No. 756,654. PATENTED APR. 5, 1904.

J. G. KING.

GRAIN CAR DOOR.

APPLICATION FILED MAR. 30, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

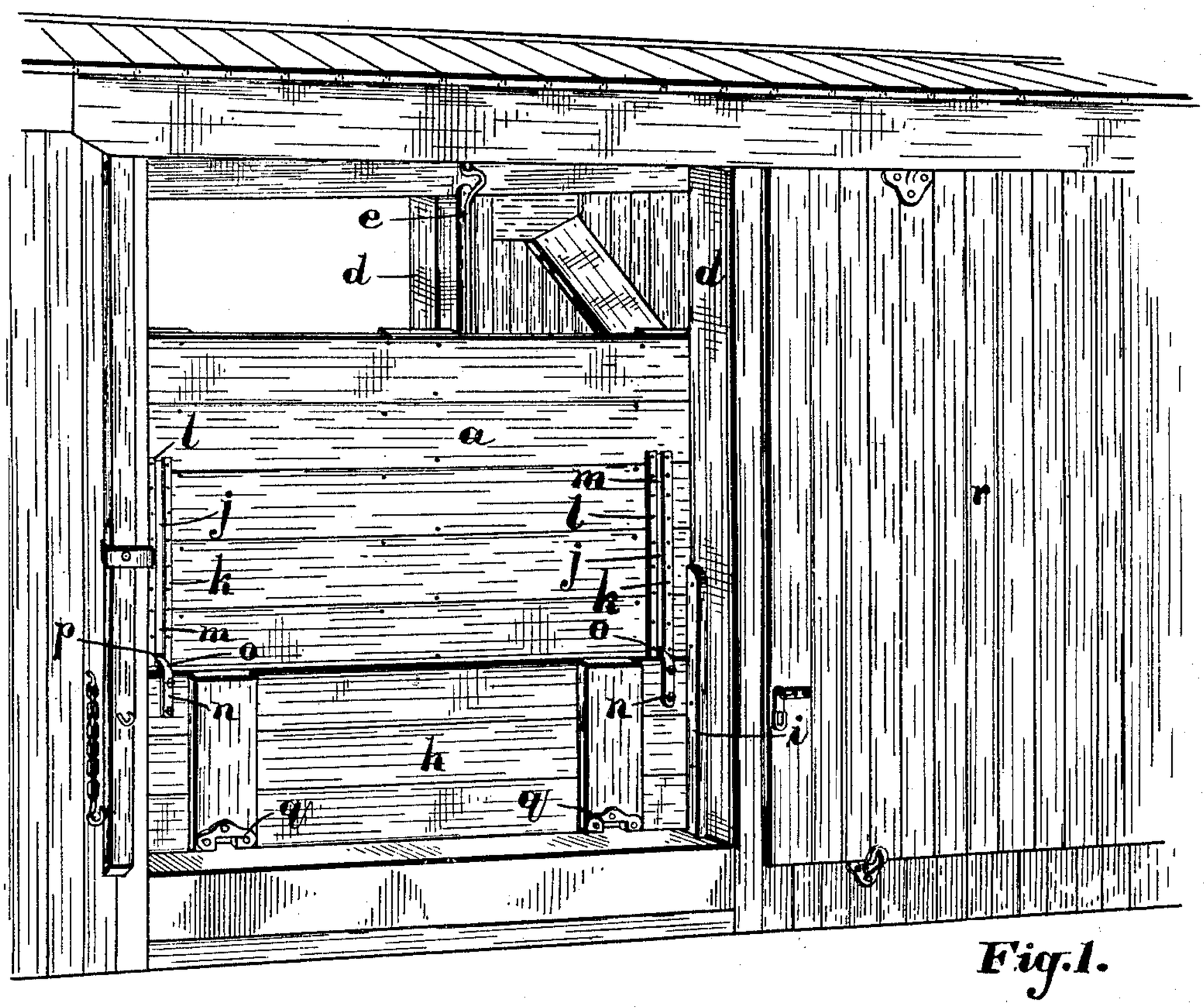

Fig. 1.

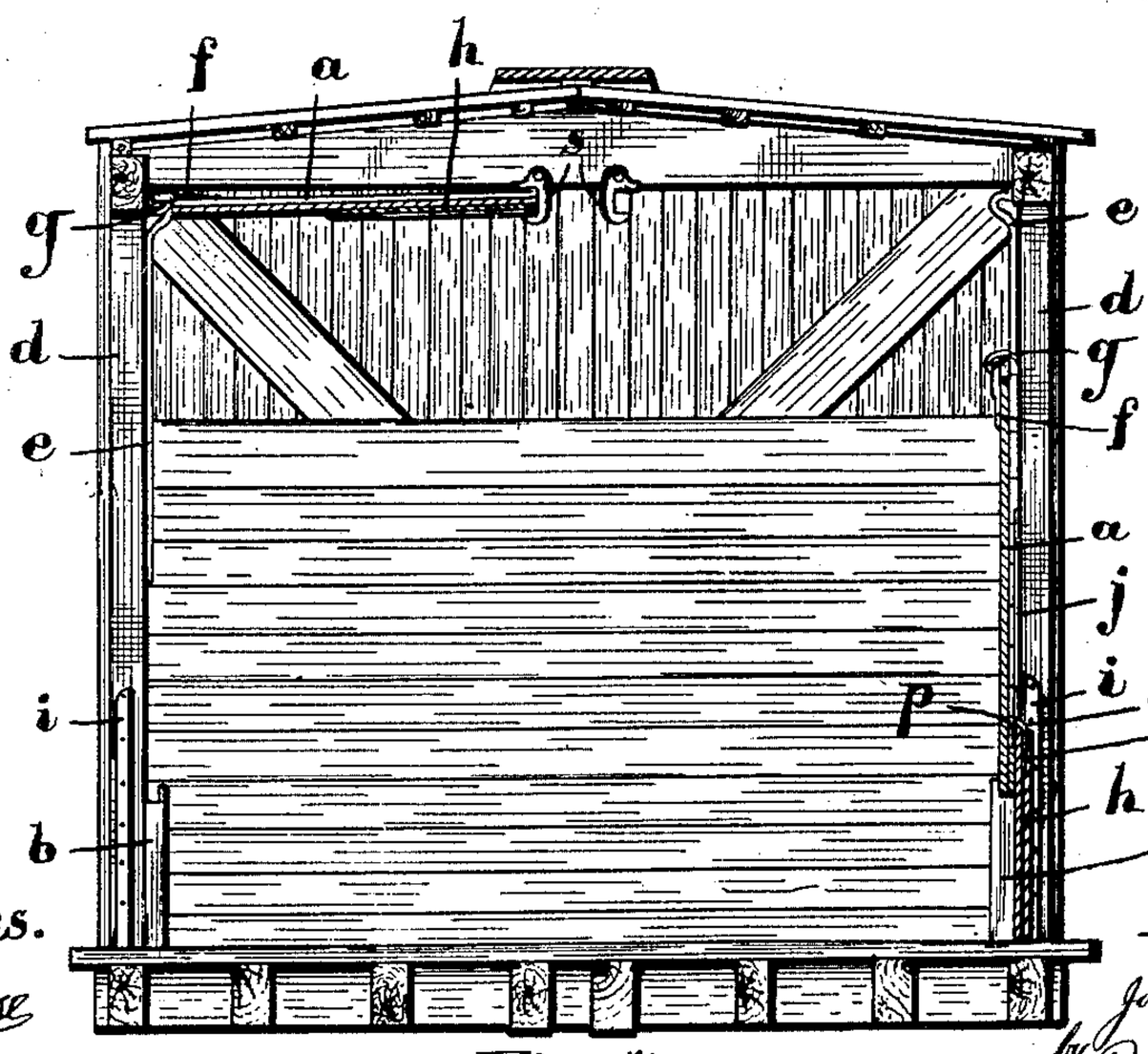

Fig. 3.

Witnesses.

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NO MODEL. 2 SHEETS—SHEET 2.

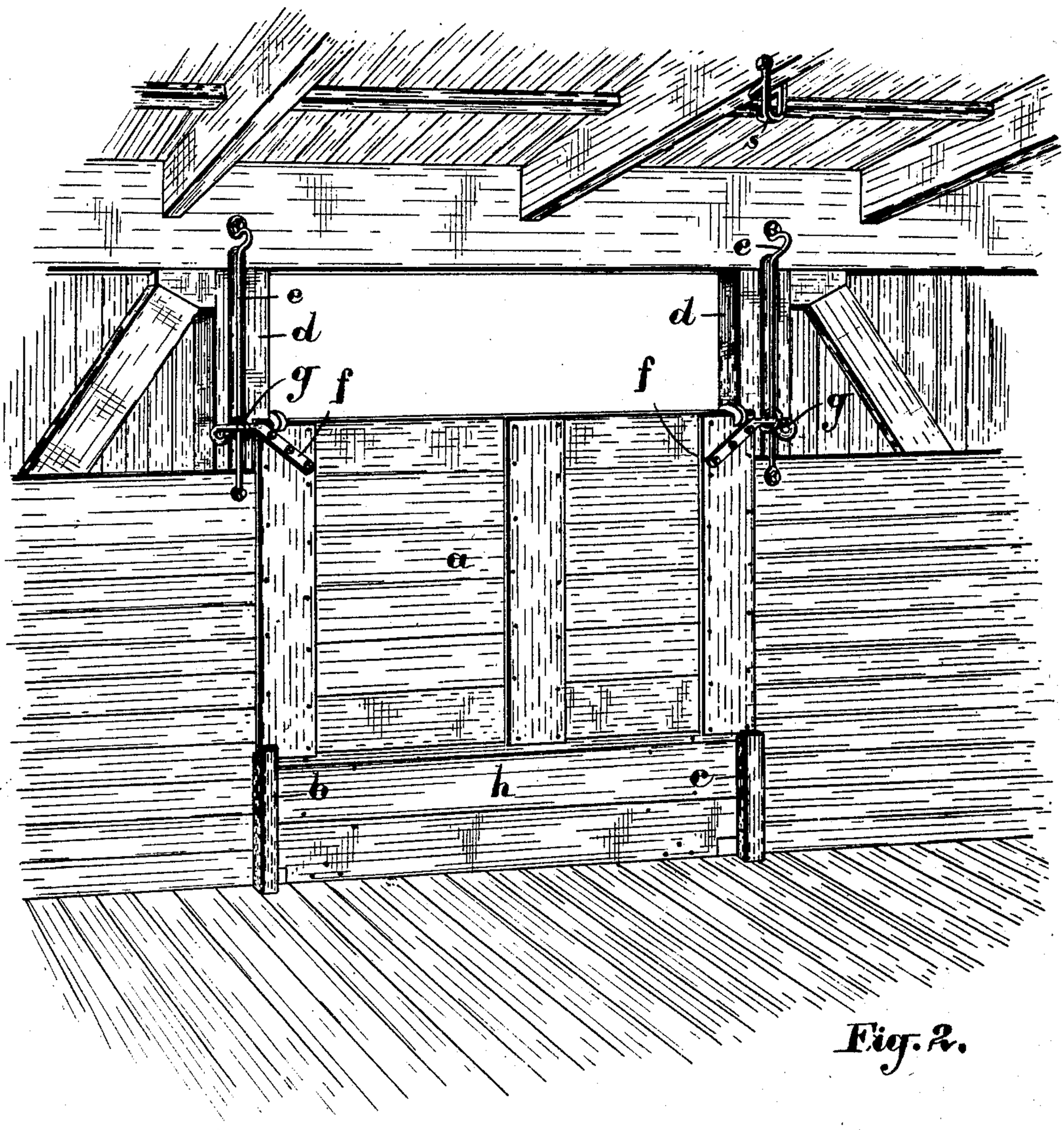

Fig. 2.

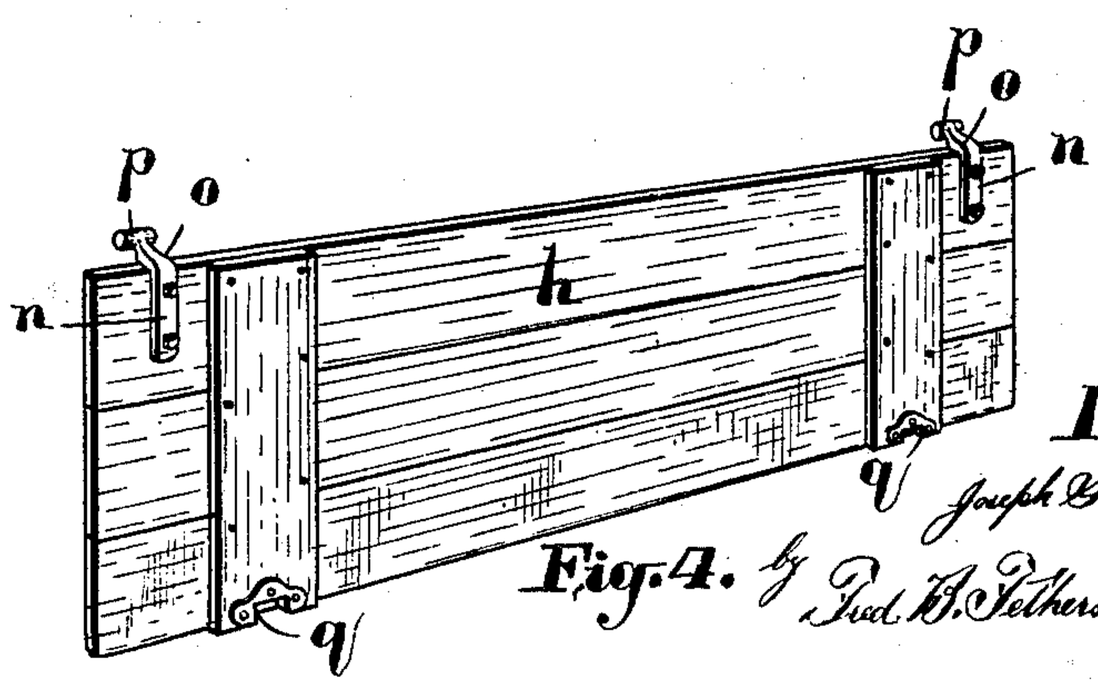

Fig. 4.

Witnesses.

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No. 756,654. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

JOSEPH GOODWIN KING, OF PORT ARTHUR, CANADA.

GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 756,654, dated April 5, 1904.

Application filed March 30, 1903. Serial No. 150,210. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH GOODWIN KING, a subject of the King of Great Britain, residing at Port Arthur, in the district of Algoma, Province of Ontario, Canada, have invented certain new and useful Improvements in Grain-Car Doors, of which the following is a specification.

My invention relates to improvements in grain-car doors; and the object of the invention is to provide a door in which the strength of the structure will be much increased at the point of greatest pressure, thereby overcoming the jamming or breaking of the door, and whereby the operation of unloading the car will be much facilitated; and it consists, essentially, of an upper door suspended or supported at the doorway and abutting upright posts at the side thereof and a lower door designed to overlap the upper door from the outside and sliding in suitable guides, the various parts being constructed and arranged in detail, as hereinafter more particularly described.

Figure 1 is a perspective view of my grain-doors in position from the outside. Fig. 2 is a perspective view of my grain-doors in position from the inside. Fig. 3 is a section through the car, showing on one side my doors in closed position and on the other side fastened to the top of the car. Fig. 4 is a perspective detail of the lower door.

Like letters of reference indicate corresponding parts in each figure.

a is the upper door, which is here shown as standing on the supplemental posts *b* and *c* and is capable of a vertical sliding movement and also a swinging movement.

d represents the door-posts.

e represents upright rods attached to the posts *d* and standing out from the said posts.

f represents irons projecting from the top corners of the upper door *a* and connected to the rods *e* by the rings *g*.

h is the lower door, designed to fill up the space in the doorway between the lower edge of the upper door *a* and the floor of the car and to overlap on the outside the lower end of the upper door.

i represents guides designed to permit the lower door to be moved upwardly and downwardly and at the same time to hold it securely against the upper door at the outside.

j represents elongated vertical slots in the door *a* partially covered in by the iron strips *k* and *l*, leaving the openings *m*.

n represents irons fastened to the door *h*, having the inwardly-projecting arms *o*, provided with T-shaped ends *p*. The ends *p* are designed to fit into the slots *j* and to be held therein by the iron strips *k* and *l*. This will allow the door *h* to slide upwardly and downwardly and yet be held firmly to the door *a*.

It must be understood that, while I describe herein a particular method of securing the lower door *h*, without departing from the spirit of my invention I can adopt many ways of securing this door either to the car-body, to the door *a*, or, if desirable, let it remain loose when removed from its position behind the guides *i*.

q represents iron sockets in the lower edge of the door *h*.

r is the ordinary car-door, designed to slide across the grain-doors when the car is in transit.

s is a hook by which the doors are fastened to the ceiling when not in use.

In order to more clearly explain the uses and advantages of my device, I shall describe fully the manner of opening and closing. When the car is to be used for the transport of grain, the upper door is let down from the ceiling of the car, where it has been hooked, and allowed to slide down on the upright rods until the lower edge reaches the corner supplemental posts *b* and *c*. This leaves an open space between the door-sill and the lower edge of the upper door. The lower door *h* is then inserted behind the guides *i*, which hold it securely against the front of the upper door *a* when there is pressure from behind on the said upper door. The lower door will readily slide into position when such pressure is relieved and will overlap on the outside the lower end of the upper door considerably and at its lower edge rest squarely against the door-sill. The car is now loaded with grain, and as the

said grain flows against the upper door the pressure firmly holds the upper door to the lower door. The advantages of having this lower door are manifest to those accustomed to the loading and unloading of grain-cars, for the reason that in many cases it will be found that where a single door is used the great pressure from within frequently breaks down the door, and where the actual breakdown does not occur the door is often jammed and very difficult to pry open. This is completely overcome in my arrangement of doors, for the pressure on the upper door is relieved by the reinforcement from the outside in the overlapping of the lower door, thus largely increasing the strength of the structure.

The facility with which the unloading may be accomplished is apparent, for by the insertion of a crowbar or other suitable prying instrument the lower door may easily be raised and, if necessary, entirely removed to allow the grain to flow.

In the construction herein described, and shown in the drawings, the lower door *h* will be held to the upper door *a*, and in this way both can be drawn up to the top of the car and held by the hook *s*.

What I claim as my invention is—

1. In a grain-car door, the combination with the door-frame having slides at the outer edge thereof, of a lower door-section introduced into the said slides, an upper door-section having a swinging and vertically-sliding movement and overlapping the upper portion of the lower door-section, and supported by suitable posts therebeneath, as and for the purpose specified.

2. In a grain-car door the combination with the door-frame having guides of a lower door-section suitably mounted to slide vertically in said guides, an upper door-section supported to have sliding and swinging movement and adapted when in closed position to overlap the upper edge of the lower door-section, and a sliding connection between the upper edge of the lower section and the upper section, substantially as described.

3. In a grain-car door the combination with the door-frame, of a lower door-section, an upper section mounted to have vertical sliding and swinging movement, said upper section overlapping the upper edge of the lower section, guides for the lower door-section, guides on the face of the upper section, and projections from the lower section having a sliding and swinging engagement with said guides, substantially as described.

4. In a device of the class described, in combination, a car-body having a suitable doorway and upright posts at the sides thereof, an upper door slidably attached at its top corners to upright rods at the upper portion of the door-opening, supplemental posts designed to support the said upper door above the sill of the doorway, a lower door designed to overlap the lower end of the upper door on the outside, and suitable guides designed to hold the lower door securely against the upper door, as and for the purpose specified.

5. In a device of the class described, in combination, a car-body having a suitable doorway and upright posts at the sides thereof, an upper door slidably attached at its top corners to upright rods at the upper portion of the door-opening, supplemental posts designed to support the said upper door above the sill of the doorway, a lower door designed to overlap the lower end of the upper door on the outside, suitable guides designed to hold the lower door securely against the upper door, and means for securing the lower door when in its open position, as and for the purpose specified.

Signed at Port Arthur, in the district of Algoma, in the Province of Ontario, Canada, this 16th day of March, 1903.

JOSEPH GOODWIN KING.

Witnesses:
W. F. LANGWORTHY,
THOMAS H. FISHER.