

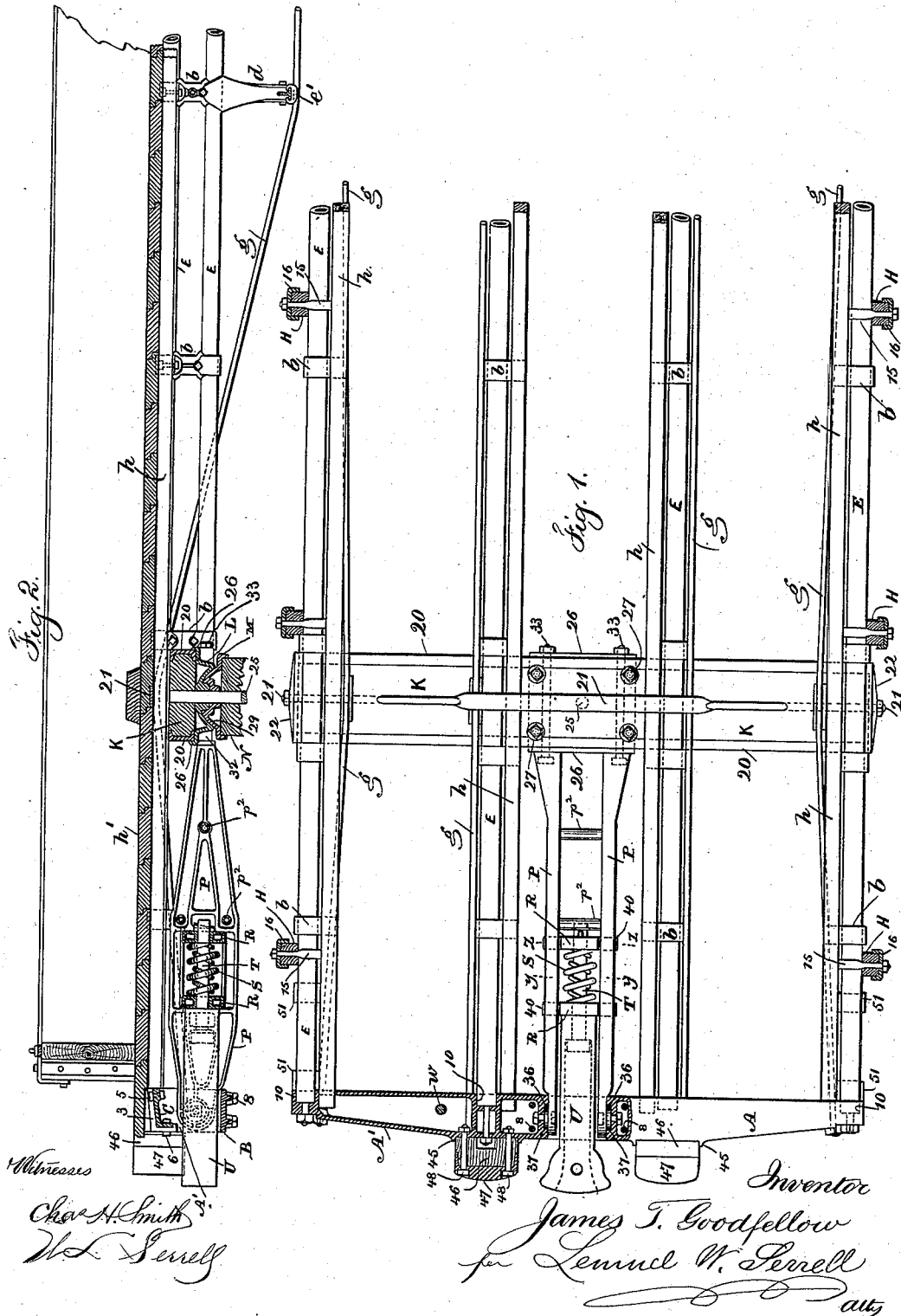
(No Model.)

3 Sheets—Sheet 1.

J. T. GOODFELLOW.  
METALLIC PLATFORM FOR RAILWAY CARS.

No. 385,177.

Patented June 26, 1888.

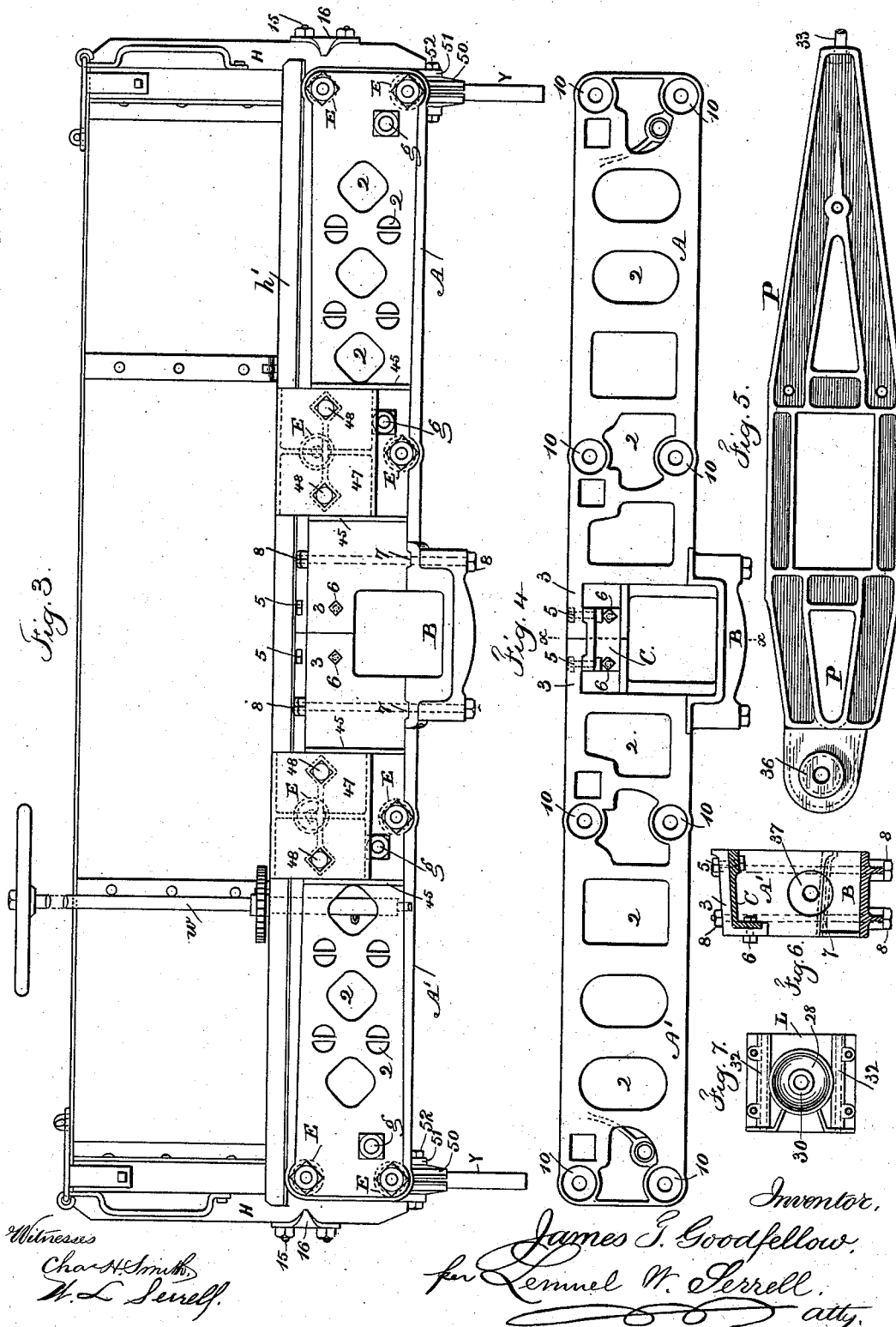


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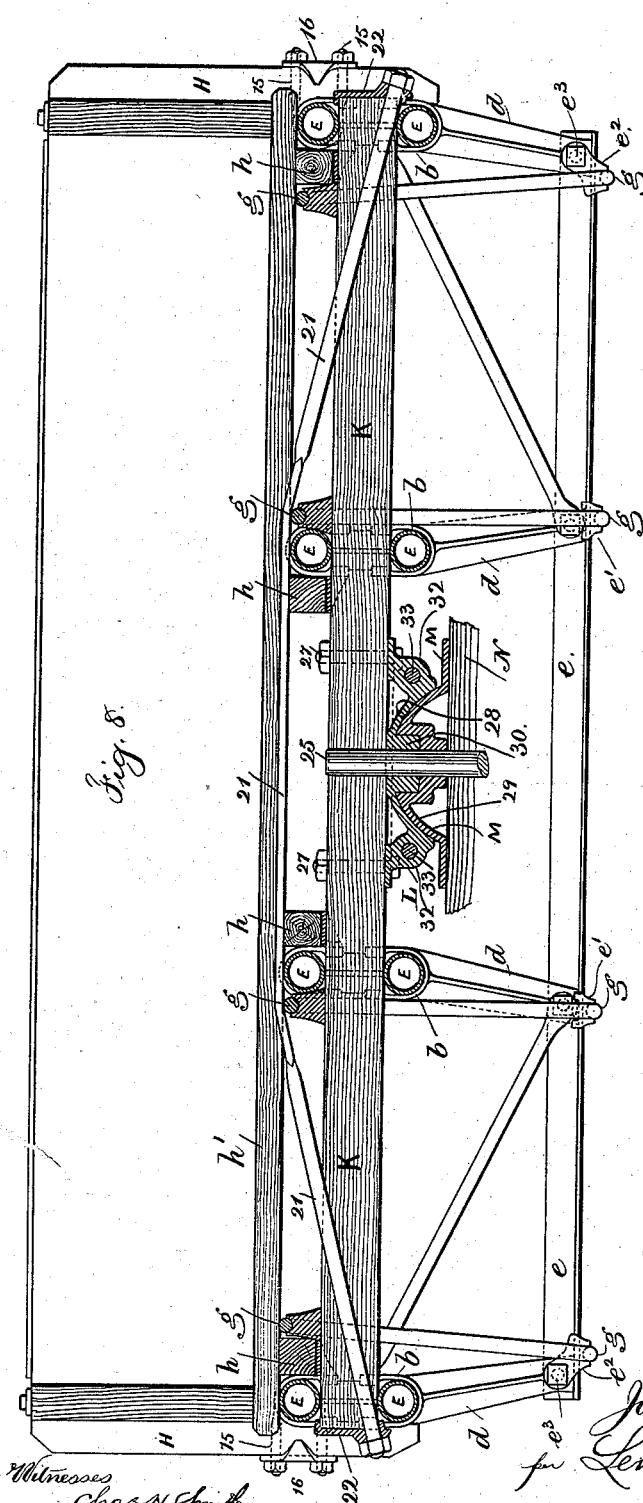


Fig. 8.

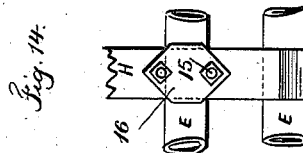


Fig. 14.



Fig. 11.

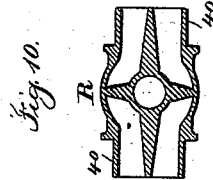


Fig. 10.

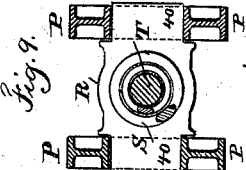


Fig. 9.

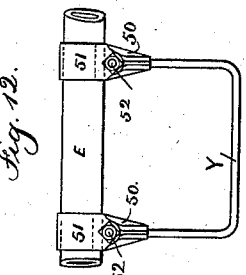


Fig. 12.

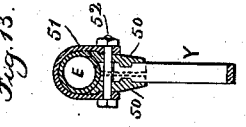


Fig. 13.

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# UNITED STATES PATENT OFFICE.

JAMES T. GOODFELLOW, OF TROY, NEW YORK, ASSIGNOR TO THE IRON CAR COMPANY, OF STAMFORD, CONNECTICUT.

## METALLIC PLATFORM FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 385,177, dated June 26, 1888.

Application filed June 15, 1887. Serial No. 241,356. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES T. GOODFELLOW, of Troy, in the county of Rensselaer and State of New York, have invented an Improvement in Metallic Platforms for Railway-Cars, of which the following is a specification.

My present invention is made for rendering the tubular metallic platform stronger than those heretofore constructed without materially increasing the weight or expense of the same; and my said improvements relate especially to the end sills of the platform, the king-bolt plates, and the connections between the king-bolt plates and the end sills, between which are the draw-frames and draw-bar.

These present improvements are especially adapted to use in connection with tubular platform-frames and the connections for the same, similar to those shown in Letters Patent Nos. 307,846 and 308,034, granted November 11, 1884, and a reference is hereby made to the said patents as illustrating some portions of the connections between the longitudinal tubes.

In the drawings, Figure 1 is a plan view, partially in section, at one end of the car-frame. Fig. 2 is a longitudinal central section. Fig. 3 is an elevation at the end of the car-platform. Fig. 4 is a detached rear view of the end sill. Fig. 5 is a separate elevation of one of the draw-frames. Fig. 6 is a cross-section through the center of the end sill at the line *x x*, Fig. 4. Fig. 7 is an inverted plan of the upper king-bolt plate. Fig. 8 is a cross-section at the king-bolt. Fig. 9 is a cross-section at *y y*, Fig. 1, in larger size. Fig. 10 is a section through one of the follower-plates, at the line *z z*, Fig. 11. Fig. 11 is an end view of said follower-plate. Fig. 12 is an elevation of the step. Fig. 13 is a cross-section through the clip that unites the step to the tube, and Fig. 14 is an elevation of the clip that unites one of the stakes to the tube.

The cast-metal parts made use of for uniting the tubes together and the end sills are preferably of malleable cast-iron, so as to possess the required strength, ductility, and toughness. The end sills are made hollow and box-shaped, and the top and bottom edges are parallel, or nearly so; but such end sills are broader in the middle than at the ends, as seen in Fig. 1, to lessen weight, and to allow the

cars to run upon curves without the sills coming together at their ends. The end sill may be cast in one piece of metal; but I prefer and have so shown the sill made in two pieces, A and A', which are the counterparts of each other, but handed, such right and left hand sections of the end sill being united by the yoke-piece B and splice-piece C.

The right and left hand parts of the end sill are not only made hollow and box-shaped and narrower near the ends, as before described, but there are openings in the vertical front and back portions of the end sill, as shown in 2 2, Figs. 3 and 4, the object of these openings being to lessen the weight of the cast metal and for supporting the core within the mold. These openings may be of any desired shape.

In the middle portion of the end sill, where the right and left hand parts come together, an opening is provided for the reception of the ends of the draw-frame, hereinafter described, and the top flanges, 3, are ribbed on their under sides (see Fig. 4) and L-shaped, so as to receive within them the splice-piece C, and the bolts 5 pass vertically through the splice-piece and through the flanges 3, and the bolts 6 pass horizontally through the splice-piece and through the vertical portions of such flanges 3, so that a very firm connection is made at the upper inner ends of the two parts of the end sill.

The yoke-piece B is recessed upon its upper surface (see Figs. 3 and 4) to form part of the opening into which the ends of the draw-frame are inserted, and there are ribs 7 on the under sides of the end sill-pieces and grooves in the upper surfaces of the yoke-piece and bolts 8, passing up vertically through the yoke-piece and through the bottom of the hollow end sill for firmly connecting the right and left hand parts of such end sill together at the lower inner parts of the same, and this yoke-piece is ribbed, as shown in Figs. 3, 4, and 6, for obtaining the requisite strength and lightness.

The longitudinal tubes E E are provided with bolts at the ends, similar to those shown in the aforesaid patents, and in the end sills there are sockets 10 for the reception of the ends of the tubes and holes for the passage of the bolts, so that the nuts of the bolts at the outer surface of the end sill will firmly draw

the tubes into the sockets and unite the end sill and tubes together. If the longitudinal tubes E are square, or if wood sills are used in place of the tubes, the sockets for receiving the ends will be shaped to correspond.

The clips *b*, for connecting the pairs of tubes and the struts *d* and T-shaped tie-bars *e*, correspond to those shown in my Patent No. 308,034, and the truss-bolts *g* are similarly arranged and applied, and they pass at their ends through the end sills, and they are drawn up by nuts; but in order to prevent the truss-bolts slipping upon the tie-bars *e*, I make use of saddles *e'*, having jaws upon their upper faces to slip endwise upon the tie-bars *e*, and grooved under surfaces, into which the truss-bolts *g* are received, and the end saddle-pieces, *e''*, are similarly formed; but in addition they are extended upwardly to form side plates, through which the bolts *e'* pass that unite the tie-bars *e* and struts *d*. The longitudinal sill-pieces *h*, flooring *h'*, and the sides that form the inclosure or box of the car are similar to those shown in the aforesaid patent, with the exception that each vertical post or stake H is connected to the tube E by a U-shaped strap, 15, that passes around the tube and through holes in the stake H, and through holes in the square plate 16, which plate is placed diagonally, as shown in Fig. 14, and two of the corners are bent backwardly to clip or support the stake, as seen in Figs. 8 and 14.

The transom-beam *k* is preferably of wood, inclosed at its edges by trough-shaped metal bars 20, (see Figs. 1 and 2,) and to strengthen this transom-beam there is a tie-rod, 21, flattened in the middle portion to rest upon the sill-pieces H and truss-bolts *g*, and the round end portions of this tie-rod 21 pass diagonally through this transom-beam and through the end plates, 22, and are drawn tight by nuts, so as to render the transom-beam very stiff and strong.

Upon the under side of the transom-beam is the top plate, L, for the king-bolt 25, and this top plate has flanges 26 at front and back of the transom-beam, and it is secured thereto by the bolts 27. The center portion of this top plate, L, is a zone-shaped cavity, 28, receiving a similar projection, 29, upon the bottom plate, M, that rests upon and is supported by the central or bridge beam, N, of the truck, and there is a circular recess in the center of the zone-shaped projection 29, receiving the cylindrical boss 30, that surrounds the king-bolt. By this construction the truck is free to swivel upon the king-bolt. The parts are very strong and light, and the king-bolt plates relieve the king-bolt almost entirely from strain.

Upon the top plate, L, are the tubular flanges 32, through which pass the bolts 33, by which the draw-frames P are connected to the top plate of the king-bolt, so that the traction-force in drawing the train is applied to the transom-beams of the cars.

The draw-frame is composed of two bars similar to those shown in Figs. 1, 2, 5, and 9. Each bar is made with openings to lessen the weight, and there are flanges along the edges of the metal (see Figs. 5 and 9) to strengthen and stiffen the same and avoid too great weight. The bolts 33 connect the ends of these draw-frames directly to the top plate, L, of the king-bolt, (see Figs. 1 and 5,) and the back ends of the draw-frames are slightly convex around the bolts 33, so as to allow for a motion at this point that may result from any spring of the frame or from concussion in backing the train, and a similar motion is allowed for at the front ends of the draw-frames by the devices next described.

The front end of each draw-frame is made as a plate, with a circular projection, 36, upon the outer face of the same. These plates pass into the opening between the right and left hand portions of the end sill and the projections or bosses 36 are received into the cavities provided for them in the inner faces of such opening, as seen at 37, Figs. 1 and 6, and a countersunk bolt firmly connects each draw-frame to the sill, and the bosses 36 lessen the strain upon such bolts. There are cross-bolts at *p'*, to tie the draw-frames together, and these preferably pass through tubes that hold the draw-frames at the proper distance apart.

Within the draw-frames there are openings for the reception of the ends of the follower-plates R. (Shown in larger size in Figs. 9, 10, 11.) These follower-plates are preferably hollow, and the end portions, 40, pass into the openings in the draw-frames P, and between these follower-plates any suitable spring is introduced, preferably double helical springs, as shown at S, and there is a bolt, T, passing through the spring and through the follower-plates and connecting with the draw-bar U, which draw-bar may be of any desired character, and it receives the link or other coupling to connect one bar to the next. The inner end of the draw-bar rests against the front follower-plate, and a wedge passes through the bolt T behind the rear follower-plate, so that the spring is compressed when the train is being drawn or when the cars are being pressed together in backing.

It will be apparent that the draw-frames form a reliable and strong connection between each end sill and the transom-beam, so that the one part aids in strengthening the other, and these draw-frames are not liable to be bent or injured by any ordinary deflection of the platform when loaded, or when the car is passing switches or curves in the track.

Upon reference to Fig. 3 it will be seen that the vertical shaft *w* for the brake-chain passes through the top of the box-shaped end sill, and its lower reduced end enters a hole in the bottom of such end sill, so as to be firmly supported by the end sill without the use of brackets, and the brake chain is wound around the shaft within the end sill, and the opening

in the rear of the end sill is sufficiently large to prevent the chain coming into contact with the metal of the end sill.

Upon the outer faces of the end sills there are vertical ribs 45, receiving between them the blocks of wood or rubber 46, and these are capped with flange-plates 47, to protect them from wear, and the bolts 48, passing through the cap-plates and blocks and into the end sills, connect the parts together, so as to form buffers that receive the pressure when the cars are being backed.

The step Y is made of a U-shaped metal bar, the ends of which are notched, as seen in Fig. 13, and there are two coupling-pieces, 50, one at each side of each end of the step, (see Figs. 3, 12, and 13,) and the clip-pieces 51 pass over the tube, and bolts 52 pass through the clip-pieces and through the coupling-pieces and firmly clamp the parts upon the tube, so that the step will be reliably suspended and it will not turn upon the tube.

I claim as my invention—

1. The combination, with the tubes and truss-bolts in a car-platform, of cast-metal end sills that are hollow and box-shaped, and provided with sockets cast with the end sill for the reception of the ends of the tubes, and holes for the passage of the truss-rods, substantially as set forth.

2. The end sills for car-platforms, each formed of right and left hand parts, in combination with the splice-piece C and yoke-piece B, for uniting the two parts of the end sill together, substantially as set forth.

3. The combination, with the draw-bar, spring, and followers, of a cast-metal draw-frame composed of two bars, each of which is made in one piece, having holes near the ends for attaching the same firmly in place, and supports for the movable followers at the ends of the springs, substantially as specified.

4. The combination, with the end sill and transom-beam, of draw-frames, each of which is made with openings and flanges for stiffening the metal, and a boss or circular projection upon the draw-frame, entering a recess in the end sill, and bolts for connecting the respective parts, substantially as set forth.

5. The combination, with the longitudinal tubes, the transom-beam, truck, and king-bolt, of the king-bolt plates, one of which has a zone-shaped projection and the other a similar-shaped recess, and a cylindrical projection on one entering a similar recess in the other, substantially as set forth.

6. The combination, with the transom-beam and the draw-frames, of the upper king-bolt plate having tubular flanges upon the same and the bolts for connecting the ends of the draw-frames with the king-bolt plate, substantially as set forth.

7. The combination, with the draw-frames, draw-bar, and spring, of follower-plates, each one of which is hollow and box-shaped and provided with internal ribs, and with a central

hole, and the draw-bar bolt passing through the spring follower-plates and into the draw-bar, substantially as set forth.

8. The combination, with the T-shaped tie-bar *e* and the truss-bolts *g*, of the saddle adapted to receive the T-head of the tie-bar and grooved on the under side for the truss-bolt, substantially as set forth.

9. The transom-beam of wood with trough-shaped metal bars at its sides, in combination with the metal tubes of the car-frame, the floor-sills, the tie-rod passing across the tubes and through the end portions of the transom-beam, and the end plates through which the tie-rod passes, substantially as set forth.

10. The combination, with the metallic tubes in a car-platform, of the U-shaped step, the clip piece passing around the metallic tube, the coupling-pieces at the upper ends of the step, and the bolts passing through the same and through the clip-pieces, substantially as set forth.

11. The combination, with the longitudinal sills in a car-platform, of hollow box-shaped metallic end sills having sockets or recesses cast upon them for the reception of the longitudinal sills, substantially as set forth.

12. The combination, with the end sill and transom-beam, of draw-frames, each of which is made in one piece with flanges for stiffening the metal and openings for receiving the ends of the followers, and bolts for connecting the ends of the draw-frame to the end sill and transom-beam, respectively, substantially as set forth.

13. The cast-metal draw-frame P, made in one piece, having flanges to strengthen the metal, openings for the attaching-bolts, and an opening for the followers of the draw-bar, substantially as set forth.

14. The cast-metal end sill formed as a hollow box, with openings to lessen the weight and tapering toward the ends, substantially as set forth.

15. The follower for the draw-bar spring, made of malleable cast-iron in one piece and having front and back plates and connecting plates or flanges, so as to form a hollow box with an opening through it for the draw-bolt, substantially as specified.

16. The compound clip-pieces 50 and 51, adapted to connect the step and tube, substantially as set forth.

17. The end sill formed of cast metal as a hollow box with openings, in combination with the brake-shaft passing through the top of the sill, and having its lower end within a socket in the lower part of the sill, substantially as set forth.

Signed by me this 27th day of May, A. D. 1887.

JAMES T. GOODFELLOW.

Witnesses:

ASHBELL BARNUM,  
FRED J. POTTER.