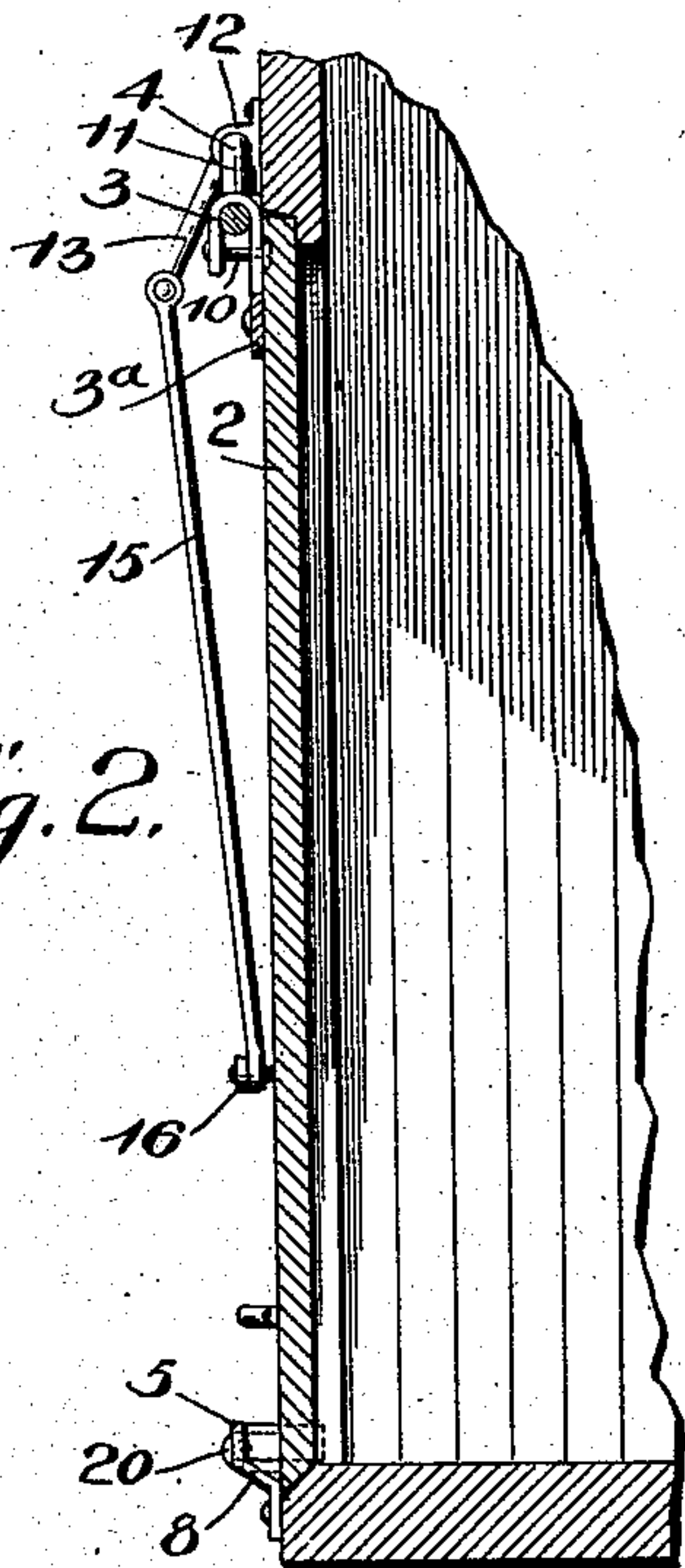


Fig. 2.

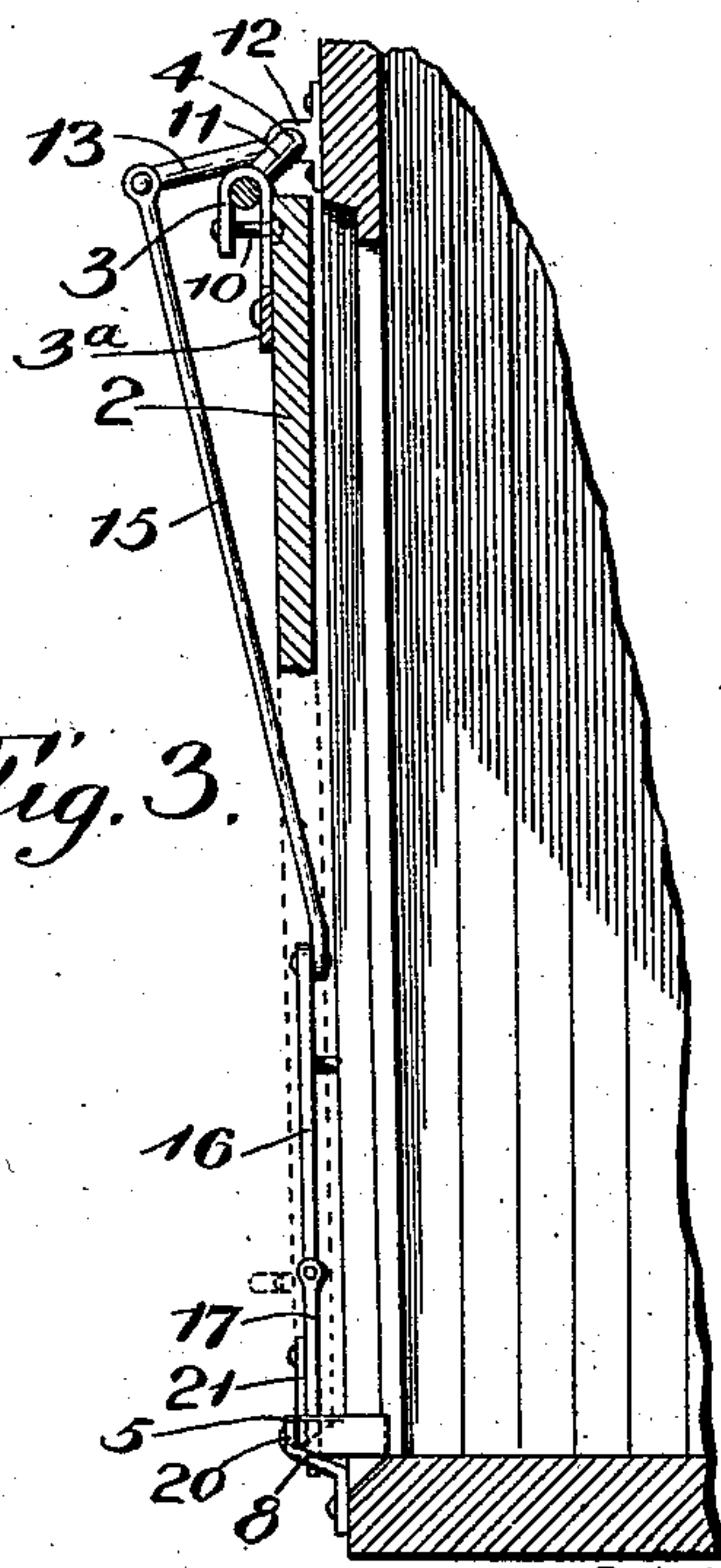


Fig. 3.

Inventor
William O. Harlow.

Witnesses

J. Kaufman

J. F. Riley

By His Attorneys,

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UNITED STATES PATENT OFFICE.

WILLIAM O. HARLOW, OF SHENANDOAH, VIRGINIA, ASSIGNOR OF ONE-HALF
TO L. A. LOHR, OF SAME PLACE.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 604,899, dated May 31, 1898.

Application filed September 20, 1897. Serial No. 652,285. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. HARLOW, a citizen of the United States, residing at Shenandoah, in the county of Page and State of Virginia, 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 and to provide simple, inexpensive, and efficient means for mounting car-doors on cars and for preventing them from being lost therefrom.

The invention consists in the construction and novel combination and arrangement of parts, as hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is an elevation of a portion of a car provided with a car-door constructed in accordance with this invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a similar view, the crank-shaft being rotated for swinging the door outward to permit the same to open.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

1 designates a car provided with a door-opening and having recesses at the edges of the opening to receive a car-door 2 and permit the same when closed to have its outer face flush with the outer face of the side of the car. The car-door 2, which is adapted to swing outward from the recesses of the door-opening, is provided with suitable hangers 3 and is suspended from a crank-shaft 4, which operates the door to swing it outward and to confine it in the said recesses. The door in closing moves downward and inward and its bottom is engaged by a pair of guides 5 and 6, located at opposite sides of the door-opening and having inclined supporting portions 8 and 9, adapted to receive the lower edge of the door when the same is swung outward. Each guide is composed of a lower inner vertical portion and an upper outer vertical portion, the lower terminal of which is connected by the inclined portion with the upper end of the inner vertical portion. The lower inner vertical portion engages the lower edge

of the door and confines the same in its closed position, and the upper outer vertical portion receives the lower edge of the door when the latter is lifted out of the recesses by the crank-shaft and is arranged for sliding, and the said upper portions of the guides guide the door in its sliding movement. The inclined connecting portions direct the lower edge of the door into the recess at the bottom of the door-opening of the car, so that the inward and outward swinging of the door by the crank-shaft is automatic. The hangers 3, which are formed integral with a horizontal bar 3^a, consist of upwardly-extending hook-shaped arms engaging the crank-shaft, which is confined in the hooks or hangers by bolts 10, located beneath the crank-shaft and locking the car-door against upward movement.

The crank-shaft 4 is provided at its ends with cranks 11, journaled in suitable bearings 12 and adapted to offset the body portion of the shaft from the side of the car to swing the door outward and permit the same to slide longitudinally of the shaft. The crank adjacent to the door-opening is provided with an arm 13, and the crank-shaft is supported between its ends by an arm or crank 14, forming a central hinge. The arm 13 is connected by a rod 15 with an operating-lever 16, fulcrumed between its ends on the car at one side of the door-opening and adapted to move the connecting-rod upward and downward to actuate the crank-shaft.

When the door is closed, the operating-lever, which is provided with a hinged section 17, is arranged in a horizontal position, as shown in Fig. 1 of the accompanying drawings, and it is adapted to be swung downward to a vertical position, as illustrated in dotted lines in Fig. 1 of the drawings, to release the door. The hinged section of the operating-lever is provided with a slot 18 and is adapted to be secured to staples or keepers 19 and 20 by a latch 21. The latch 21, which is L-shaped, is pivoted to the outer face of the hinged section of the lever and is arranged to engage the opening of the staples or keepers when the hinged section is disposed on the same.

The door is provided with a suitable handle, and its opening movement is limited by a stop 22 of the ordinary construction.

The invention has the following advantages: The operating mechanism for swinging the crank-shaft inward and outward serves as a lock for the car-door and is adapted
 5 to support the crank-shaft when the same is arranged to provide a track for the door, and it is also adapted to receive an ordinary car-seal. The door is securely held in its closed position, and it is impossible for it to become
 10 disconnected from the car and lost, and when the door is arranged for opening it perfect freedom of movement is afforded and the door cannot become clogged and refuse to open. The lower edge of the door is free in opening,
 15 and the guides, which support the door in opening, serve as stops to confine the bottom thereof when it is closed.

Changes in the form, proportion, and minor details of construction may be resorted to
 20 without departing from the spirit or sacrificing any of the advantages of this invention.

What I claim is—

1. The combination with a car having a door-opening, and a car-door, of a crank-shaft
 25 journaled on the car at the top of the door-opening and supporting the car-door and forming a track for the same, said crank-shaft being adapted to be rotated partially to swing the door into and out of the door-opening of
 30 the car, means for locking the crank-shaft against rotation, and guides mounted on the car at the bottom of the car-opening and provided with lower inner vertical portions to confine the door in its closed position, and

having outer upper vertical portions to re- 35
 ceive and guide the lower edge of the door when the latter is swung out of the door-opening, substantially as described.

2. The combination with a car having a door-opening, and a car-door, of a crank-shaft 40
 journaled on the car at the top of the door-opening and forming a track, said crank-shaft having the car-door slidably mounted on it and adapted to swing the same into and out
 45 of the door-opening, the guides mounted on the car at the bottom of the door-opening and composed of the lower inner vertical portions adapted to confine the door in its closed position, the outer upper vertical portions forming
 50 guides and receiving the bottom of the door when the latter is swung out of the door-opening, and the inclined connecting portions extending from the upper ends of the lower vertical portions to the lower ends of the outer
 55 vertical portions and adapted to guide the bottom of the door into the door-opening when the door is being closed, an operating-lever mounted on the car and connected with the crank-shaft, and means for locking the lever,
 60 substantially as described.

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

WILLIAM O. HARLOW.

Witnesses:

J. F. HEAZEL,

W. B. SPRINKEL.