(No Model.)

G. W. DITHRIDGE.

METALLIC RAILWAY CAR.

No. 464,314. Patented Dec. 1, 1891.

Fig. 3.

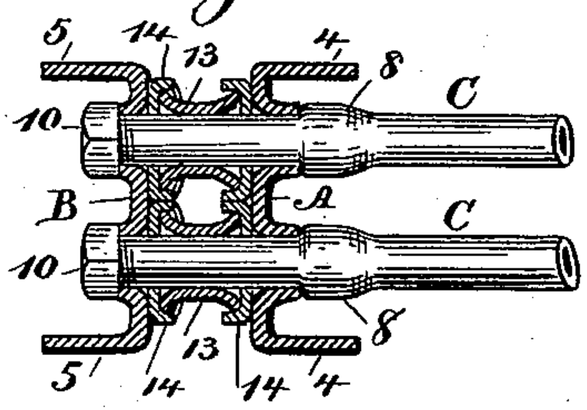


Fig. 4.

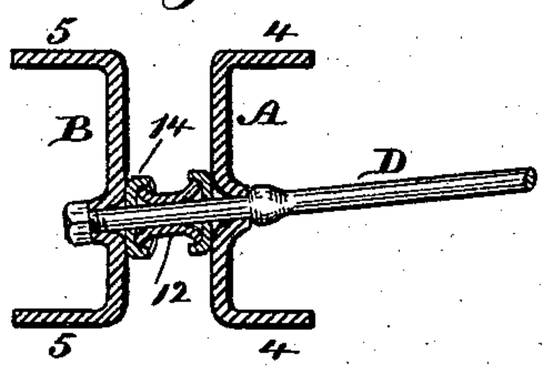


Fig. 5

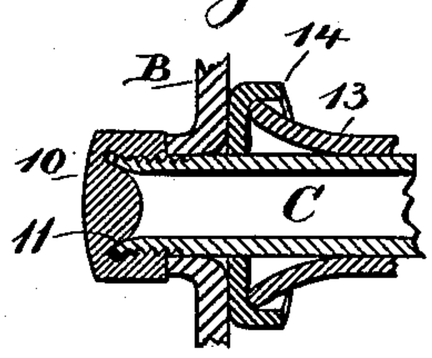


Fig. 1.

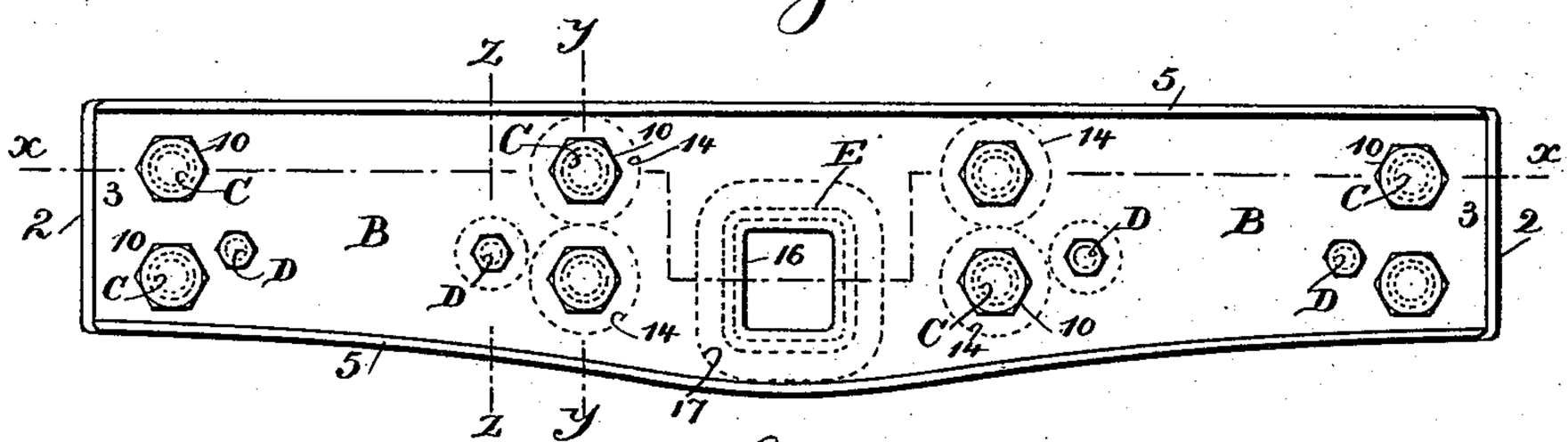
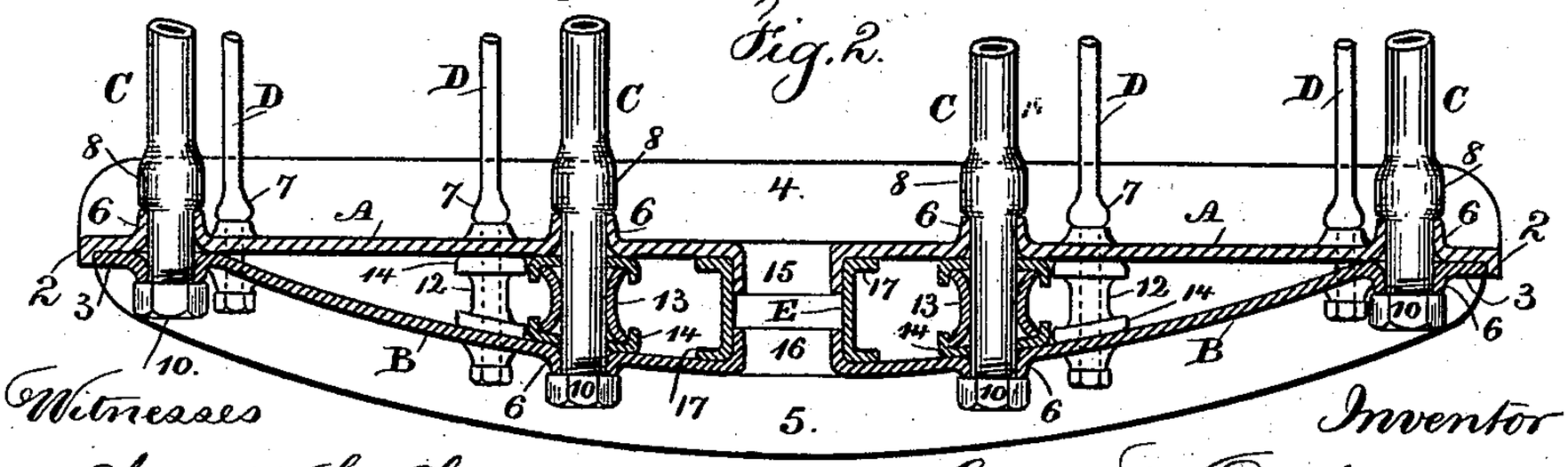


Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE W. DITHRIDGE, OF NEW YORK, N. Y.

METALLIC RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 464,314, dated December 1, 1891.

Application filed January 19, 1891. Serial No. 378,215. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. DITHRIDGE, a citizen of the United States, residing in the city and State of New York, have invented an Improvement in Metallic Railway-Cars, of which the following is a specification.

The platforms of metallic railway-cars have heretofore been made with longitudinal tubes, sometimes of steel, and at the ends of the platforms sills have been connected with the tubes, such end sills being made of one or more castings of malleable iron; but in practice these are found to be heavy and not to possess the desired elasticity, and they become bent and cannot easily be repaired.

My present invention is made with reference to obtaining lightness, strength, and elasticity in the end sills of the car-platform, and each end sill is made of metallic plates, preferably of steel, rolled, forged, and provided with flanges, openings, and interlocking flanges, as hereinafter described, so as to receive the longitudinal tubes and tie-rods and form a very strong, light, and durable end sill for a car-platform.

In the drawings, Figure 1 is an elevation of the front of one of the end sills. Fig. 2 is a sectional plan view at the line *x x* of Fig. 1; and Figs. 3 and 4 are vertical cross-sections at the line *y y* and *z z*, respectively. Fig. 5 is a section in larger size at the end of one of the tubes.

Each end sill of the car is made of two principal members—the internal plate A and the external plate B—and at C C tubes are represented, preferably of iron or steel, and at D tie or truss rods, and it is to be understood that the number of these tubes and tie-rods will vary with the size and character of the car, and the width of the plates A and B and their length will also vary; but the peculiarities of construction to which my invention relates may be applied to the platform of any size or character of car. The internal plate A is preferably straight, or nearly so, and the external plate B is arched outwardly, either as a regular curve or formed with inclines or bends, and at the ends of the internal plate A there are vertical flanges 2, within which the ends 3 of the external plate A are received, and such ends 3 may either be straight, flanged, or thickened by being upset, and these flanges 2 and ends 3 setting closely together form a firm support to the external plate A against concussion or pressure at the end of the platform, because any pressure at the center of the plate B is taken by tension upon the internal plate A by the flanges 2, and these flanges may alone be depended upon, or the plates A and B may also be riveted together at their ends.

Another feature in the construction of the end sill by the two plates A and B is that these plates A and B are strengthened by top and bottom flanges, the flanges 4 upon the internal plate A being turned, preferably, inwardly of the platform, and these flanges not only stiffen and strengthen the end sill, but said flanges 4 are adapted to receiving the flooring or surface of the platform; and the flanges 5 on the edges of the plate B are preferably turned outwardly and form a protection to the other parts of the end sill that project beyond the external plate B. The width of the plates A and B and also the width of the flanges 4 and 5 will depend upon the size of the end sill and upon the strength required.

At the places where the tubes C and the tie-rods D or both pass through the plates A and B of the end sill the steel or other metal of the plate is most likely to become injured immediately adjacent to the opening through which the tube or tie-rod passes. To strengthen the plate metal at such openings, I perforate the plate with a smaller hole than that which is required, and spread the plate or sheet of metal by a suitable die or tool into a trumpet-mouth, as shown at 6, by which means the plate metal is not only stiffened, but a broader base or area is given for the pressure or strain coming upon the plate from the tie-rods or tubes, and it is to be understood that these openings and trumpet-mouths are to be applied at the proper places, and made with reference to obtaining the greatest strength from a given thickness of plate or sheet metal in the end sills.

In order to make a proper bearing of the tubes or tie-rods against the metal adjacent to the openings, such metal is to be properly faced off or rendered true by the die, and the tube or tie-rod is provided with a shoulder

adapted to rest against the annular trumpet-mouth bearing. To accomplish this object, lock-nuts may be made use of but I prefer to swell the tube or tie-rod at the proper place, and this may be done by upsetting the tie-rod in a heated condition and in suitable dies, and the tube may be swelled outwardly by a tube-expander of any ordinary character. I have represented the tie-rods upset to form shoulders at 7, and the tubes expanded as at 8, and these shoulders will properly come against the inner faces of the internal plate A, the tubes or tie-rods passing through such internal plate A, and also through the external plate B, and at the face of such external plate B where the same is struck up to a trumpet-mouth bearing, the tie-rods are provided with nuts and the tubes C are either expanded as in inserting boiler-tubes or preferably they are externally screw-threaded to receive the nuts 10, and these nuts are made as shown sectionally in larger size in Fig. 5, the screw-thread being cut upon the interior surface and the nut recessed at the inner end of the screw-thread, and adjacent to the recess is a conical portion 11, adapted to pass into the inside of the tube, so that by giving the nut an extra turn and preferably driving the same slightly endwise the conical portion 11 expands the extreme end of the tube sufficiently to prevent the nut from working loose and dropping off, and at the same time the end of the tube is closed to exclude moisture.

Between the inner surfaces of the plates A and B and around the tubes C and the tie-rods D there are to be sleeves. I have shown sleeves 12 for the tie-rods and the sleeves 13 for the tube C, and the lengths of these sleeves will vary according to the place where the tube or rod passes through the end sill, and it is preferable to spread the ends of the sleeves into trumpet-mouths corresponding to the trumpet-mouthed openings in the plates A and B, and the parts are strengthened and the bearings widened by employing washers 14 around the tubes or the tie-rods and between the ends of the sleeves and the plates of the end sill, and by providing annular rims upon the washers for receiving the edges of the trumpet-shaped ends of the sleeves the strength of the parts is increased, because the trumpet-mouthed ends of the sleeves cannot spread by the end pressure to which they are exposed. By this construction the end sill is very strongly connected with the respective tubes and tie-rods or truss-rods. The weight of the parts is much less than heretofore usual, and there is considerable elasticity, so that the parts do not become bent by the ordinary concussion and strain to which they are subjected, especially in running the cars together in backing a train.

In some instances the draft-bars are below and independent of the end sills. In other instances the draft-bars pass through openings in the end sills. When the construction of the car-platform is such that the draft-bar is to pass through the end sill, I provide in the plates A and B openings of the proper size, and cut these openings smaller and spread inwardly the metal to form flanges 15 16, which stand toward each other, and a tube E, preferably rectangular, of the proper size is introduced between the plates A and B and around the flanges 15 16, and this tube may be provided with flanges 17 at its ends. Hence in this construction the strength of the plates A and B is not materially lessened by the openings provided for the draft-bar, and I remark that the tube E may be bolted or riveted to the flanges 15 and 16 and the flanges 17 of the tube E may be bolted or riveted to the plates A and B.

I have not represented any draw-bar, as the same may be of any desired character.

I claim as my invention—

1. The end sill for metallic cars, composed of the internal plate A, having end flanges 2 and flanges 4 upon the top or bottom edges, and the external plate B, the ends of which are received between the flanges 2, substantially as set forth.

2. The end sill for metallic cars, composed of the internal plate A, having top and bottom flanges 4 and end flanges 2, and the external plate B, the ends of which are received between the flanges 2 and having flanges 5, there being openings through the respective plates for the tie-rods and tubes, substantially as set forth.

3. The metallic end sill for railway-cars, composed of the wrought-metal plates having openings with the metal bent trumpet-shaped at the openings, in combination with the tie-rods and tubes passing through such openings and connected with the end sill, substantially as set forth.

4. The internal plate A and external plate B, of wrought metal, having top and bottom flanges and interlocking at the ends and openings through such plates, in combination with the tie-rods and tubes passing through such openings and secured in place, substantially as set forth.

5. The combination, with the tube or tie-rod, of a wrought-metal end sill or plate having trumpet-shaped openings for the tie-rods or tubes, there being flanges or shoulders upon the tubes or tie-rods resting against the metal of the plate at the trumpet-shaped opening, substantially as set forth.

6. The end sill composed of the wrought-metal plates A and B, having trumpet-shaped openings, in combination with the tie-rods and tubes passing through such openings, and the sleeves between the plates A and B, and the nuts for securing the tubes and tie-rods in place, substantially as set forth.

7. The combination, with the end-sill plates having openings through them, of the tubes and tie-rods, the sleeves having trumpet-

shaped openings, and the shoulders and nuts or fastenings for the respective tubes and tie-rods, substantially as set forth.

8. The sleeves having trumpet-shaped ends, in combination with the washers having annular flanges receiving the trumpet-shaped ends of the sleeves, substantially as set forth.

9. The combination, with the internal and external wrought-metal plates forming the end sills, of the tube E between such plates at the opening for the draft-bar, the metal of the plates or tube, or both, being flanged, substantially as set forth.

Signed by me this 2d day of January, 1891.

GEO. W. DITHRIDGE.

Witnesses:

O. H. SIMONDS,

R. L. ETTINGER.