J. P. CONRATH & P. KNIPPER.

Grain-Car Door.

No. 212,901 Patented Mar. 4, 1879.

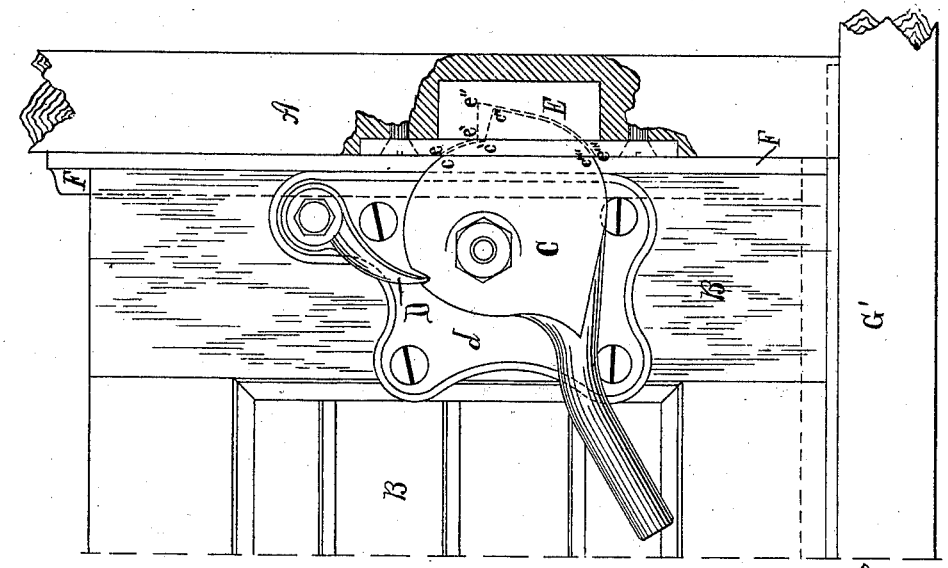

Fig. 3.

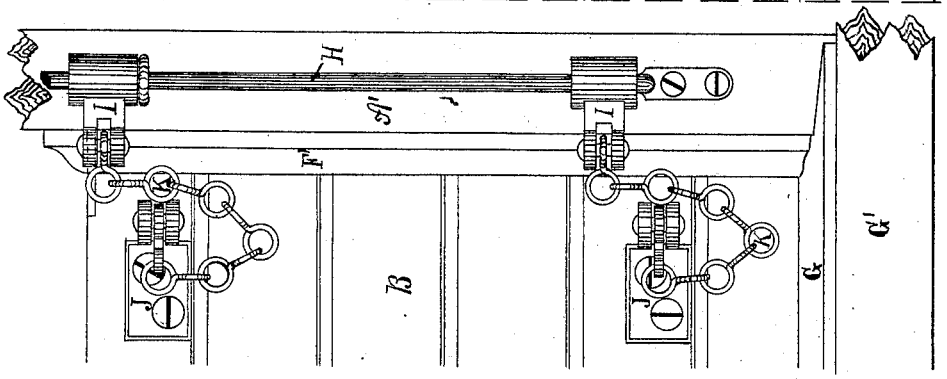

Fig. 2.

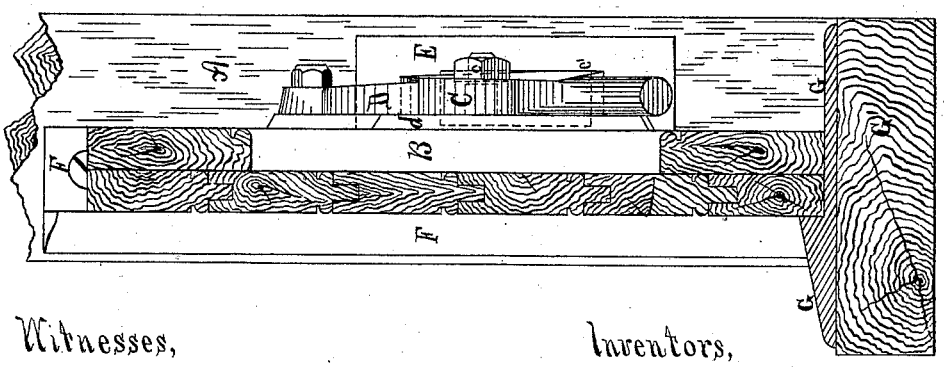

Fig. 1.

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UNITED STATES PATENT OFFICE.

JOSEPH P. CONRATH AND PETER KNIPPER, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN GRAIN-CAR DOORS.

Specification forming part of Letters Patent No. **212,901**, dated March 4, 1879; application filed October 28, 1878.

To all whom it may concern:

Be it known that we, JOSEPH P. CONRATH and PETER KNIPPER, of Erie, in the county of Erie and State of Pennsylvania, have invented a new and useful Grain-Door for Freight-Cars; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to grain-doors for railroad-cars; and consists in improved devices for fastening the same in place.

The object of our invention is to provide a grain-door with devices whereby it can be securely fastened in place before the car is filled with grain, and whereby it can be unfastened and removed from place while the grain is banked against it.

The precise nature of our invention will fully appear from the accompanying drawings, specification, and claims.

The accompanying drawings illustrate our invention, as follows: Figure 1 is a vertical section through the door transversely. Fig. 2 is an elevation of one end of the door and its post from the inside of the car. Fig. 3 is a similar view of the opposite end of the door from the outside.

The parts shown in front elevation in Fig. 3 are seen in side elevation in Fig. 1.

A A′ are the door-posts. G′ is the sill, and B is the door. The other parts will be mentioned and designated in the following general description.

When cars are loaded with grain, a grain-door is used which is no way connected with the outside door, which slides on guides, and in the drawings no part of this outside door is shown. The grain-door does not reach to the top of the opening, because the car is never filled full. A grain-door should fit in place tight, so no grain will escape. It should also be so fixed that it can be removed for unloading the car while the grain is banked against it, for by so doing the work of unloading is facilitated, as it avoids the necessity of shoveling out the banked grain.

On the posts A A′ of the opening we put jamb-plates F F′, and on the sill G′ we put a flange-plate, G. The jamb-plate F′ is in the form of a mortise, or rather it serves the purpose of a mortise, for it is double-flanged, and the end of the grain-door B sits between the two flanges. The other jamb-plate, F, has one flange, against which the door B abuts when in place, as it also does against the flange on the sill-plate G. These plates are permanently secured to the posts and sill by screws or otherwise. They may be made of wood or metal, preferably of metal.

The device for securing the door when in place is shown in Figs. 1 and 3. It consists of a latch or bolt, C, pivoted on a plate, *d*, which is screwed to the stile of the door, and of a mortise-block, E, set in the post A.

The latch C is a cam-plate with a handle, and is shown in Fig. 3 in the position it occupies when latched or set to lock the door. This device not only locks the door, but it firmly sets it against the jamb or flange plates.

In Fig. 3 the form of the mortise-block is shown at E, and by dotted line the form of the mortise is shown, and also the form and position of the engaging-latch. Thus the dotted line *c c′ c″ c‴* shows the form of the latch, and the dotted line *e e′ e″ e‴* shows the form of the mortise. As shown in this figure, the latch is set so it is shown as in contact with the back of the mortise; and it will be observed, by the form of the latch, that, as it acts against the back of the mortise, it will crowd the door against the opposite post, A′. The side of the latch from *c″* to *c‴* is wedge-shaped, so that as it enters the mortise it also crowds the door against the flange of the jamb F. When the latch is withdrawn from the mortise the door is free to be removed. There may be as many latches as desired on the door.

D is a pawl, which falls into a notch on the latch, and prevents it unlatching by the jarring of the car.

On the inside of the door, at the opposite end of the same, may be placed staples or other devices for attaching chains, as at J J, Fig. 2, and on the post A′ a rod, H, with slides I I, to which the chains K are attached. These chains hold the door when it drops out, and they allow it to be swung inside the car and hung up by the side of the door. This arrangement allows the doors to be handled as if not attached to the car, and still retains

them, and prevents them getting lost when not in use, for when the car is in use for other freights the grain-doors are not used.

We are aware that grain-doors have heretofore been made removable by unloosing certain fastening devices, as in the patent to S. E. Knott, No. 90,560, 1869; also patent to F. J. Kimball, July 13, 1875, No. 165,490. We do not desire to claim as our invention any of the devices therein shown, and we hereby disclaim the same.

Our invention relates wholly to the combination of devices by which we accomplish the object above named.

What we claim, therefore, as our invention is—

1. The combination, with the grain-door B of a freight-car, and the jambs F F′, of the latch device C E, having a curved and wedged form, by which, when set, the door is pressed against and retained within the jambs, and when released the door is free to drop out, as and for the purposes set forth.

2. A latch device for a car grain-door, composed of the plate *d*, latch C, with cam-shaped side *c c′ c″ c‴* and wedge-shaped face *c″ c‴*, and mortise E, with the formation *e e′ e″ e‴*, as described, and pawl D, as and for the purposes set forth.

3. A railroad-car grain-door which is adapted to sit within jambs F F′, and is provided at one side with a latch device for retaining the same in place within said jambs, in combination with the fastenings J J, chains K K, slides I I, and rod H, arranged at the opposite side of said door from the latch, as and for the purposes set forth.

In testimony whereof we, the said JOSEPH P. CONRATH and PETER KNIPPER, have hereunto set our hands.

JOSEPH P. CONRATH.
PETER KNIPPER.

Witnesses:
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