

(No Model.)

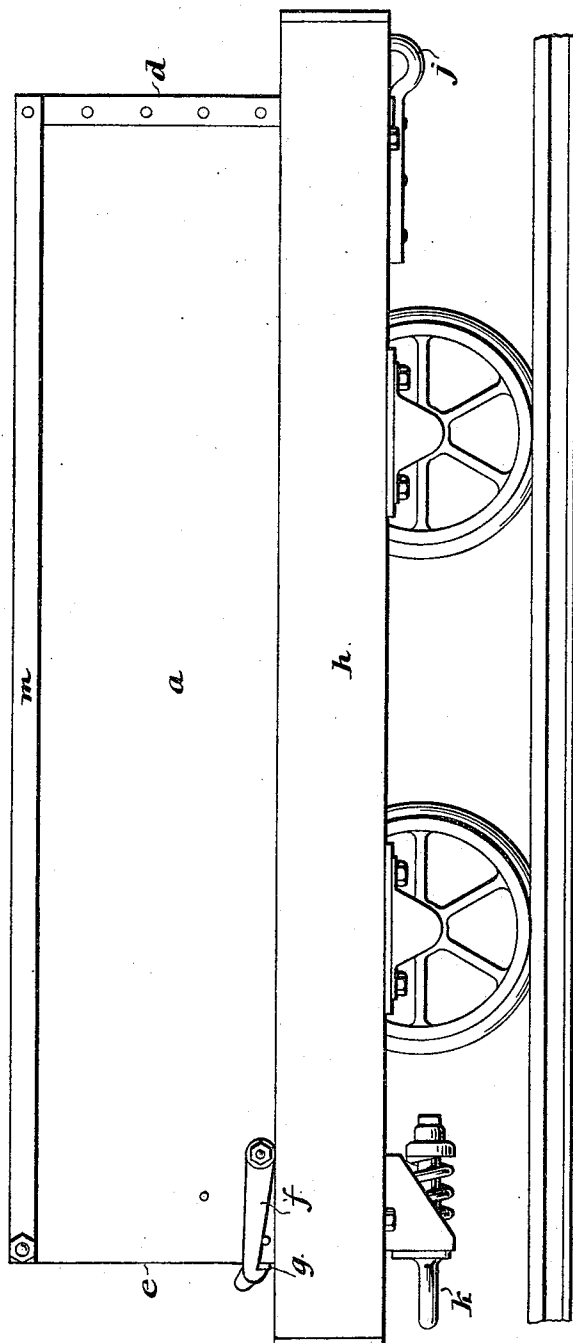
3 Sheets—Sheet 1.

H. M. BOIES.
TRAMWAY CAR.

No. 564,552.

Patented July 21, 1896.

FIG. 1.



WITNESSES:

James Bell
N. E. Paige

INVENTOR:

Henry M. Boies
By J. C. Wiley
attorney

(No Model.)

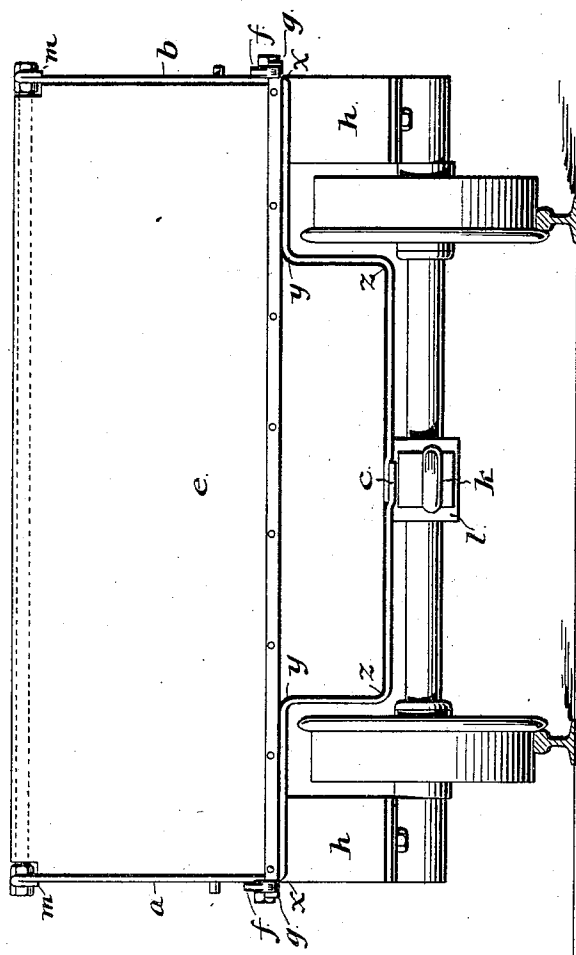
3 Sheets—Sheet 2.

H. M. BOIES.
TRAMWAY CAR.

No. 564,552.

Patented July 21, 1896.

FIG. 2.



WITNESSES:

James Bell
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INVENTOR:

Henry M. Boies
By W. B. Haley
Attorney

(No Model.)

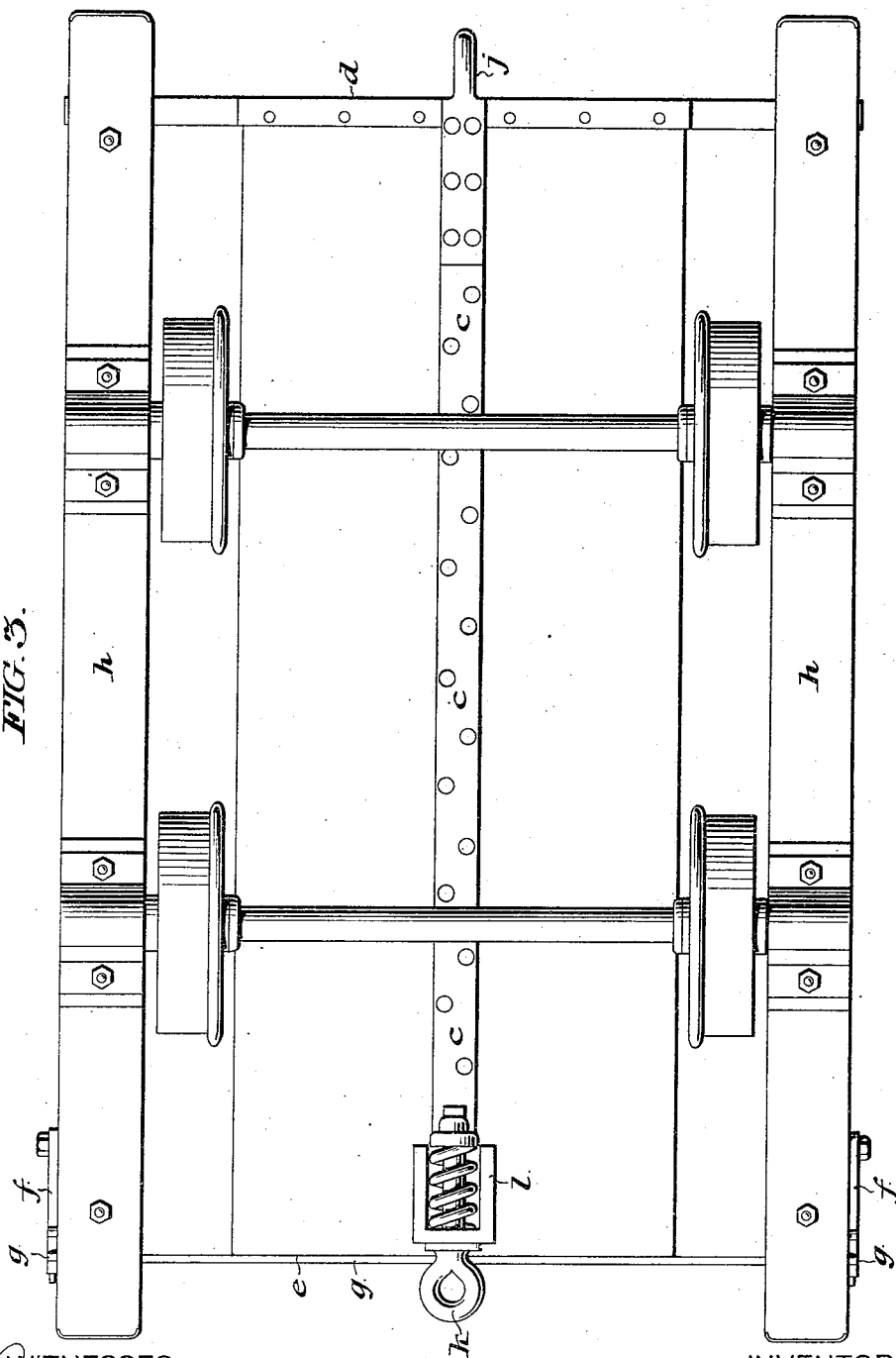
3 Sheets—Sheet 3.

H. M. BOIES.
TRAMWAY CAR.

No. 564,552.

Patented July 21, 1896.

FIG. 3.



WITNESSES:

James Bell
H. E. Paige

INVENTOR:

Henry M. Boies
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UNITED STATES PATENT OFFICE.

HENRY M. BOIES, OF SCRANTON, PENNSYLVANIA, ASSIGNOR TO THE
BOIES STEEL WHEEL COMPANY, OF PENNSYLVANIA.

TRAMWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 564,552, dated July 21, 1896.

Application filed April 6, 1896. Serial No. 586,461. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. BOIES, of the city of Scranton, county of Lackawanna, and State of Pennsylvania, have invented certain new and useful Improvements in Tramway-Cars, whereof the following is a specification, reference being had to the accompanying drawings.

Said improvements appertain to a new method of construction for tramway-cars for the conveyance of material in bulk, such as are used in and about mines and industrial establishments, and more specifically consist of an improvement upon the form of tram-car which is fully described in an application by me for Letters Patent of the United States, which is now pending and bears Serial No. 568,908.

In the accompanying drawings, Figure 1 is a side elevation of a car embodying my invention. Fig. 2 is a front elevation of the same, and Fig. 3 is a plan view of such car viewed from beneath.

My invention consists in a frameless tram-car of the same general character as that which has been described in the application above referred to. That is to say, a tram-car from which is entirely omitted the usual framework upon which the body of the car is usually supported and the running-gear and draft-rigging attached.

In place of this framework I substitute a car-body sufficiently strong to carry the draft-rigging and running-gear directly, thus obtaining the advantage of lightness and simplicity.

The car-body is constructed as follows: The sides and body are composed of two pieces of sheet metal *a b*, (iron or preferably steel,) each bent to form a side and half the bottom. The two united edges are securely riveted together along the median line of the bottom of the car, forming a wide lap *c*, thus adding double strength to the bottom along the median line, where the hooks and links for coupling to other cars are attached. The sheet metal is about one-quarter of an inch in thickness and runs without break from one end of the car to the other. The body of the car is formed by bending this double piece of sheet metal at right angles along

the six lines *x x y y z z*, as shown in Fig. 2, thus giving the maximum capacity with the lowest possible center of gravity. To the bottom and sides thus formed are joined two end pieces *e d*, each consisting of a single piece of sheet metal cut to the corresponding shape. The piece *d* for the rear end is flanged to fit round the sides and bottom of that end, and through the flanges bolted or riveted in place.

The piece *e* for the front end is not flanged, but is cut to cover snugly the space which it occupies. It is swiveled along its upper edge upon a rod of metal, connecting the two upper forward corners of the car and bolted thereto. It is further held in place at the bottom by two metal hooks *f*, pivoted to the sides of the car and engaging with the projecting ends of the bar *g*, fastened across the front of the plate *e*, near the bottom, as customary in such cars.

In order to add stiffness and strength to the upper edge of the body, pieces *a*, *b*, and *d* may have their upper edges turned over upon themselves, as seen at *m*, thus doubling their thickness; or, if desired, they may be turned to an angle, or over a rod extending around the upper edge of the body.

The entire car-body is thus practically formed of four pieces of metal. The shape is such as to give strength, especially in resisting longitudinal strains, and this strength is greatest at the point where it should be, namely: the median line, where the strain of the draft-rigging principally falls. The car-body thus formed is not mounted upon any framework, but has draft-rigging, running-gear, and bumper-timbers attached directly to it.

The draft-rigging consists, at one end, of a hook *j*, riveted or bolted below the middle of the car directly upon the overlap. At the other end a link *k*, or a link and chain, may be similarly attached, either by being bolted or riveted directly to the lap, as the hook is, or with the intervention of a spring, as shown in the drawings. In this case a bracket-frame *l* is fastened to the car, in which the shank of the link is placed surrounded by a strong spiral spring which is capable of taking up any sudden strain at starting. Two straight

bumper-timbers *h h*, each longer than the car-body and fortified at their ends by iron plates, are independently bolted longitudinally to the bottom of the car-body, one on either side, with both ends projecting beyond the car-body. The running-gear may be attached to these bumpers by means of appropriate journal-boxes, as shown in the drawings, or, if preferred, the axles may be journaled directly upon the bottom of the car, it being understood that the function of the bumper-timbers is not to support the running-gear.

Having thus described my invention, I claim—

1. A car-body having the two sides and bottom composed of two pieces of sheet metal united by a wide riveted overlap along the median line, and having draft-rigging directly attached to the overlap, substantially as set forth.

2. A car-body having the two sides and bottom composed of two pieces of sheet metal united by a wide riveted overlap along the median line, its two ends composed of corresponding single flat pieces flanged to fit snugly, and having draft-rigging directly attached to the overlap, substantially as set forth.

3. A frameless tram-car consisting of a car-body, the sides and bottom of which are formed of two pieces of sheet metal united along the median line by a wide overlap, draft-rigging attached to said car-body at either end along the overlap; a pair of bumper-timbers

attached to the bottom of the car-body longitudinally one at either side; and running-gear attached to the bumper-timbers, substantially as set forth.

4. A frameless tram-car consisting of a car-body, the sides and bottom of which are formed of two pieces of sheet metal united along the median line by a wide overlap and bent at right angles along the lines *x x*, *y y*, *z z*, forming a central longitudinal depression; draft-rigging attached to said car-body at either end along the overlap; a pair of bumper-timbers attached to the bottom of the car-body longitudinally one at either side; and running-gear attached to the bumper-timbers, substantially as set forth.

5. A frameless tram-car consisting of a car-body, the sides and bottom of which are formed of two pieces of sheet metal united along the median line by a wide overlap and bent at right angles along the lines *x x*, *y y*, *z z*, forming a central longitudinal depression; draft-rigging attached to said car-body at either end along the overlap; a pair of bumper-timbers attached to the bottom of the car-body longitudinally one at either side; and running-gear attached to the bumper-timbers, the wheels thereof occupying the spaces between the bumper-timbers and the central depression, substantially as set forth.

HENRY M. BOIES.

Witnesses:

JOHN D. SHERER,
SELDEN H. KINGSBURY.