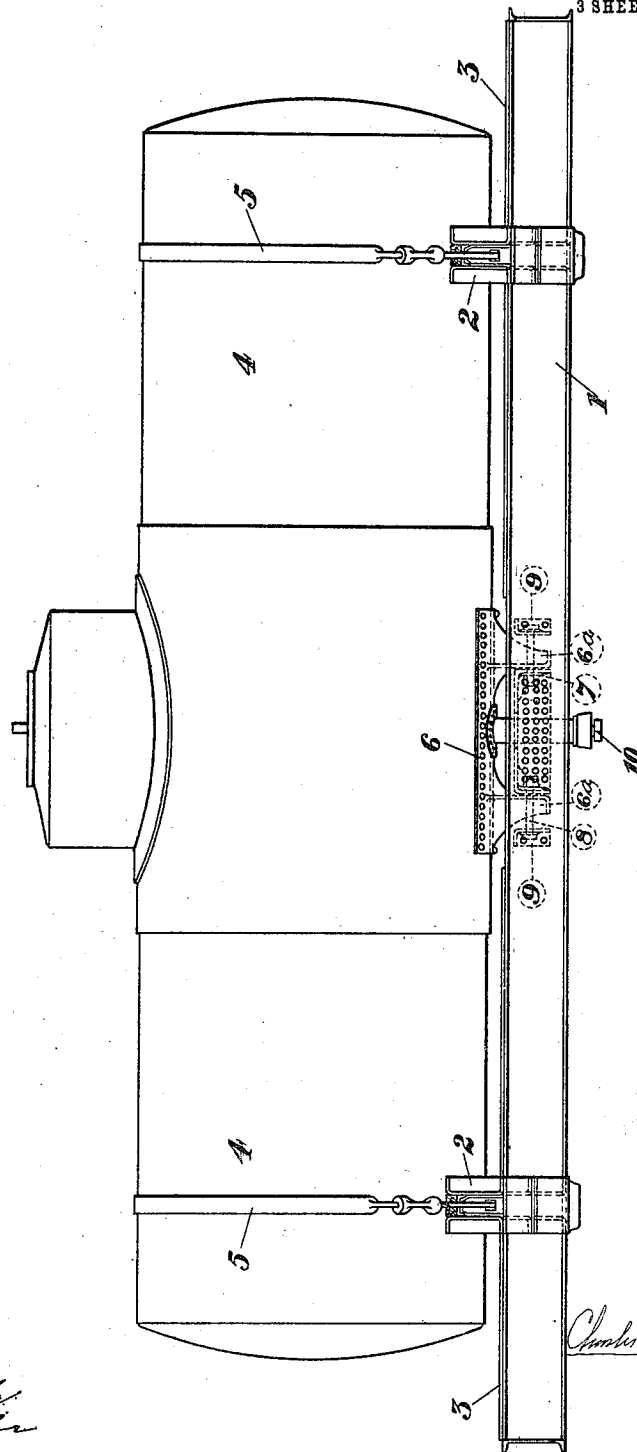


TANK CAR.

1,011,216.

3 SHEETS—SHEET 1.

Fig. 1.



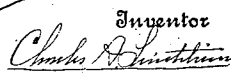
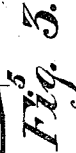
Witnesses
Frank C. Miller
W. D. Sifer

Inventor
Charles A. Lindstrom

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Patented Dec. 12, 1911.

3 SHEETS—SHEET 2.



C. A. LINDSTRÖM.
TANK CAR.

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1,011,216.

Patented Dec. 12, 1911.

3 SHEETS-SHEET 3.

Fig. 5.

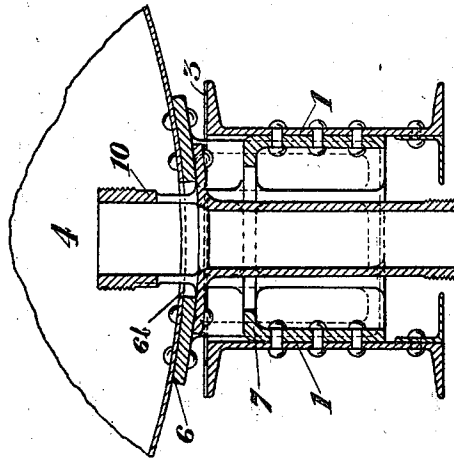
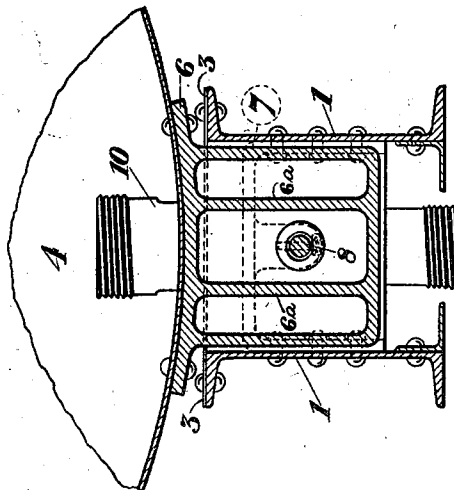


Fig. 4.



Witnesses

Frank C. Miller.
M. S. Lifer

Inventor
Charles A. Lindström

UNITED STATES PATENT OFFICE.

CHARLES A. LINDSTRÖM, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO PRESSED STEEL CAR COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

TANK-CAR.

1,011,216.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed June 12, 1909, Serial No. 501,778. Renewed July 3, 1911. Serial No. 636,743.

To all whom it may concern:

Be it known that I, CHARLES A. LINDSTRÖM, a citizen of the United States, residing at Pittsburgh, Northside, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Tank-Cars, of which the following is a specification.

An object of the present invention is to provide an improved tank car construction of the form in which the tank is securely fastened to the underframe, preferably substantially at the center of the car and supported at or near its ends in such a manner that expansion and contraction of the metal in the tank, due to temperature changes, may take place.

A specific object of the present invention is to provide a tank car construction of the above described type, in which while the tank is securely fastened to the underframe it may be easily and quickly removed therefrom.

For producing these results, suitable means is employed for bolting the tank to the underframe to hold the same securely to the underframe and in such a manner as to prevent any relative movement between the tank and underframe, except that due to expansion and contraction of the metal.

The invention is fully, clearly and accurately described in this specification, and is shown in the accompanying drawings in which like reference characters refer to like parts, and in which—

Figure 1 is an elevation of a tank car, minus its trucks, equipped with an embodiment of the invention; Fig. 2 is a plan view of the subject-matter of the invention, showing a portion of the bottom sheet of the tank; Fig. 3 is a longitudinal section of the same on the line 3—3 Fig. 2; Fig. 4 is a transverse section of the same on the line 4—4, Fig. 2, and Fig. 5 is a like view on the line 5—5, Fig. 2.

Referring now in detail to the drawings, 1 represents the center sills and 2 the saddles or cradles which, together with the center sills 1, constitute substantially the entire underframe of the car; the underframe of the car, however, may be of any suitable construction. As shown in the drawings, there are two center sills 1 spaced apart by cover plates 3, and they form the backbone of the car, adapted to receive and transmit

buffing and pulling shocks. 4 is a tank resting on the saddles or cradles 2 at or near its ends but not permanently secured thereto. Any suitable number of tank stays or bands 5 may be employed for holding the tank to the underframe. These stays or bands 5 may also be located in any suitable position relative to the length of the car. As a part of the means for securely and detachably holding the tank to its underframe and preventing relative longitudinal movement between the tank and its underframe, an anchor plate, casting or member 6 is employed which is securely attached, as by rivets, to the tank 4, preferably on the underside at its longitudinal and transverse center. The anchor casting or member 6 is provided with a concave upper face and a pair of depending legs or projections 6^a spaced from each other in a direction longitudinal of the car, and these legs or projections 6^a and the whole anchor casting or member 6 may be and preferably are ribbed and reinforced to render the same strong enough to resist the shocks to which they are subjected.

Coöperating with the anchor plate, casting or member 6, to hold the tank securely to its underframe, is employed an anchor plate, casting or member 7, preferably of cast steel, suitably ribbed or reinforced for purpose of strength, riveted or otherwise suitably secured to and preferably between the center sills 1. Plate 7 is preferably located at a point, longitudinally of the center sills 1, where it will be between the depending legs 6^a of the plate, casting or member 6, when the parts are in adjusted positions. Finally, plates, members or castings 6 and 7 are secured to each other through the medium of bolts 8 passing through suitable perforations in said members 6 and 7 and in butt plates 9 located a suitable distance and spaced from plates 7 and riveted or otherwise suitably secured to the center sills 1.

Plates 7 and 9 preferably extend between and are secured to each of the center sills 1 so that they form struts or stiffeners for the center sill at the point of attachment of the tank 4 to the underframe. These plates are provided with vertical sides and ends and also horizontal portions, but one or more sides of each are preferably left open so that manipulation of the bolts and rivets forming parts of the connection is facilitated.

tated. The length of the plate 7 is made as nearly as possible the same as the distance between the opposing faces of the legs 6^a, as the use of rough castings will permit, to obtain as snug a fit and prevent as far as possible any relative movement of the parts longitudinally of the car. If desired, however, the opposing faces of the plates 7 and the legs 6^a may be milled to obtain an absolutely snug fit. Cotters 8^a are illustrated in the drawing for the purpose of holding the bolts 8 in adjusted position, but bolts 8 may, if desired, be threaded in the customary manner and nuts may be employed. The horizontal side or web of the plate 7 is shown perforated at 7^a through which perforation the tank nozzle 10 extends. Of course, the nozzle 10 may be located in any other convenient position on the tank 4, but the customary location at center of bottom of the tank is desirable since the perforation 7^a will then occupy a space in the neutral axis of the upper side or web in the plate 7.

The plate 7 is not only designed to stiffen the center sill construction of the car, but is also designed for the purpose of proper transmittal of the strains of buffing and pulling shocks, and for the proper distribution of stress within plate 7. The plate 6 is also perforated at its neutral axis for the same purpose and for the same reason as stated in connection with the perforation 7^a of the plate 7. Nozzle 10 is provided with an annular flange by means of which it is riveted or otherwise secured to tank 4, such flange being riveted to the undersurface of plate 6, as a better and easier fit of the nozzle is possible than if said flange were located beneath plate 6. Locating the perforation in the plate 6 and the nozzle 10 centrally on the plate 6 makes the rivets more accessible to the riveting tools, as the riveting in this position is not interfered with by reinforcing flanges or vertical faces of plate 6.

The construction thus shown and described provides a securing means for the tank on the underframe which leaves the tank on either side of its longitudinal center absolutely free for expansion or contraction due to temperature changes and provides against longitudinal, vertical or pivotal movement of the tank on its underframe.

The specific connection between the tank and underframe shown and described may, however, be located at any other suitable point longitudinally of the car and may be duplicated. For instance, a like connection may be located at each bolster point but would not be quite as advantageous as the expansion and contraction of metal in the tank would then be limited to a greater or less extent unless longitudinal movement between the parts was provided for.

By arranging the anchor plates 6 and 7 so that when the parts are in adjusted posi-

tions they are located between the center sills 1, it will be seen that the center of gravity in the tank is lowered over what it would be if the connection between said anchor plates was made at a point above the center sills.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a tank car, the combination with an underframe and a tank, of overlapping anchor members located within the car underframe, and a longitudinal bolt passing through said members to secure them to each other.

2. In a tank car, the combination with an underframe and a tank, of anchor members mounted on said tank and underframe, and located below the upper horizontal plane of the underframe, one of said members embracing the other of said members and a bolt securing said members to each other.

3. In a tank car, in combination with an underframe and a tank, a plural-legged anchor member secured to said tank and extending downwardly to a point within the underframe, and an anchor member secured to the underframe and embraced by the legs of the tank anchor member, said legs of the tank anchor member being substantially in contact with said underframe anchor member.

4. In a tank car, in combination with an underframe and a tank, a plural-legged anchor member secured to said tank and extending downwardly to a point within the underframe, and an anchor member secured to the underframe and embraced by the legs of the tank anchor member, and a bolt securing said members to each other.

5. In a tank car, in combination with a tank and an underframe comprising a pair of center sills, an anchor plate riveted between said center sills, an anchor plate riveted to said tank and overlapping said underframe anchor member, and a longitudinal bolt securing said members to each other.

6. In a tank car, in combination with a tank and an underframe comprising a pair of center sills, an anchor plate riveted between said center sills, an anchor plate secured to the tank and having a pair of legs extending downwardly on either side of said underframe anchor plate, and bolts passed through said legs and said underframe anchor plate to secure the parts to each other.

7. In a tank car, in combination with an underframe comprising a pair of center sills and a tank, a reinforced anchor plate secured between said center sills and a reinforced plural-legged anchor plate secured to said tank and embracing the anchor plate in said underframe.

8. In a tank car, having a tank and an

underframe comprising a pair of center sills, a reinforced anchor plate secured between said center sills, a reinforced plural-legged anchor plate secured to said tank and embracing the anchor member between the center sills, and longitudinal bolts passed through said legs and members securing the said anchor members together.

9. In a tank car, the combination with a tank and an underframe comprising a pair of center sills, of a reinforced anchor plate secured between said center sills, butt plates secured to said center sills in line with said anchor plate, an anchor plate secured to said tank and having legs extending downwardly between the butt plates and the anchor plate in the underframe and means securing the anchor plate, the legs and butt plates together.

10. In a tank car, the combination with a tank and an underframe comprising a pair of center sills, of a reinforced anchor plate secured between said center sills, butt plates also secured between said center sills and spaced from said anchor plate, an anchor member secured to said tank and having a plurality of legs extending downwardly between the butt plates and said anchor plates, and longitudinal bolts passed through said

butt plates, said legs and said anchor plate to secure the tank to the underframe.

11. In a tank car, an underframe and a tank, a perforated anchor casting on said tank, a perforated anchor casting on said underframe, and a tank nozzle passing through the perforations in said castings.

12. In a tank car, an underframe and a tank, a perforated anchor casting on said tank, a perforated anchor casting on said underframe, and a tank nozzle riveted to the casting on said tank and projecting through the perforations in both of said castings.

13. In a tank car, a tank and a pair of sills, anchor members secured, respectively, to said tank and sills and having vertical, transverse faces between said sills engaging each other to prevent longitudinal relative movement between the tank and sills, and a bolt passed through said members to prevent vertical relative movement between said tank and sills.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES A. LINDSTRÖM.

Witnesses:

HARRY CUNNINGHAM,
WILLIAM NICHOLAS.