(No Model.) 3 Sheets—Sheet 1.

C. A. DAVIS.

RAILWAY CAR.

No. 370,859. Patented Oct. 4, 1887.

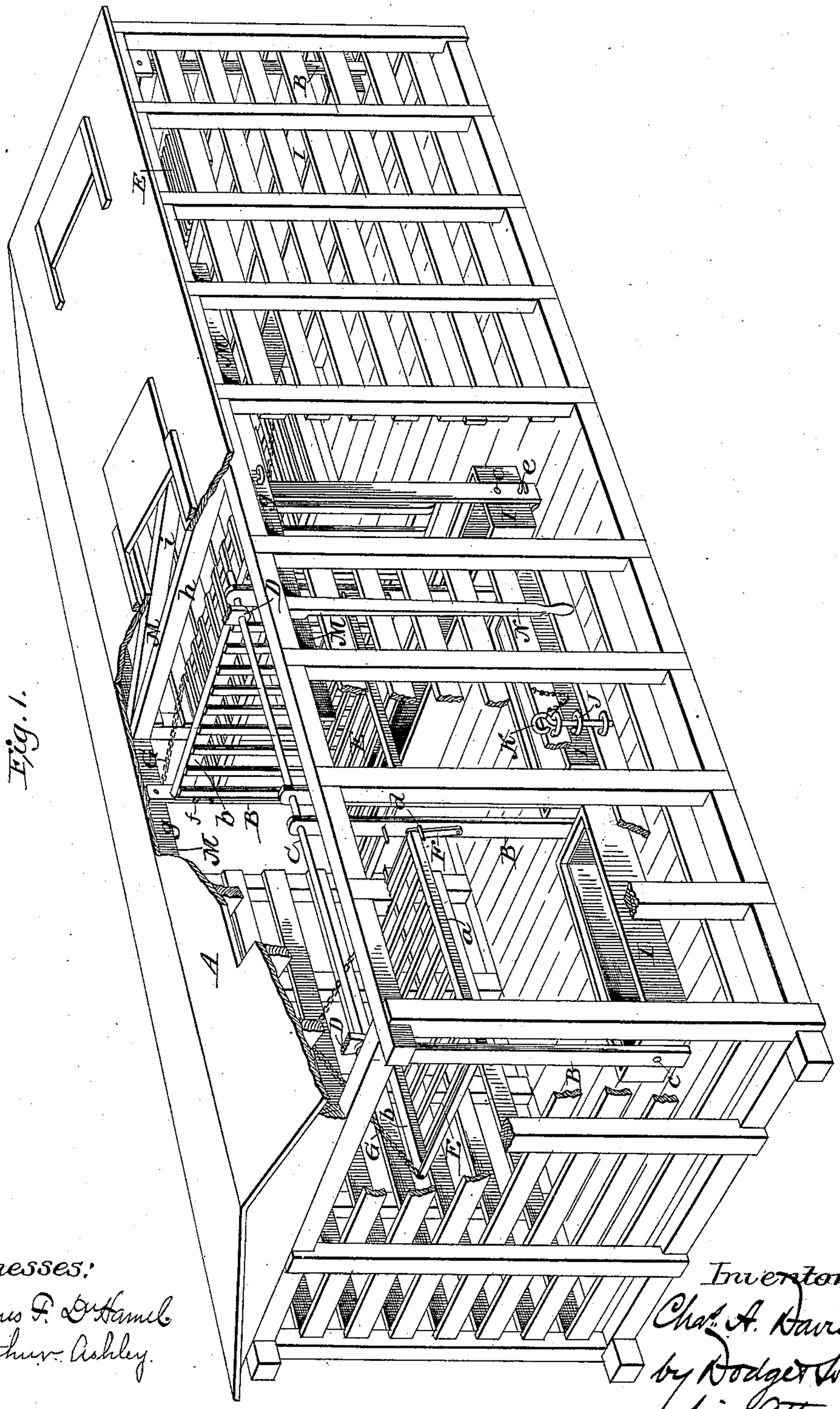


Fig. 1.

Witnesses:
James F. Duhamel
Arthur Ashley.

Inventor:
Chas. A. Davis,
by Dodger Sons,
his Attys.

(No Model.)

3 Sheets—Sheet 2.

C. A. DAVIS.

RAILWAY CAR.

No. 370,859. Patented Oct. 4, 1887.

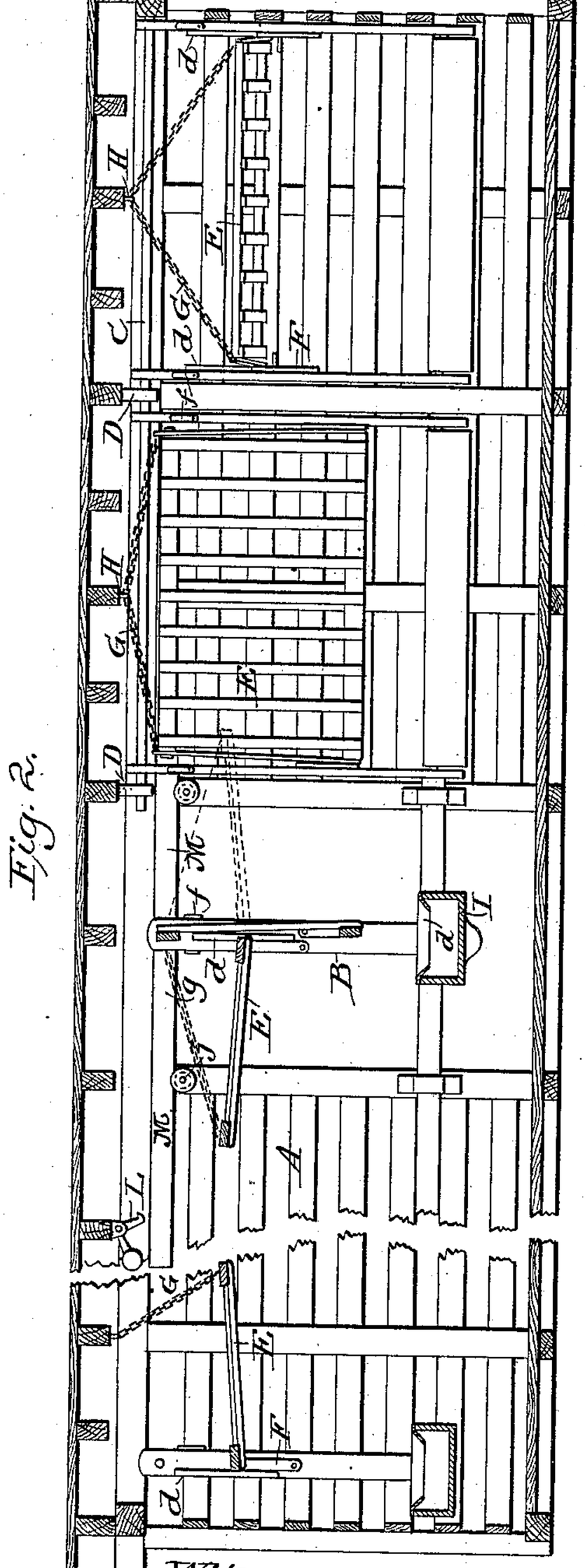


Fig. 2.

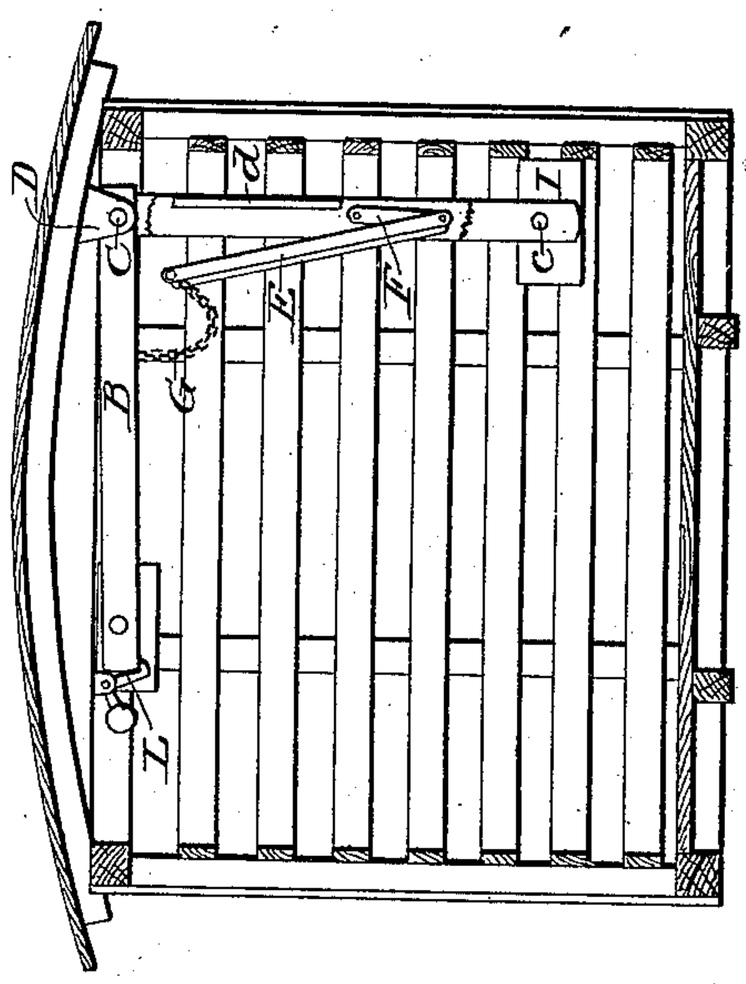


Fig. 4.

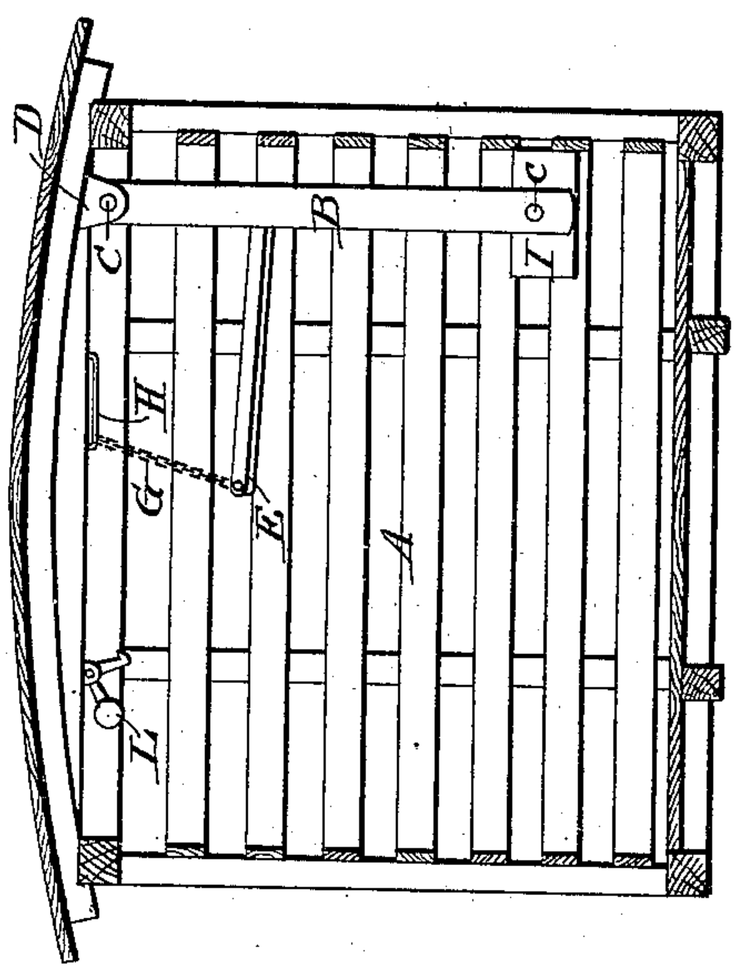


Fig. 3.

Witnesses:
James F. DuHamel.
Arthur Ashley.

Inventor,
Charles A. Davis,
by Dodger Sons,
his Attys.

(No Model.)

3 Sheets—Sheet 3.

C. A. DAVIS.

RAILWAY CAR.

No. 370,859. Patented Oct. 4, 1887.

Fig. 5.

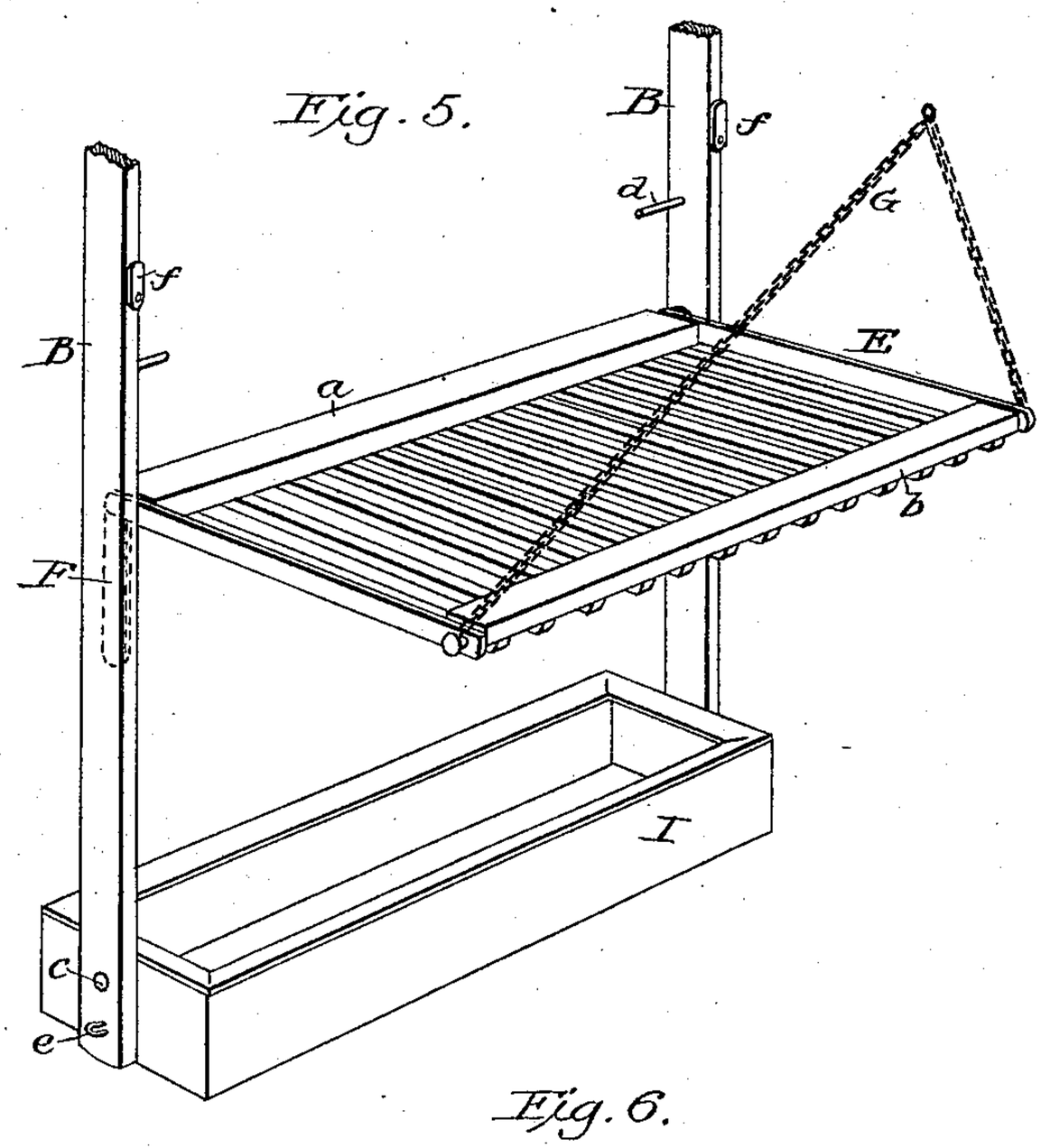
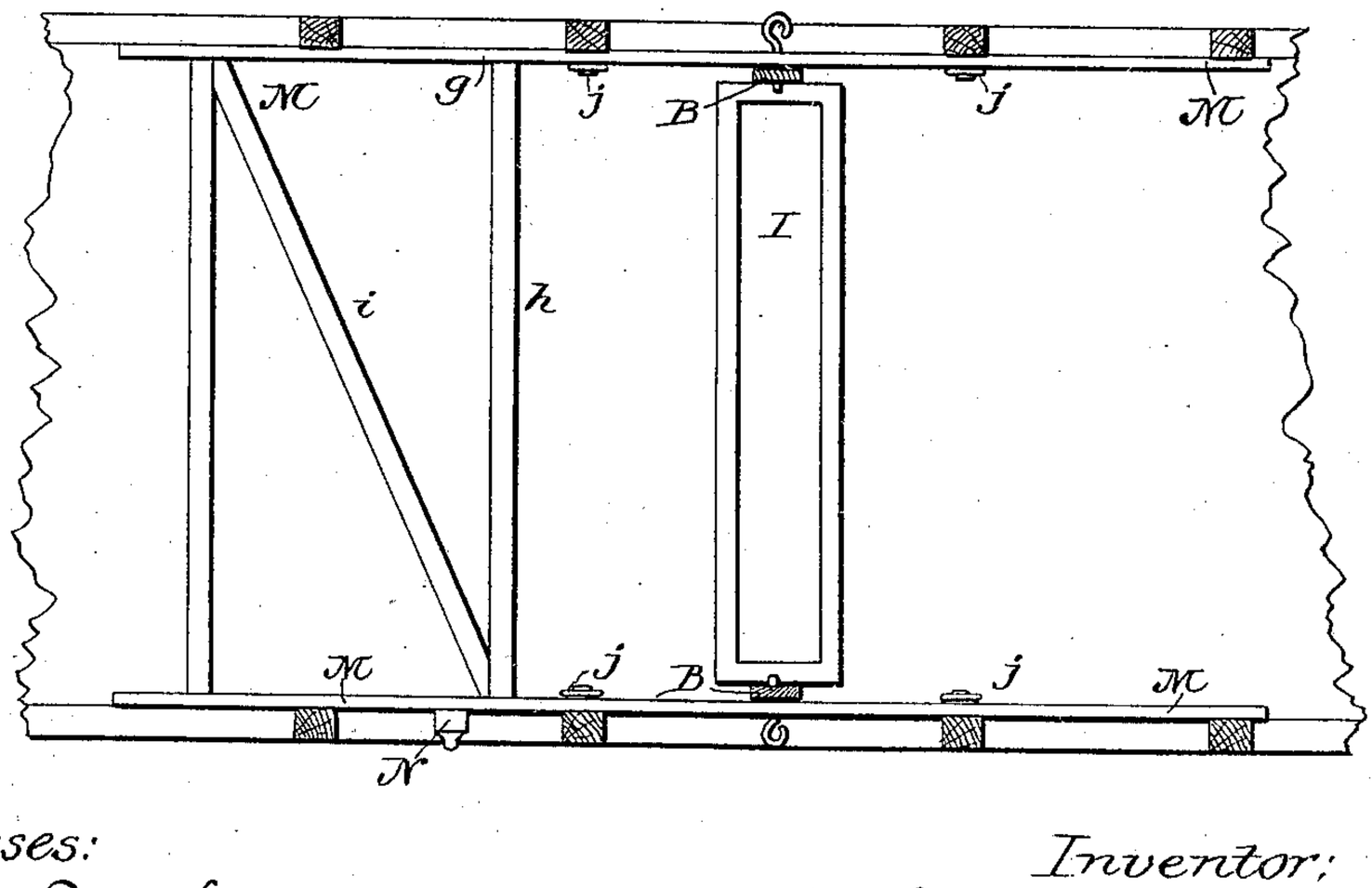


Fig. 6.



Witnesses:
James A. DuHamel
Arthur Lishley.

Inventor:
Chas A. Davis
by Dodger & Sons
his Attys.

UNITED STATES PATENT OFFICE.

CHARLES A. DAVIS, OF WASHINGTON, DISTRICT OF COLUMBIA.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 370,859, dated October 4, 1887.

Application filed August 13, 1887. Serial No. 246,905. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. DAVIS, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Railway-Cars, of which the following is a specification.

My invention relates to railway-cars, and is designed to adapt them for ready conversion from ordinary box or slatted cars suitable for general merchandise to stock-cars with hay-racks and troughs for feed or water, or vice versa.

In the annexed drawings, Figure 1 is a perspective view of a car-body embodying my improvements, and showing the same arranged in several equivalent but slightly-different ways; Fig. 2, a longitudinal section of the same, the car being broken away to get it within the prescribed limits of the drawings; Figs. 3 and 4, transverse sectional views; Fig. 5, a perspective view of the rack, and Fig. 6 a horizontal section of the car.

It is well known that ordinary box or slatted cars—such as are used for the transportation of general merchandise—require considerable preparation before they are fit for the transportation of live stock, and when thus prepared they are in a great measure unfit for general merchandise, and the wood-work of the cars is inevitably more or less mutilated or injured. Moreover, the time required to prepare the cars or to remove the fixtures applied in preparing them for the reception of live stock involves material loss and inconvenience.

The object of my invention, therefore, is to provide simple and inexpensive fixtures or attachments for ordinary cars, which may be quickly and easily brought into position for use or thrown up out of the way into the ceiling or top of the car, where they may not interfere with the carrying space thereof.

With this object in view my invention consists, primarily, in suspending from the upper part of the car, by means of swinging bars or hangers, folding racks which may be adjusted to support hay or other feed in convenient position above the heads of the stock, and in providing the lower ends of said bars with pivoted or tipping troughs to receive water or feed, the whole being constructed and arranged so that the troughs and the racks may be folded and placed compactly between the suspending-bars and swung into the upper part of the car above the space ordinarily utilized for carrying purposes, and above the heads of the train-men. These parts or attachments are of such construction that they may be applied in a short time and by unskilled workmen to cars already constructed and in use, thus avoiding the necessity of constructing cars especially for the purpose. This is a feature of much importance, for the reason that it avoids a very large portion of the expense attending such special construction and enables the railway companies to quickly prepare cars for the special service required.

Referring again to the drawings, A indicates the body of an ordinary car, constructed with the usual sills, floor, uprights, slats, roof, and with such braces as may be required.

B B indicate bars suspended from the top of the car and arranged in pairs, as shown in the several figures. The precise manner of suspending the bars is not important; but a convenient way consists in perforating the upper ends of the bars and passing through them a horizontal rod, C, which also passes through hangers or brackets D, attached to the rafters or roof-timbers of the car, or to the side timbers thereof, as may be found most convenient.

Extending from one to the other bar or hanger B of each pair is a slatted frame or rack, E, the lower cross-bar, *a*, of which is attached by means of links F at its ends to the hangers or bars B, in the manner shown in Figs. 1 and 2, while the upper cross-bar, *b*, of said rack is connected by means of a chain or other flexible coupling, G, to a rod or guide, H, secured to the roof of the car. By means of these connections—that is, the links F and chain or coupling G—the rack is enabled to be dropped down to the position shown in Fig. 4, preparatory to being thrown back between and parallel with the bars or hangers B, which position it occupies when the hangers are swung up to a horizontal position in the top of the car, or to be raised to a substantially horizontal position, as shown in Figs. 1, 2, and 3, which position it occupies while the car is in use for the transportation of live stock. When in this latter position, the racks serve to support hay or like feed at a height sufficient to clear the heads of the cattle or stock,

and in convenient position to be reached by cattle beneath the rack or at the middle of the car, though preventing it from being wasted or trampled under foot.

Below the rack, extending from bar to bar of each pair, and pivotally attached to the same at its ends, is a trough, I, the pivots *c* of which are above the center of gravity of the trough, so that the trough naturally assumes and remains in a horizontal position. This trough is for the purpose of holding water or small feed of any kind, and may be divided into compartments or not, as preferred. It will advisably be provided with an overhanging lip, *d*, to prevent the water from splashing over its sides, and it may also be furnished with a cover, by which it may be closed to exclude dust and dirt when not required for use. This trough is somewhat wider than its depth, and is pivoted to the bars or hangers B in order that it may assume a horizontal position between the bars when the latter are elevated to the top of the car, and thereby avoid the unnecessary taking up of head room in the car.

For the purpose of locking the trough against accidental tipping when lowered to position for use, any simple and convenient locking device may be employed, a pin or bolt, *e*, passing through one of the bars or hangers B and into a socket in the trough, answering the purpose very well.

J indicates an eye or staple projecting from the side of the trough, and designed to extend between and beyond the slats at the sides or ends of the car to receive a bolt or rod, K, by which to lock the trough, and consequently the hangers and rack, in position for use and prevent their swinging back and forth.

When the racks and troughs are not required for use and it is desired to get them out of the way in order to utilize the entire interior of the car for the transportation of merchandise, the racks E are drawn forward or away from the bars or hangers B, to allow the links F to swing forward and downward until the rack assumes the position shown in Fig. 4, the links then occupying a vertical position and bringing the lower edge of the rack between the bars or hangers B B, while its upward edge stands outward from or in advance thereof. The upper edge is then pressed inward until the rack assumes a position parallel with the bars or hangers B, its inner face resting against the stops *d* of said bars or hangers, in which position the racks are secured by means of turn-buttons *f*, or equivalent locking devices. The troughs I are then tipped at right angles to their normal position, or so that their bottoms are parallel with the length of the bars B B, and they may be locked in said position, after which the hangers, with the rack and trough folded, as explained, are swung up to a horizontal position in the top of the car, where they are held by hooks or catches L of any convenient character.

The foregoing construction applies equally to racks applied to the sides or to the ends of the cars, in either or both of which positions they obviously may be placed, though in practice I contemplate using them either on the sides alone or at the ends and at the middle of the car. When applied to the sides, I contemplate arranging those at one side of the car—that is, at one side of the usual middle doors of the car—on one side, and those at the other side of the door on the opposite side, of the car, though this arrangement is not essential.

When a rack is to be provided at the middle of the car, I adopt the construction and arrangement shown in Figs. 1, 2, and 6—that is to say, I construct a double rack and trough in precisely the same manner as the single racks and troughs are constructed, except that two such racks are placed back to back and hung within or to the same pair of hangers or bars, which hangers are suspended from a frame, M, adapted to move longitudinally in the upper part of the car, so that the double rack may be moved to either side of the car doors or openings to leave an unobstructed entrance or exit into or from the car. Such double rack is shown in Fig. 1 and more plainly in Fig. 2. This frame M, as best shown in Fig. 6, consists of two side bars or rails, *g*, connected by cross-bars *h*, suitably stiffened by diagonal bars or braces *i*, the bars or rails *g* running on rollers *j*, Figs. 2 and 6, applied to the timbers of the car at such height that the frame shall pass above the top line of the car doors or openings and thus avoid reducing or obstructing said openings. By reason of the bracing of the frame its side bars are prevented from moving independently of each other, and consequently from cramping or binding, and the bars or hangers B of the double rack are caused to move simultaneously and equally, and consequently the rack is maintained always in proper position.

For the purpose of moving the frame M and its rack and trough, an arm or bar, N, is rigidly attached to one of the side rails, *g*, of the frame, and is carried outward beyond the slats of the car-frame, as shown in Figs. 1 and 6, and downward to a convenient height to be taken hold of by a person standing at the side of the car, so that the frame may be readily moved back and forth without entering or opening the car. Such handle or arm may be at either or both sides of the car.

As stated, the double rack is simply a duplication of the single racks, or, in other words, consists of a single pair of bars or hangers, B B, and two racks, E E, each provided with links F F and with chains G G, the latter, in the case of the said double rack, extending from the upper bars of the racks to the hangers B B, so that they may maintain the racks in position regardless of the movement of the frame M back and forth, the construction and arrangement being shown in Fig. 2.

The folding of the racks and the tipping of the troughs are features of great importance in this invention, for the reason that they per-

mit the rack to be folded into very compact shape when not in use and the entire structure—that is, the racks, troughs, and suspending-bars—to be swung up close to the roof of the car at such height that they will in no manner interfere with the movements of the train-men, and will not take up any space that is ordinarily utilized for storage of merchandise in shipping, whereas a rack projecting sufficiently to contain a reasonable supply of hay or like feed and not capable of being folded, as here explained, would project so far below the roof of the car as to materially interfere with the movements of the train men and to reduce considerably the available space within the car with the racks raised to their highest position.

Another feature of considerable importance is the link-connection between the inner or lower edges of the racks and their suspending-bars or hangers B, by which I am enabled to raise the racks to a substantially horizontal position, thereby giving free space for the heads of the cattle or stock, permitting perfect circulation of air through the car when applied to the sides thereof, and placing the hay or other feed at such height that it cannot be readily scattered under foot or wasted, yet bringing it into convenient position for the stock beneath the racks or in the middle of the car.

It will be seen that the benefits of my invention would be realized to a greater or less extent if the racks were used without the troughs or the troughs without the racks, though I deem it preferable to employ both, as I am thereby enabled to provide for both feeding and watering the stock or for feeding different classes of food.

The frame M, as represented in Fig. 1, is braced at one end only, and at that side of the pivots of the bars B opposite that occupied by the rack when raised to the top of the car, and this for the reason that it is desirable to avoid placing any obstructions in the path of the rack which might prevent its swinging sufficiently high to give the proper clearance-space beneath. The materials of which the rack and its hangers are made and the details of construction of said parts may be varied indefinitely, and no claim is made specifically thereto; nor do I mean to restrict myself to any specific materials or construction, my invention consisting, broadly, in suspending-bars or hangers and a rack adapted to fold up between the same; in hangers and a rack so connected therewith that it may be either folded compactly within the hangers or drawn out to assume a position substantially at right angles thereto; in the combination, with hangers, of a pivoted trough; in the combination of pendulous hangers, a folding rack carried by said hangers, and a pivoted trough beneath the rack, and in other features, above set forth, whereby these parts are rendered practicable and capable of successful application and use.

The roof of the car may be provided with hatches or doors through which to supply the hay or other feed, and wire-gauze may be applied to the sides and ends of the car to prevent the entrance of sparks, if this be deemed necessary, though no claim is made thereto.

It will be seen that by means of the sliding frame M, I am enabled to move the double rack at the middle of the car to either side of the car doors or openings, thus leaving the entire width of the doors unobstructed for the entrance or exit of stock, and that when either side is filled or emptied, as the case may be, the frame, with its rack and trough, may be moved to the opposite side of the door or opening and the other end of the car similarly filled or emptied.

By my construction and arrangement not only is the entire interior of the car left available for general purposes, but I am enabled in short time to convert an ordinary car into a stock-car possessing all the advantages of the most approved type of stock-cars now in use, and in some particulars superior thereto, and this at a trifling expense and without in any manner altering the general construction of the car; and I am further enabled to reconvert the car into an ordinary freight-car with very little labor and in extremely short time. The parts which it is necessary to add to ordinary cars to render them capable of such speedy conversion are simple, cheap, and can be applied by mechanics of ordinary ability with simple tools and without the necessity of sending the cars to the shops for alteration, it being understood, of course, that a standard stock-car is of prescribed dimensions, and that the parts or attachments, if properly proportioned for one, may be interchangeably used in any of said cars. Cars thus provided may be employed to carry ordinary merchandise in one direction and stock in the opposite direction, and thus made serviceable at all times, instead of requiring to be returned empty, as is now the common practice on many roads. They moreover reduce the number of cars necessary for carrying on the business of a road, and avoid the great accumulation of one class of cars at any given point.

I am aware that it has been proposed to make cars convertible from stock to freight cars, and vice versa; that it has been proposed to provide folding hay-racks for freight-cars; that swinging partitions provided with water or feed troughs have been proposed, and that in one case a non-folding suspended hay-rack has been described. Such prior constructions I do not claim; but,

Having thus set forth my invention, what I do claim is—

1. In combination with a car and with bars suspended from the upper part thereof, a rack carried by said bars and adapted to fold up between them, substantially as and for the purpose set forth.

2. In combination with a car and with bars or hangers suspended from the upper part

thereof, a trough pivoted between said bars and adapted to be tipped between the same, substantially as and for the purpose set forth.

3. In combination with a car and with bars or hangers suspended therein, links pivotally attached to said bars or hangers, a rack connected at one edge to the links, and a flexible support extending from the opposite edge of the rack to an elevated support, substantially as and for the purpose set forth.

4. In combination with a car and with bars or hangers suspended therein, a folding rack carried by said bars or hangers, and a pivoted trough also carried by said bars or hangers below the rack, whereby the rack and the trough are adapted to be brought into position for use or to be folded between the hangers or bars and swung into the upper part of the car above the space required for storage of merchandise therein.

5. In combination with a car, bars or hangers suspended therein and provided with stops *d*, links F, pivotally attached to said hangers, a rack, E, having one edge connected with said links, flexible bands or supports G, attached to the opposite edge of the rack, and guides H, serving to sustain the flexible bands or supports G.

6. In combination with a car, hangers or bars B, suspended therein, a trough, I, pivoted in said arms and provided with an eye or staple, J, and a rod or bolt, K, passing outside of the car and through said eye or staple to hold the trough and hangers against movement.

7. In combination with a car, bars or hangers B, suspended therein, and a folding rack carried by said bars or hangers, fastening devices, substantially as shown and described, for securing the hangers against movement when dropped into position for use.

8. In combination with a car, a longitudinally-movable frame, M, hangers or bars suspended therefrom, and a rack carried by said hangers, substantially as described.

9. In combination with a car, a longitudinally-movable frame, M, mounted in the upper part thereof, bars or hangers B, suspended from said frame, and a folding double rack carried by said hangers, substantially as described and shown.

10. In combination with a car, hangers or bars suspended therein, a folding rack carried by said bars or hangers and adapted to fold into the space between them, and a hook or catch adapted to engage with the hangers and to hold them in a horizontal position at the top of the car.

11. In combination with a car and a longitudinally-movable frame mounted in the upper part thereof, a rack suspended from said frame, and an arm or hand-piece attached to said frame and extending down outside of the car to a convenient position to be moved by a person outside of the car.

In witness whereof I hereunto set my hand in the presence of two witnesses.

CHARLES A. DAVIS.

Witnesses:
ANDREW PARKER,
WILLIAM W. DODGE.