(No Model.) 2 Sheets—Sheet 1.

J. R. SPRAGUE.

GRAIN DOOR FOR FREIGHT CARS.

No. 257,099. Patented Apr. 25, 1882.

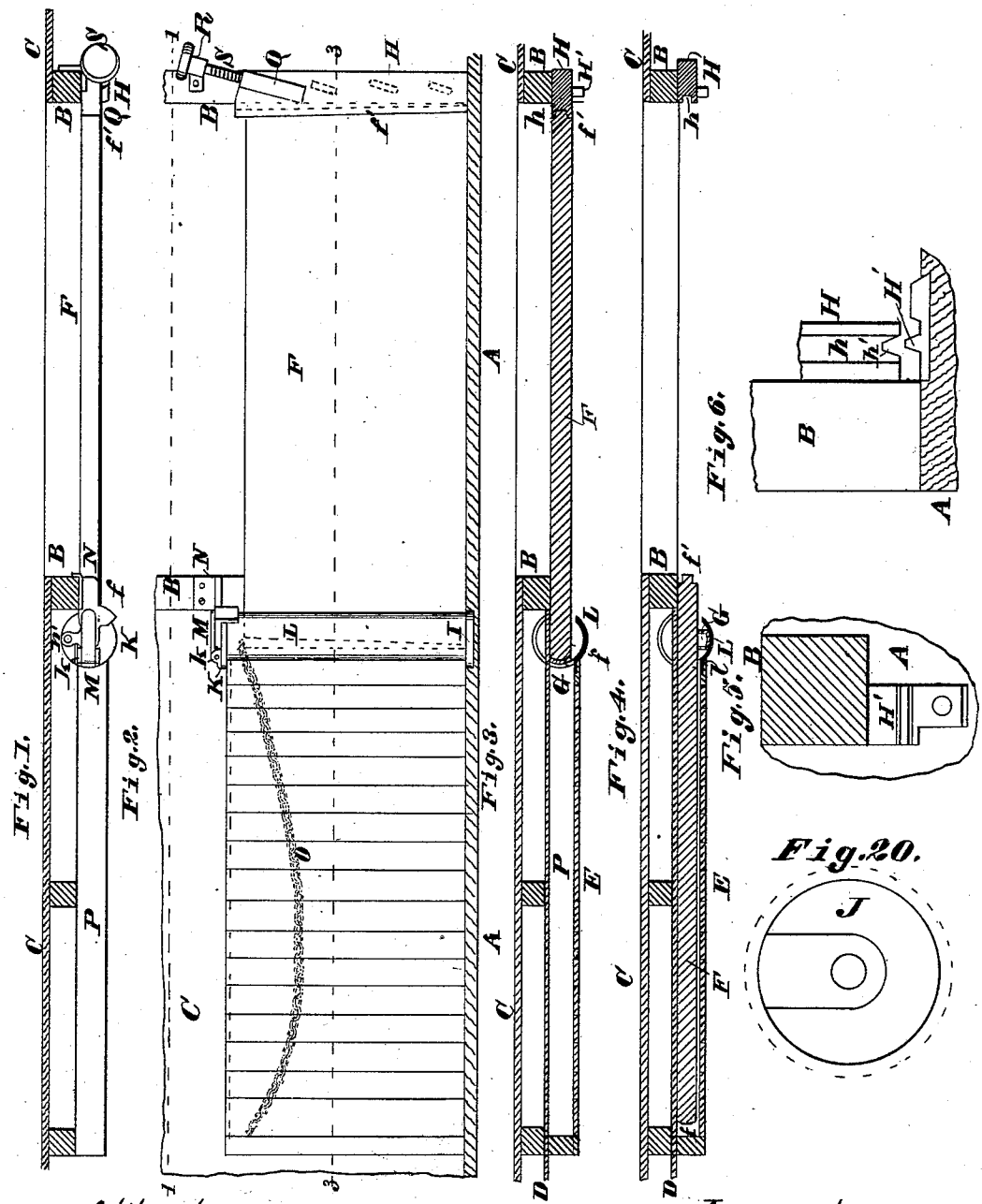

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 6.

Fig. 5.

Fig. 20.

Attest:
Charles Pickles
Geo. H. Knight.

Inventor:
Jacob R. Sprague
By Knight Bros.
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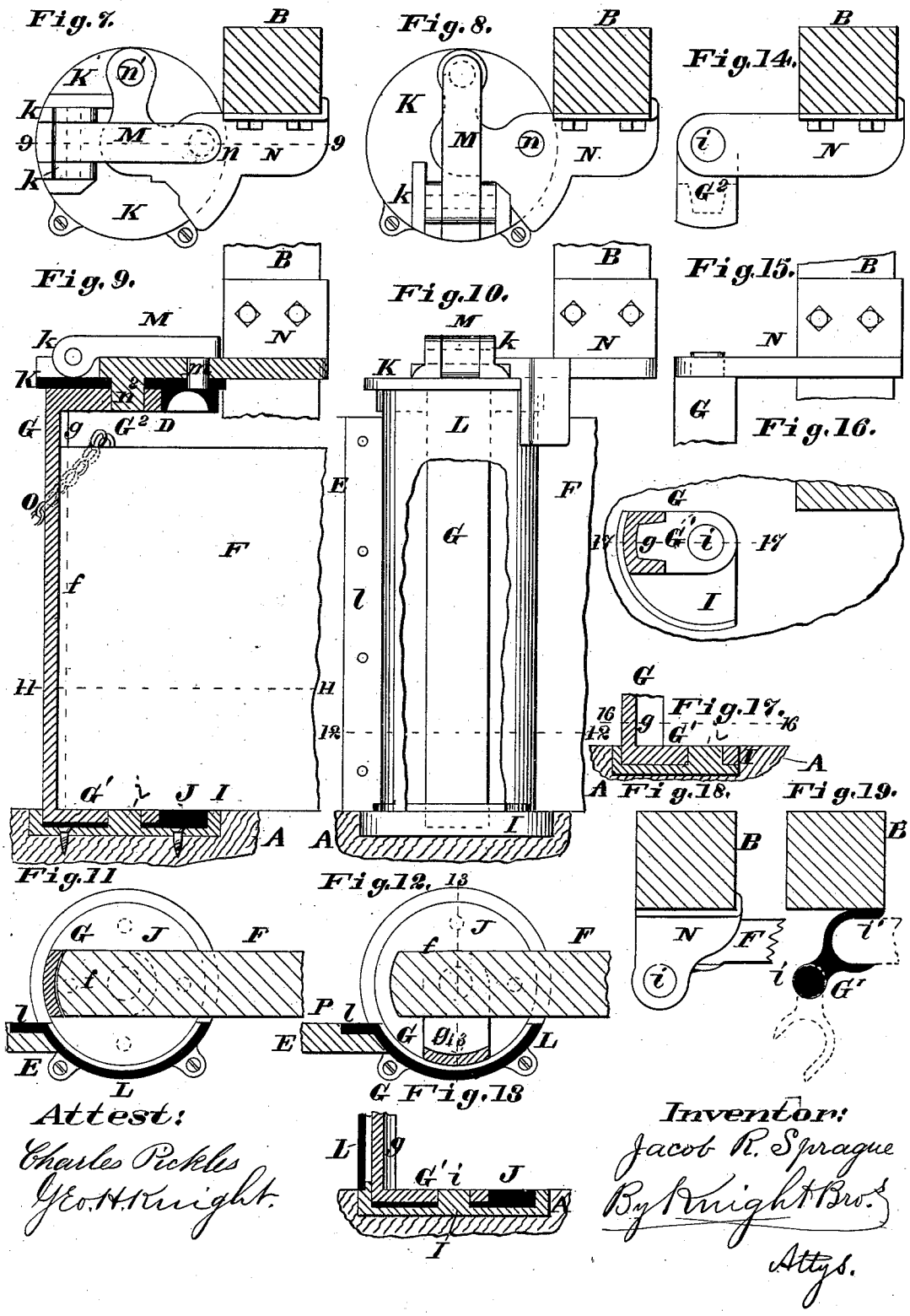

UNITED STATES PATENT OFFICE.

JACOB R. SPRAGUE, OF ST. LOUIS, MISSOURI.

GRAIN-DOOR FOR FREIGHT-CARS.

SPECIFICATION forming part of Letters Patent No. 257,099, dated April 25, 1882.

Application filed December 29, 1881. (No model.)

To all whom it may concern:

Be it known that I, JACOB R. SPRAGUE, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Grain-Doors for Railway Freight-Cars, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention is in some respects an improvement on my Patent No. 244,941, dated July 26, 1881.

In the drawings, Figure 1 is a horizontal section through the door-posts and part of the side of a freight-car at 1 1, Fig. 2. Fig. 2 is a side view of the door in place and an inside view of part of the wall of the car. Fig. 3 is a horizontal section at 3 3, Fig. 2. Fig. 4 is a horizontal section at 3 3, Fig. 2, except that the door is shown within the pocket. Fig. 5 is an enlarged top view of the tongue closing the aperture between the floor and the lower end of the locking-cleat when they are not in close contact. Fig. 6 is a detail elevation, showing an end view of the tongue with the lower part of the locking-cleat, the latter being in its elevated position. Fig. 7 is a top view of the case containing or protecting the hinged or pivoted cleat by which one end of the door is held. The cleat in this view is in position to hold the door in place. Fig. 8 is a similar view to Fig. 7, except that the hinged cleat is in position to allow the door to slide back into the pocket. Fig. 9 is a vertical section at 9 9, Fig. 7. Fig. 10 is a side view of the metal casing covering the cleat with part of the casing broken out to show the cleat, the latter being in the position shown in Fig. 8. Fig. 11 is a horizontal section at 11 11, Fig. 9. Fig. 12 is a horizontal section at 12 12, Fig. 10. Fig. 13 is a detail vertical section at 13 13, Fig. 12. Fig. 14 is a top view of a modification of the pivoted cleat, the cleat being shown turned outward to allow the door to be slid into the pocket. Fig. 15 is a detail side view of the upper pivotal hinge of the cleat as shown in Fig. 14. Fig. 16 is a horizontal section at 16 16, Fig. 17. Fig. 17 is a vertical section at 17 17, Fig. 16. Fig. 18 is a top view of another modification, and Fig. 19 is a horizontal section through the same. Fig. 20 is a top view of the step-block.

A is a car-floor and door-sill; B, the side posts, and C the side wall, of a car.

D is the ordinary inside casing.

E is a casing set a sufficient distance from the lining D to form between them a pocket, P, for the reception of the door F when it is not in use. (See Fig. 4.) The pocket is open at the end next the post, and at this place is the pivoted cleat or holder G, channeled at *g* to receive the end *f* of the door. I prefer to make my door somewhat longer at the bottom than at the top, with the ends inclined, as described in my patent above referred to, and for the same reason, but do not confine myself to this form of construction.

I will first describe my invention as shown in Figs. 1 to 13, inclusive.

The ends of the door F may be rounded or rabbeted, as shown, or may be beveled or square or otherwise formed. The ends are in any case made to fit the channels *g* and *h* of the cleats G and H. I is a step-plate let into the floor A and secured thereto by screws or otherwise.

J is a step block-turning in a recess of the step I and recessed to receive the lower end, G′, of the cleat G, said lower end being turned in a horizontal direction and bored to fit the central pivot, *i*, of the step-plate. The pivot *i* is not essential, as the block J has circumferential bearing in the plate I. At the upper end the cleat G has a lug, G^2, similar to that G′, and fitting in a turn-block, K, which forms the cap or top of the fixed metal casing L. Said casing is fixed to the car-floor and to the pocket-casing E—to the latter by means of flange *l* and to the former by lugs. The casing L is a post supporting the upper end of the turning cleat G and forming the outer edge of the pocket-casing E. Its preferred construction is clearly shown in Figs. 2, 3, 10, 11, and 12, in Figs. 3, 11, and 12 of which it is shown concavo-convex in horizontal section.

The door should not fit the casing so tightly that it cannot swing to some extent in either direction, especially outward, when the free edge is relieved from the locking-cleat H. It is not necessary for the door to swing much to allow its edge to be drawn from the channel in the turning cleat so that the cleat can be swung around and the door slid into its pocket behind the casing.

Upon the turning cap K are lugs *k*, to which is hinged the lever M, that is used to turn the cap and with it the cleat. The lever M has at

the under side a stud or pin, *m*, which may be made to engage in either of the holes *n n'* of the bracket N to hold the cleat G in either position. The cap or bracket has a pin, n^2, engaging in the other member or that on which the cap K turns. The bracket N is attached to the post B.

The pin n^2 may be either in the cap or bracket, and whichever it is fixed to it engages in the other one. Thus, if the pin is fast upon the cap it engages in the bracket, and vice versa. It is quite immaterial which the pin is fast to. The point is that the bracket and cap are hinged together.

O is a chain connecting the door to the inner end of the pocket P, so as to prevent the removal of the door from the car.

The side of the cleat G may be recessed at one side for the passage of the chain when the cleat is in position shown in Figs. 2, 9.

The locking-cleat H is shown similar to that in my patent aforesaid, (to which I refer for description of construction and operation,) except that the lower end of the cleat has a groove, *h'*, receiving, when the cleat is in the lower position, a tongue, H', extending upward from the floor of the car. The purpose of this construction is to close any aperture that might otherwise be beneath the bottom of the cleat and render it unnecessary that the lower end of the cleat should be in contact with the floor.

It will be seen that the end *f'* of the door F does not lap past the corner of the side post, B, and the cleat H is made to advance beyond the face of the post to engage the end of the door, and for this reason the lower end of the cleat should be arranged to make a grain-tight connection with the floor.

In the modification shown in Figs. 14, 15, 16, and 17 the metal casing L is dispensed with.

The cleat G may consist of a simple bar of channel-iron, (cast of wrought,) made with lugs G' and G^2, projecting horizontally from the channel side and pivoted to the floor and to a bracket, N, attached to the door-post. The pivot-pin may be in one piece with either the lugs or the floor-plate and bracket, and engage in a socket in the other member or one of the two members of the hinge, or may be in the form of a detached pintle. The cleat G stands at the mouth of the pocket P, and when it is swung outward from the wall of the car the door can be slid back between the cleat and the door-post. The different positions of the cleat are shown in Figs. 14, 15 and 16, 17, respectively.

In Figs. 18 and 19 is shown a modification in which the cleat consists of a channel-bar whose channel or recess *g* receives the end of the door. (See Fig. 18.)

The cleat has a stiffening-rib, G', at the back, ending at top and bottom in similar pivots, one of which turns in bearing in the floor and the other one of which is shown at *i*, having bearing in the bracket N, attached to the post B.

It will be seen that the endwise pressure of the door will hold the cleat firmly against the inner face of the post B. When the edge of the door has been withdrawn from the cleat the latter can be turned outward on its pivots into the position indicated by dotted lines in Fig. 19, leaving space between the cleat and the post, in which the door can be slipped back out of the way. The injurious practice of securing the door by nails driven through it into the post is prevented by this cleat, as the lip *i'* is interposed between the door and the post.

The operation is as follows: Suppose the door to be locked in place, as shown in Figs. 1, 2, 3, and 11. To open the door the sliding cleat H is raised and moved to the right by means of the screw S, turning in the ear R, and the screw-socket Q. This frees the end *f'* of the door, so that this end can be swung either inward or outward, the hinged cleat turning freely on its pivots and allowing this movement, without drawing the end from channel *g*. Then the free end of the locking-lever M may be lifted, withdrawing the pin *m* from hole *n*, and the lever may be used to turn the head K and cleat G into the position shown in Figs. 4, 8, and 13, and the lever swung over to engage the pin *m* in the hole *n'*. The door may then be slid into the pocket P, and will be out of the way of damage.

I claim as my invention.

1. The pivoted cleat or holder, in combination with a grain-car door adapted to swing laterally, the said cleat or holder in one position holding one end of the door and in the other position permitting the door to slide past it, as set forth.

2. The pivoted cleat G, having channel *g* and adapted to turn on a vertical axis, in combination with a grain-car door, as set forth.

3. The combination, with the pivoted cleat G, of the lever M, hinged thereto, and adapted to lock the cleat either in engagement or out of engagement with the door, as set forth.

4. The combination of a grain-door, F, pivoted cleat G, and casing L, covering the cleat.

5. The combination of pivoted cleat G and step plate or block I, let flush into the floor, and constructed to give bearing to the lower end of the cleat.

6. The combination of the car-door F, pocket P, and pivoted cleat G, adapted to open and close the pocket, as set forth.

7. The combination of the locking-cleat H, having recess *h'* and inclined movement, and the tongue H', adapted to enter said recess, as set forth.

JACOB R. SPRAGUE.

Witnesses:
SAML. KNIGHT,
GEO. H. KNIGHT.