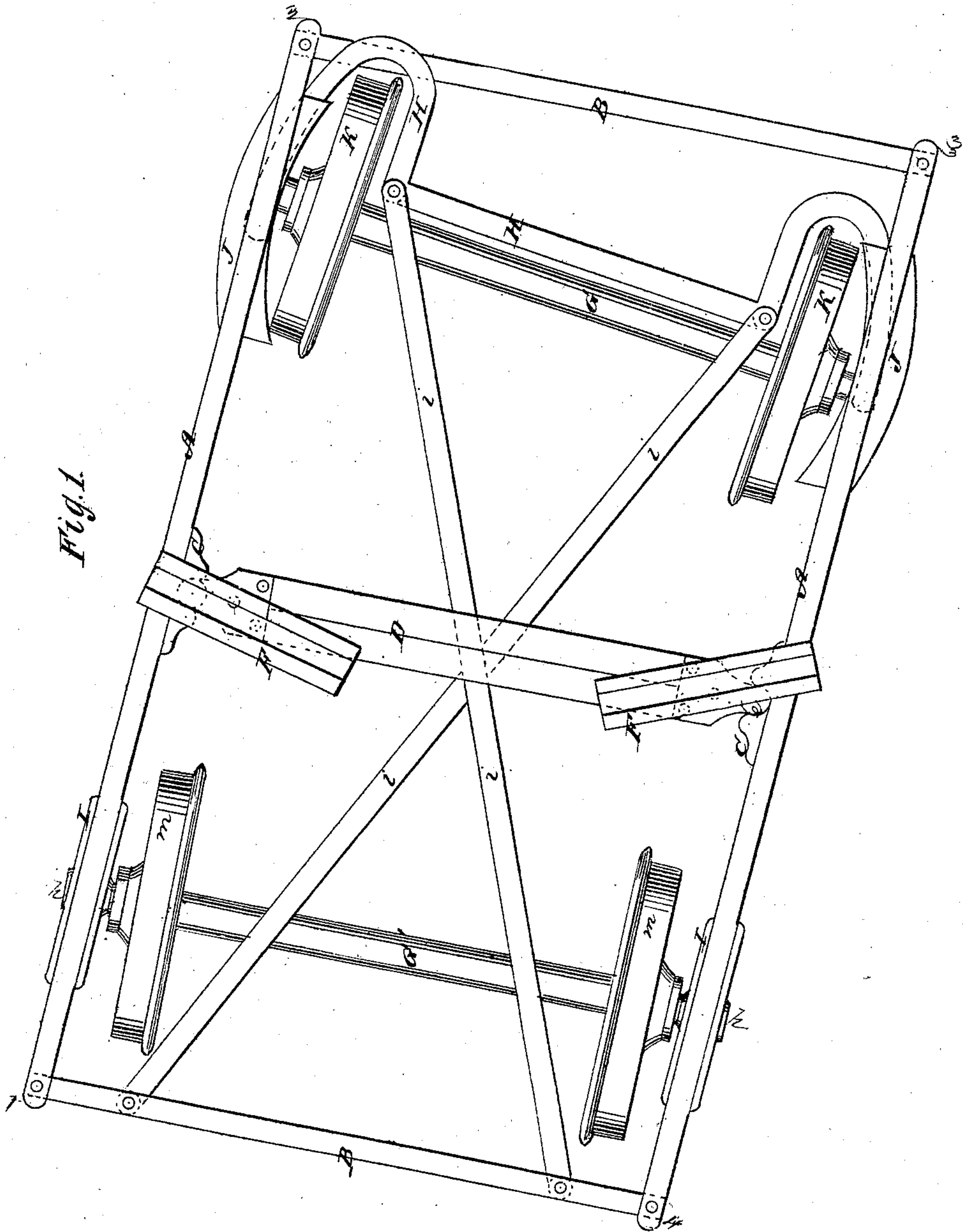


W. YOUMANS.
Railroad Car-Trucks.

No. 135,614.

Patented Feb. 4, 1873.



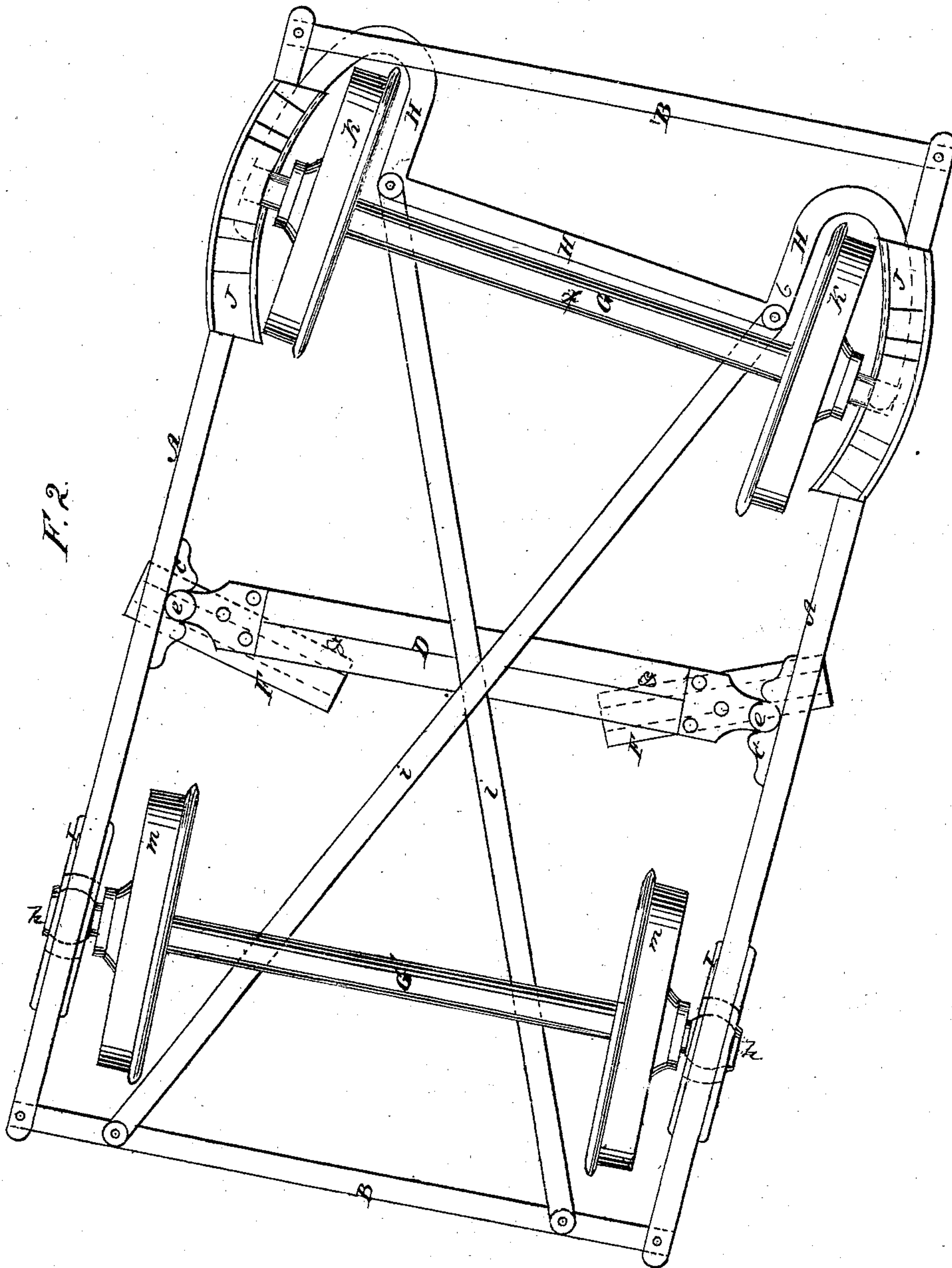
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Railroad Car-Trucks.

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Fig. 3.

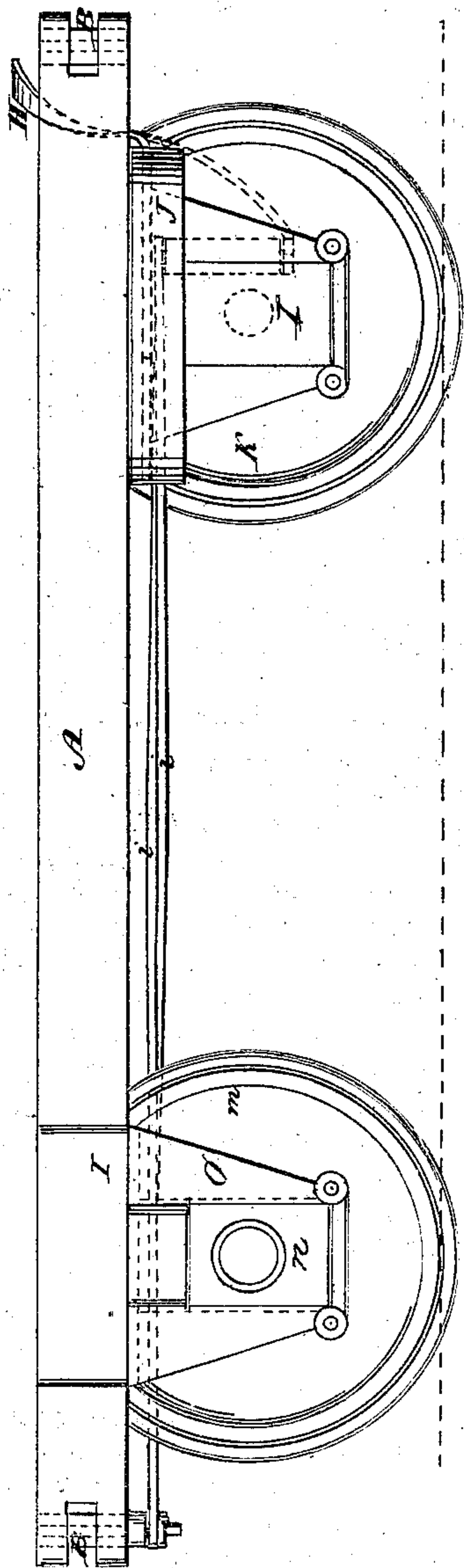
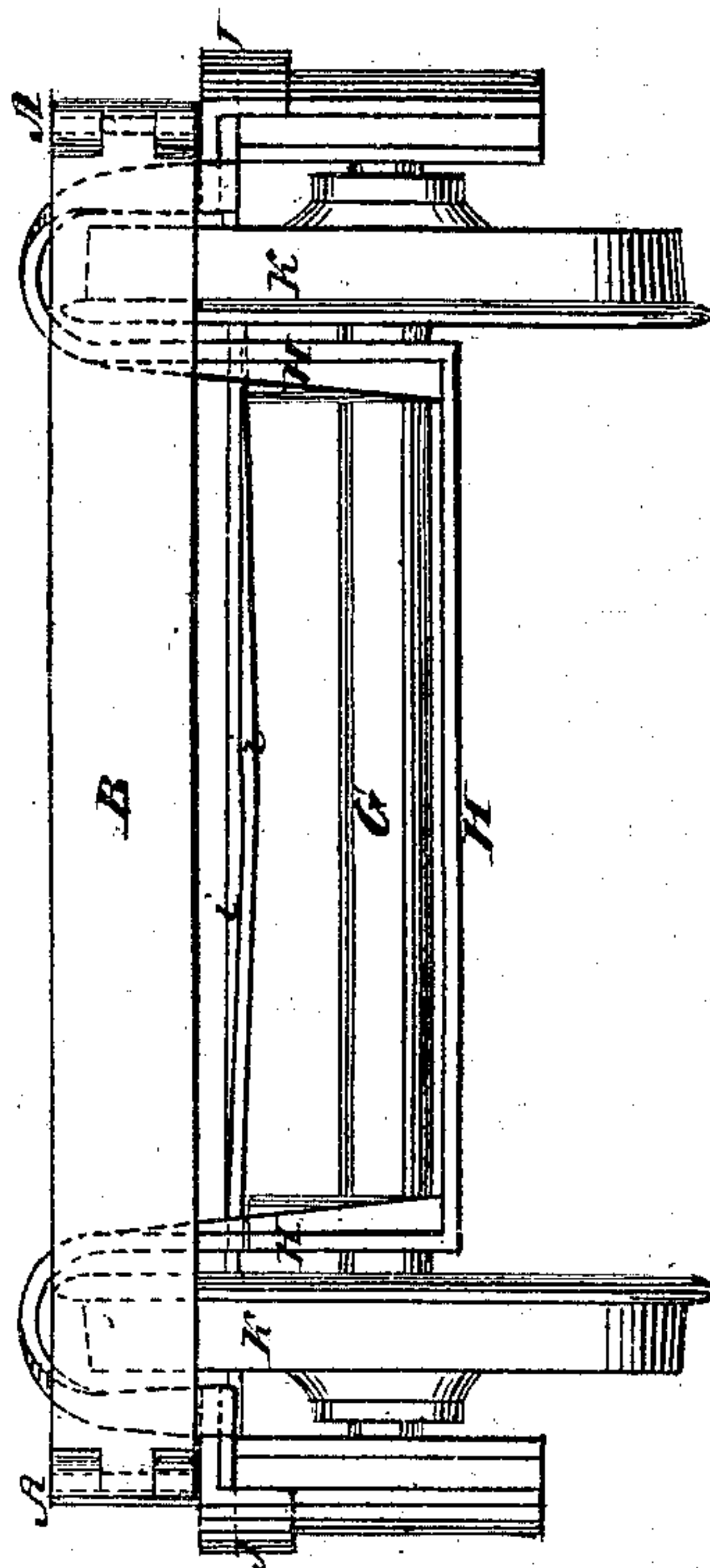


Fig. 4.



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Inventor:
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UNITED STATES PATENT OFFICE.

WALTER YOUMANS, OF LANSINGBURG, NEW YORK.

IMPROVEMENT IN RAILROAD-CAR TRUCKS.

Specification forming part of Letters Patent No. 135,614, dated February 4, 1873.

To all whom it may concern:

Be it known that I, WALTER YOUMANS, of Lansingburg, in the State of New York, have invented certain new and useful Improvements in Railroad Trucks; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this application.

Previous to my invention trucks for railway carriages have been made in a variety of ways, and many devices and modes of construction have been suggested and patented, having for their main object to embody in the truck a ready capacity to turn the curves of the road.

In an application lately filed by me, and upon which Letters Patent are about to issue, I have shown and described a kind of truck adapted to embrace, to an eminent degree, this ready capacity to easily run round the "curves," but this kind of truck is rather expensive for common and freight cars.

My present invention has for its main object the production of a truck for freight-cars which, while it shall possess the capacity to more readily turn the curves than those now in use, shall be exceedingly cheap, simple, and durable in its mode of construction; and principally to this end my invention consists, first, in making the frame of the truck so that its shape or contour can be changed, or so that the wheel-pieces of the frame may swivel on the end bars to permit the automatic placement of the wheel-pieces in the best relative position to the curved lines of the rails, all as hereinafter more fully explained; second, in hanging one of the axles in boxes, which are so made and arranged with the jaws (in which they are held) that they can swivel in a manner and for purposes to be hereinafter more fully described; third, in combination with a jointed frame (or a frame the wheel-pieces of which are pivoted at their ends to the ends of the "end bars") of a center-beam, hinged at each end to the wheel-pieces, as and for purposes to be presently explained; fourth, in the use, in connection with a swiveling frame and center-beam, of straight-grooved shoe-pieces adapted to interlock with ways on the bottom of the car-body, and arranged to operate

in the manner and for purposes to be presently explained.

To enable those skilled in the art to make and use my invention, I will proceed to more fully describe the construction and operation of my improved truck, referring by letters to the accompanying drawing, in which—

Figure 1 is a top view; Fig. 3, a side elevation; Fig. 4, an end view; and Fig. 2, a bottom view, of a freight-car truck made according to my invention.

In the several figures the same part will be found designated by the same letter of reference.

A A are the wheel-pieces, and B B the end bars of the truck-frame. The bars or beams, in lieu of being rigidly framed together, as is usual, are jointed or pivoted together at the four corners 1 2 3 4 of the frame by suitable vertically-arranged bolts. Near the center of each wheel-piece A, and in its inner side, is located a metal stand, C; and in these stands C C is mounted the center-beam D, which is provided at each end with stand, the pintles *e* of which turn and slide vertically in the stands C. By this arrangement of the center-beam D with the truck-frame the wheel-pieces A are permitted to swivel freely about the pintles *e* as axes of oscillation, while at the same time the center-beam D is free to move up and down. The center-beam D may rest on suitable springs, if desired. F F are grooved shoe-pieces, which are bolted on top of the center-beam, and in which rest and move ways or projections which fit into the grooves of F, and which are bolted to the under side of the body of the car. The shoe-piece F and the projections on the car-body which work therein, are arranged after the fashion and embrace, substantially, the same principle of operation as the grooved plate and way, fully shown and described in my other application. G is the front axle of the truck. It is mounted in the usual boxes *h*, which are located in jaws I, that move in curved guides J attached to the wheel-pieces A, all in about the same manner shown and described in my other application. The guides or holder-stands J are curved, as shown, in arcs of a circle, whose center is at a vertical line which passes through the axis of the axle G at a point midway between the

ends of the said axle; and the said curved stands J are embraced between arms which project downward from the under side of the car-body, and which serve to hold the body sidewise on the truck while the latter is free to swivel about a vertical axis of motion which passes through the center of axle G, (about as described in my other application.) H is a metal frame-piece, which is so shaped and arranged as to pass round the wheels, as shown, and which is bolted at each end to, and connects together, the two jaws I, (in which the boxes of axle G are located.) This frame H is connected at the points 5 6, by means of the pivoted bars or rods *i*, to the rear or distant one of the end bars B of the truck-frame, as clearly seen at Fig. 2. G' is the rear axle, which is provided with the usual wheels *m* and with boxes *n*, which are so formed and arranged in the jaws *o* (see Fig. 3) that the wheel-pieces A, to which the jaws *o* are permanently attached, can swivel in a horizontal plane.

The operation of truck made as shown and described is as follows: The truck being arranged beneath the car as usual, and the body of the latter being provided with the proper pendent arms or leg-pieces to embrace laterally the two curved guide-pieces J, and with the suitable projections to engage with the grooves in the shoe-pieces F, this action will occur: When the forward wheels K strike a curve in the road the axle G will assume the position seen at Fig. 2, and the truck-frame will have a tendency to swivel on a vertical or imaginary axis of motion coincident with the point *x* in axle G; but simultaneously with the shifting of the axle G (carrying round with its ends its boxes and the jaws I) the frame or frame-piece H is swiveled, and, by its action on the connecting-bars *i*, the latter are made to operate on the rear end bar B and distort the frame of the truck (which, while running on a straight track, was perfectly rectangular) into the condition seen at Fig. 2, causing the wheel-pieces A to slightly oscillate about the ball-jointed boxes *n*, while at the same time the axle G' is brought into the position of a radius of the curve being traversed. Thus, by the combined action of all the movable parts, as described, the axles and wheels automatically come into the proper and most desirable relative positions with the rails without being suddenly forced into position by the action only of the wheels on the rails.

It will be understood that, as in the truck described in my other application, the tendency of the truck-frame is to swivel bodily about a vertical axis of motion which passes through the center of the foremost axle, and that in lieu of this action being made to actu-

ate the rear axle it is made to effect the distortion of the truck-frame, as explained, this being permitted by the arrangement of the axle G' in swiveling boxes *o*, as explained.

As before remarked, the general line of direction of the grooves in shoe-pieces F is in accordance with the principle of construction laid down in my other application; the dotted line *yy* corresponds to the arc of the curved slot or groove in the oscillatory center-beam shown in said application, and the straight grooves (in this case) in the shoes F are arranged in the lines of chords to segments of this arc.

The truck is of course propelled or moved forward through the medium of connection with the car-body effected by the projections which engage with these grooved shoe-pieces, and the action of said projections and grooves together, and their action on the truck when the car strikes a curve, are about the same as explained of the curved groove and way in my other application. Here, however, the center-beam D is hinged at each end to the shifting wheel-pieces A in lieu of being pivoted near its center to a fixed point, as in the case where a rigid truck-frame is used.

It will be seen that by the described construction of a truck the most desirable ends are attained in a most simple and economic manner. Many of the forms of parts and details of construction may of course be varied without departing from the spirit of my invention or the several features of my improvement.

Having so fully described my invention that those skilled can fully understand it, what I claim as new, and desire to secure by Letters Patent, is—

1. A truck-frame the parts of which are pivoted together so that it may be distorted, (or the wheel-pieces may be moved to assume different angles with the end bars,) substantially as and for the purposes described.
2. The combination, with the truck-frame, axle, and jaws, of boxes adapted to turn within the jaws, substantially as and for the purposes described.
3. A center-beam pivoted or hinged at each end to the wheel-pieces, substantially as and for the purposes described.
4. In combination with the truck-frame and hinged center-beam, the straight grooved shoe-pieces F or their equivalents, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand and seal this 27th day of November, 1872.

WALTER YOUMANS. [L. S.]

In presence of—

JACOB FELBEL,
J. N. MCINTIRE