J. D. IMBODEN.

FREIGHT-CAR.

No. 184,625. Patented Nov. 21, 1876.

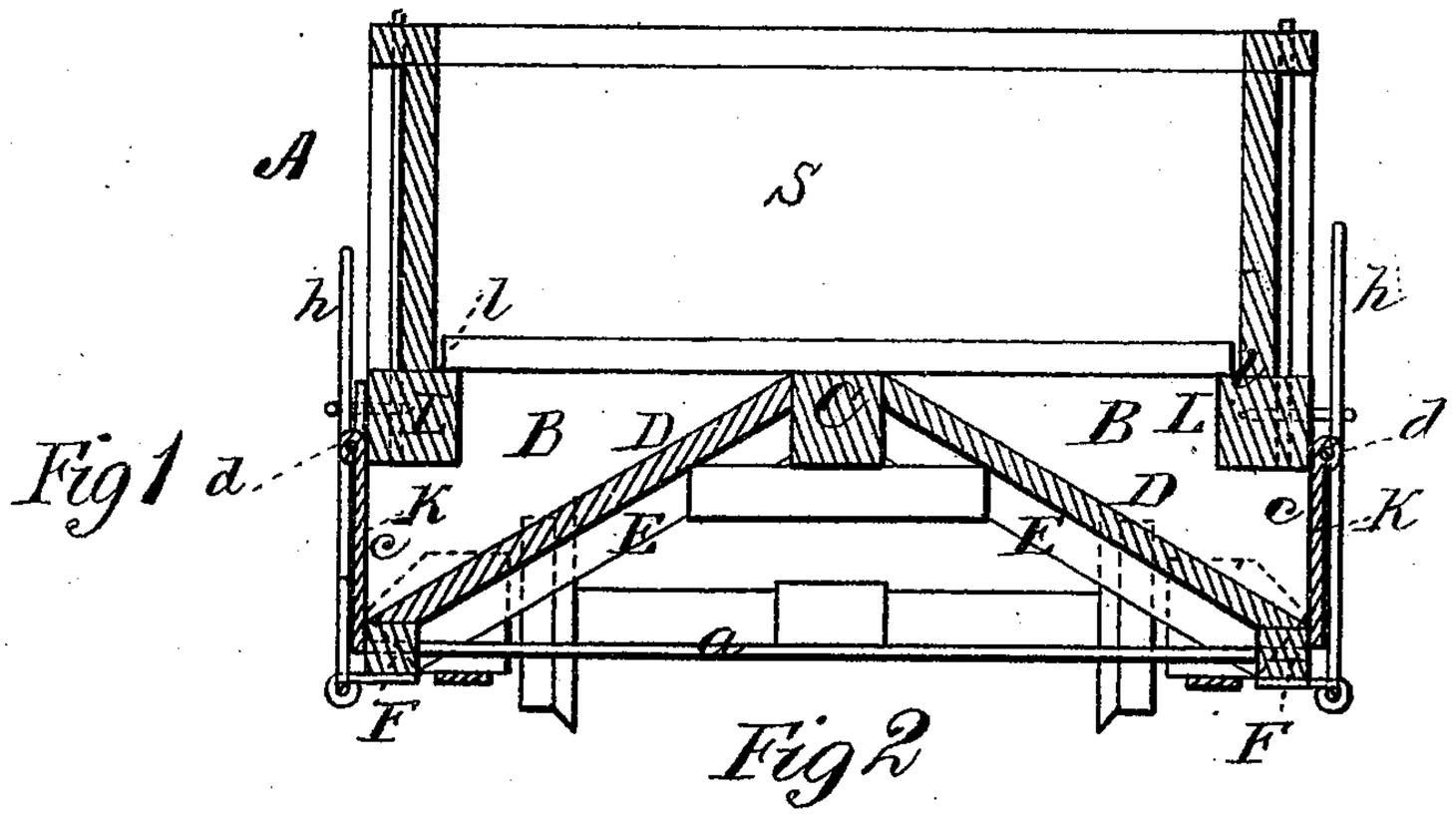


Fig 1

Fig 2

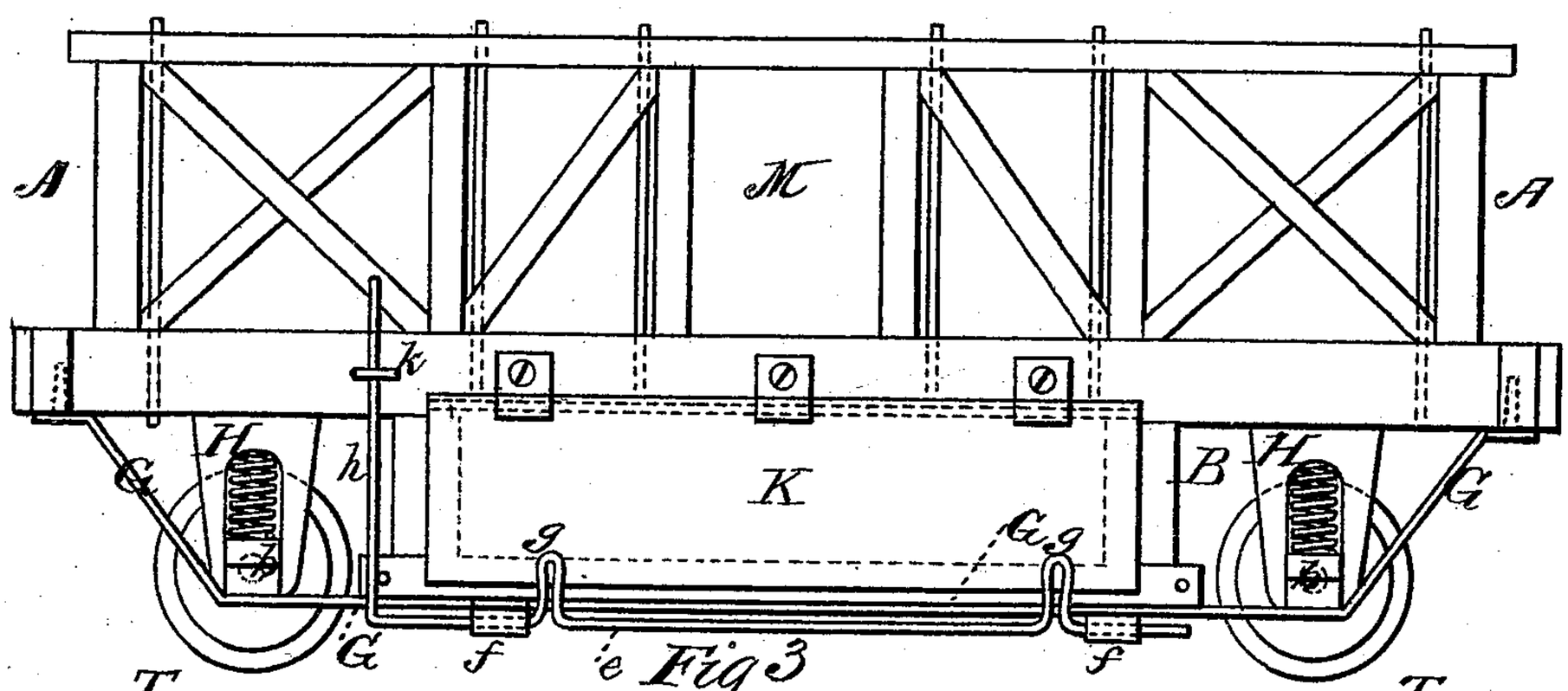
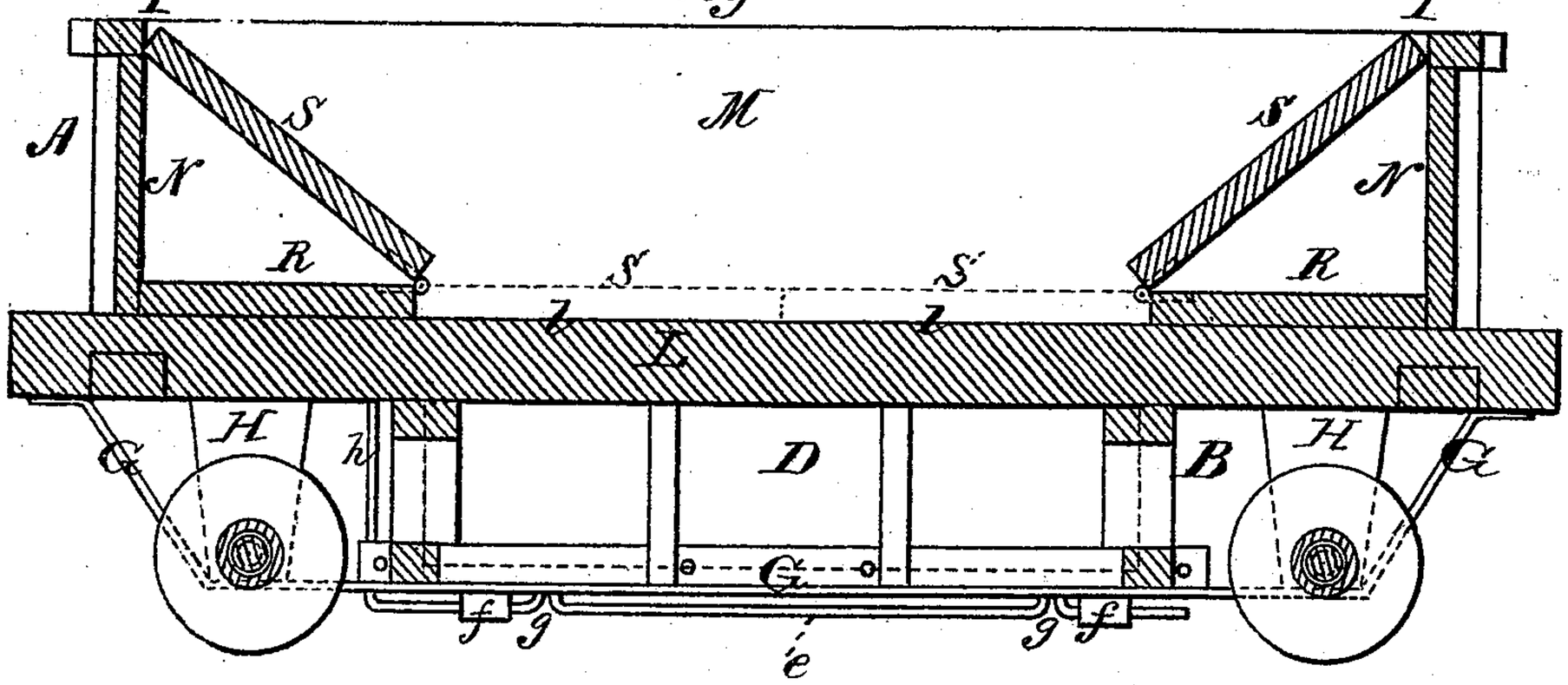


Fig 3



WITNESSES

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JOHN D. IMBODEN, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-TWENTIETH OF HIS RIGHT TO A. D. WILLIAMS, AND ONE-HALF OF HIS RIGHT TO R. H. MAURY, TRUSTEE FOR SAID A. D. WILLIAMS, BOTH OF SAME PLACE.

IMPROVEMENT IN FREIGHT-CARS.

Specification forming part of Letters Patent No. **184,625**, dated November 21, 1876; application filed June 24, 1876.

To all whom it may concern:

Be it known that I, JOHN D. IMBODEN, of Richmond, in the county of Henrico and State of Virginia, have invented a new and valuable Improvement in Low-Gravity Center-Draft Railway-Cars; and do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a cross-sectional view of my improved railway-car. Fig. 2 is a side view thereof, and Fig. 3 is a longitudinal central section of the same.

This invention has relation to railway-cars, both for freight and passengers; and it consists in the construction and novel arrangement, in connection with a car-body, of a suspended or sub compartment, designed to carry a part of the load very near the ground; of a central longitudinal draft-beam or spine with lateral ribs, serving the double purpose of supporting the floor of the sub-compartment and of trussing the center-beam, adding to its solidity and stiffness in resisting concussion, and distributing the forces applied to it in the traction of the train; of the vertical parallel dumping-gates, hinged at the upper side so as to close themselves by gravity when the load has run out; of the lever-fastening and its shaft, having projecting lugs; of the movable doors or ledges, designed to bridge over the top of the sub-compartment, and thereby transform it temporarily into a freight-car with a raised flat bottom; and of the longitudinal union-braces to secure the sub-compartment pedestals and main frame-work together, and preserve their proper relative position, all as hereinafter more fully shown and described.

One of the principal features of my invention consists in such a construction of the car-body as will permit a large proportion of the load to be carried within a few inches of the railway-track, thereby bringing down the center of gravity of both the car and its load much nearer the ground than is practicable in the present forms of railway-cars in use, reducing materially the oscillating forces of a moving train, and manifestly saving wear and tear of both rolling stock and permanent way, and leading to an important reduction in the bulk and weight of material employed in construction.

In order to illustrate this invention, the accompanying drawings show the application thereof to a coal-car, which will carry ores and similar substances equally well, and with slight modifications is adapted to the transportation of grain in bulk, cotton in bales, and live stock.

The letter A designates the upper portion of the body of the car, and B the suspended portion or sub-compartment under the former, and communicating therewith. C represents a longitudinal beam centrally arranged, and running the length of the car in the frame-work of the car-body, designed to receive all the strain of traction in moving the train, and of concussion in stopping it, to the relief of the other frame-work of the car, especially its cross-timbers or head-pieces and their joints. This beam or spine is another material feature of the construction, and is designed to promote the durability and safety of the car. This beam is designed to receive at its ends the couplings of the cars, and also the buffers.

In the construction of the coal-car, this center-beam forms the summit or dividing-ridge between the two lateral outwardly-sloping floors D D. These sloping floors are designed to extend the entire length of the sub-compartment, and serve to conduct the coal, ores, or grain to the dumping-gates on the sides of the car. Under these floors the lateral inclined ribs E extend downward and outward, springing from the center-beam, and, at their lower ends, abutted against and connected to the lower rails F of the sub-compartments. These are strengthened by through-bolts *a*, and by iron braces G, that extend longitudinally under the frame-work of the sub-compartment on each side of the car, and under the pedestals H and boxes *b* of the wheels,

thence being bent upward at each end of the car and bolted to the main frame. This brace on each side of the car is designed to secure the rectangular relation of the sub-compartment, the pedestals and the superior frame-work being directly bolted to these parts.

K designates the dumping-gates, which close the openings *c* or mouths of the chutes. These openings are in the side walls of the sub-compartments, and the gates K, hanging vertically when closed, are hinged to the principal side rails L of the car-body, as indicated at *d d* in the drawings.

In the construction of this coal-car the end walls N are designed to be built vertical, as well as the side walls M of the superior portion A; and from each end of the body a ledge, R, of flooring extends toward the opening at the top of the sub-compartment. S S indicate the inclined end walls or hopper-guides, which conduct the load toward the chutes of the sub-compartment. These end walls are usually designed by me to be made movable, being hinged at their lower edges, and resting by their upper edges against the upper, transverse, or end rails, of the car-body, as indicated at T in the drawings. The car is unloaded by opening the dumping-gates and allowing the load to pass out down the hopper-guides and chutes. In order to keep the gates closed, a long rod or shaft, *e*, is extended along the lower edge of each gate, below the same, being connected to the lower side rail of the sub-compartment by suitable bearings *f*. Each shaft is provided with lugs or tongues *g* at several points in its length, which project upward to engage with the lower edge of the swinging gate and keep it shut. In order to secure the engagement each shaft is provided at its ends with an upwardly-turned lever-arm, *h*, which is engaged with a latch or keeper, *k*, secured to the frame-work of the car. By the simple disengagement of this lever-arm the chute can be opened. The hinged end walls are designed to be covered with metal, and to have strong battens on their faces. When the car is unloaded the hinged end walls S may be folded toward each other into the plane of the floor-ledges of the superior compartment, and, resting on the central spine and side ledges *l*, serve to complete the floor of this compartment, forming for the time an ordinary flat-bottomed car, which can be stowed with freight instead of being returned empty. When this low-gravity center-draft car is constructed for the special transportation of cotton, the bottom of the sub-compartment is horizontal, and along the outside of the top rail a table or plank, about a foot wide and supported on brackets, is extended, to receive a folded tarpaulin, which is designed to have the full length and half the width of the car-body. When the car is loaded this tarpaulin is unbound and spread over the cotton, being properly secured to protect the load from fire and the weather.

In the live-stock car the animals stand on the bottom of the sub-compartment, with their feet but a few inches from the ground. They are placed so as to face the front and rear of the car. The sections of the car-body at the ends which overhang the wheels or trucks are nearly three feet higher than the floor of the sub-compartment on which the animals stand, and are intended to be provided with racks for hay and troughs for water for long journeys. This provender-compartment is designed usually to be provided with a sliding section of flooring, which may be drawn out toward the middle of the car to meet its fellow from the other end, and, like the folding ends of the coal-car, form a clear floor for the upper compartment, which thus becomes a freight-chamber, while the dung and filth is covered up in the sub-compartment.

In the coal, ore, or grain car the chutes, as above described, are placed with their openings in the sides of the car, and not in the bottom; and for discharging in bulk, a movable canvas bag or tube is employed to receive the grain at the mouth of the chute and carry it to the hold of a vessel or other receptacle, without the necessity of handling.

In the construction of certain classes of these cars, such as for live stock, or where the principle is applied to passenger-cars, the center-beam or spine of the car may be found to work most advantageously at the bottom of the suspended or sub compartment, so as to pass under the car-axles and allow the couplings to be placed very near the ground.

On all these cars a guard-wheel or simple flanged shoe may be attached to the bottom frame-timbers of the sub-compartment in such a manner that it shall be carried but three or four inches above and immediately over the rails, so that in case of the breaking of a wheel or axle, or of a truck jumping the track, the car-body will drag upon the rails held there by the flange of this guard-wheel or shoe until the train is stopped.

On these cars any coupling or brake now in use may be employed, and the cars may be constructed for four wheels without trucks; or the usual trucks may be used. In the accompanying drawings a four-wheeled car is shown.

Passenger-coaches constructed on this plan will, it is thought, be safer and steadier than others, being in a great measure free from uncomfortable oscillating movements, and not so liable to be thrown from the track. Running so near the ground, the atmosphere will be so compressed by a train in rapid motion that it will escape from beneath the cars in a powerful horizontal current, which will drive all dust so far from the train that before it can rise sufficiently to annoy the passengers the train will have cleared it.

It is desirable to the perfect working of these cars, but not indispensable to their general utility, that they should be furnished with some approved form of axle allowing independent motion of the wheels.

What I claim as new, and desire to secure by Letters Patent, is—

1. The car-body A, having a sub-compartment, B, suspended below it between the trucks, and the transversely-hinged floor-sections S S, closing the communication between the body and sub-compartment, combined and arranged substantially as specified.

2. The center spine or draft-beam, in combination with the lateral trussing-ribs and the car-frame, substantially as specified.

3. In combination with the car-body A, having floor-sections R, covering the trucks, and the hinged chute-sections S S, completing the floor of the car-body, and hinged to the inner edges of the said floor-sections, the open sub-compartment having gravitating side doors, and suspended between the trucks, substantially as specified.

4. In a dumping-car, the combination, with a vertically-hanging dumping-gate, of the fastening-shaft *e*, its pressure-lugs *g*, and lever-arm *h*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN D. IMBODEN.

Witnesses:

ALLEN H. GANGEWER,

F. J. MASI.