

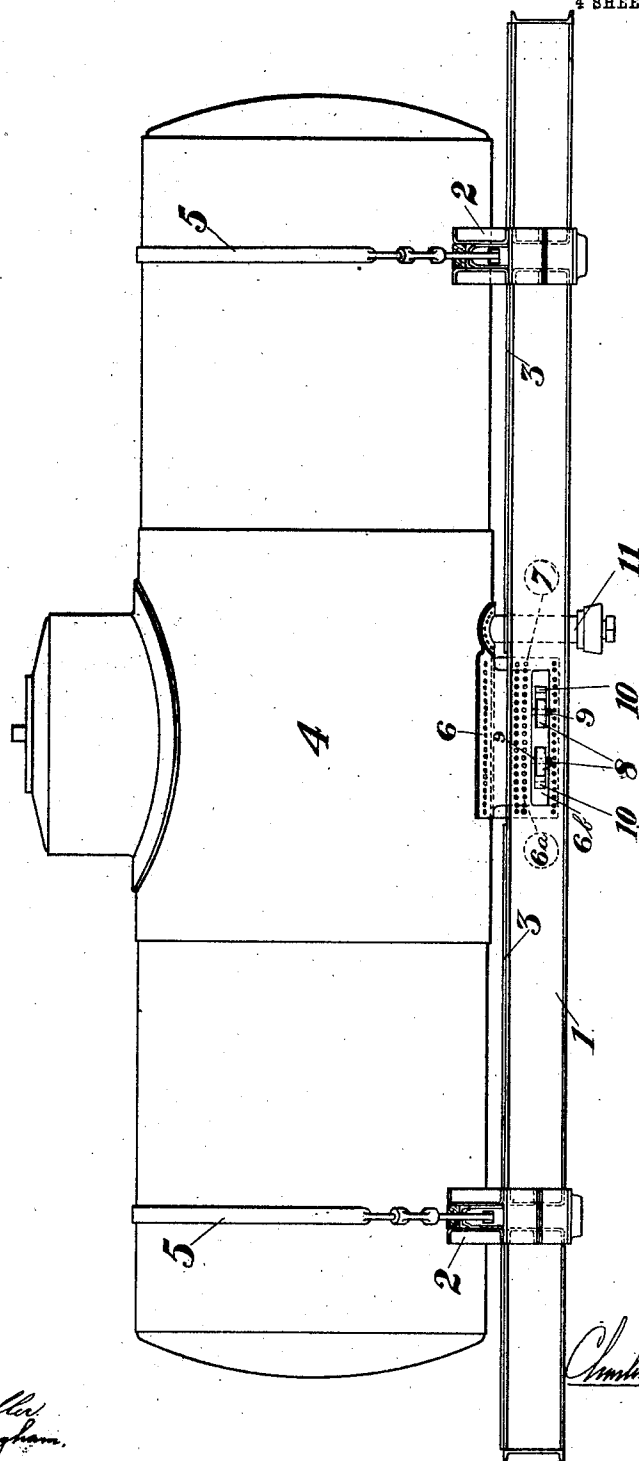
1,021,539.

C. A. LINDSTRÖM.
TANK CAR CONSTRUCTION.
APPLICATION FILED APR. 2, 1909.

Patented Mar. 26, 1912.

4 SHEETS-SHEET 1.

Fig. 1.



Witnesses
Frank C. Miller
Harry Cunningham.

Inventor
C. A. Lindström

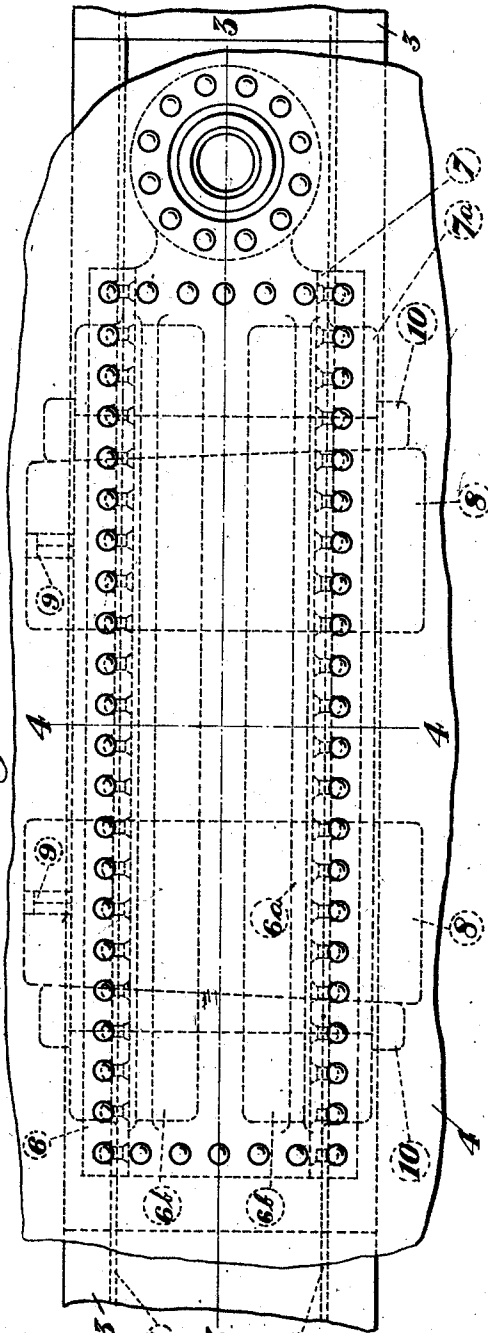
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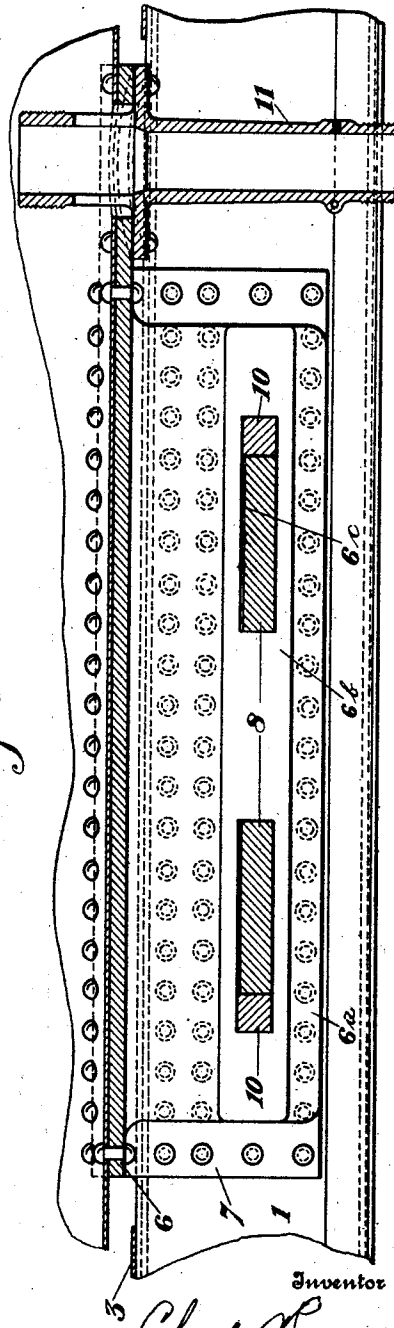
4 SHEETS—SHEET 2.

Fig. 2.



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Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 5.

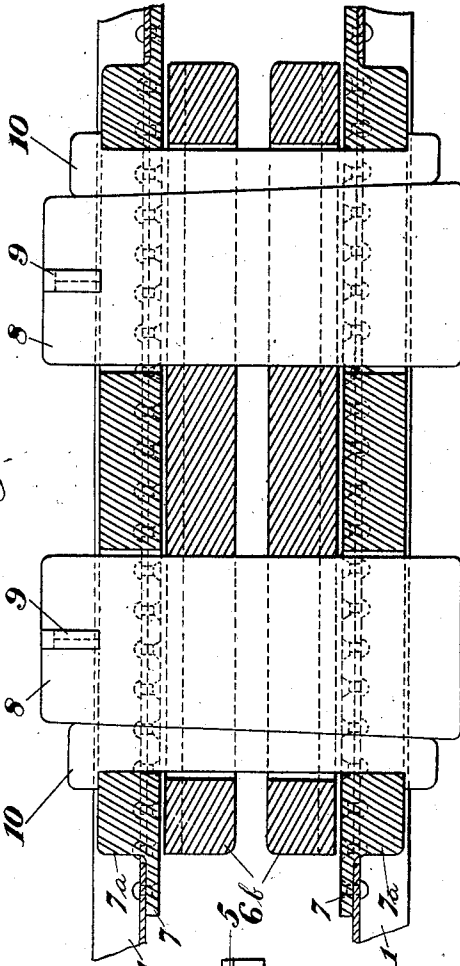
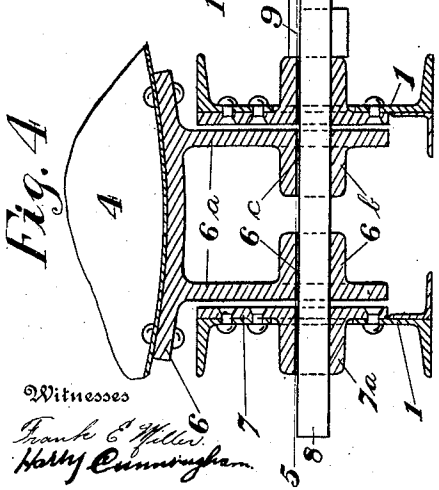


Fig. 4.



Witnesses
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Fig. 9.

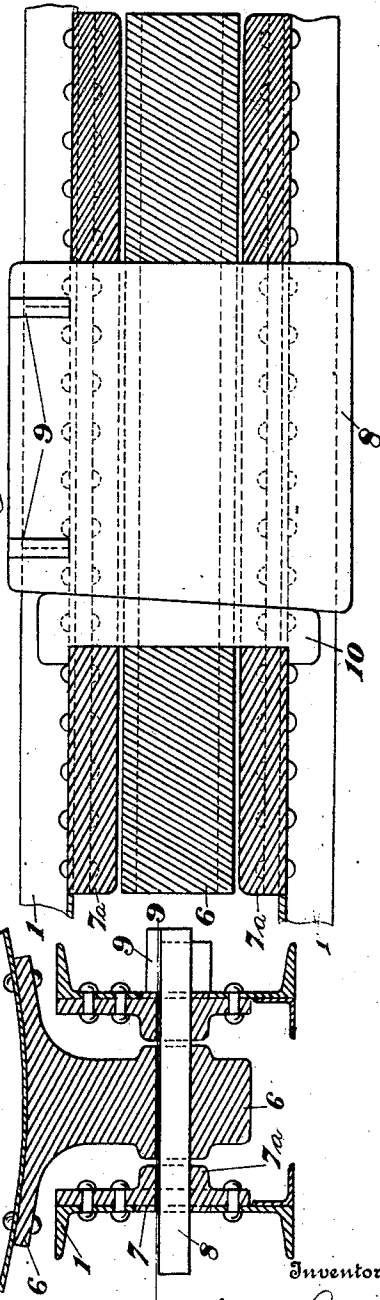
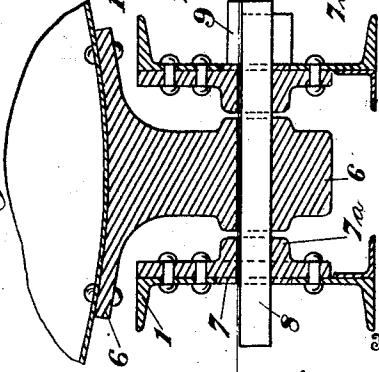


Fig. 8.



Inventor

Charles Lindström

1,021,539.

Patented Mar. 26, 1912.

4 SHEETS-SHEET 4.

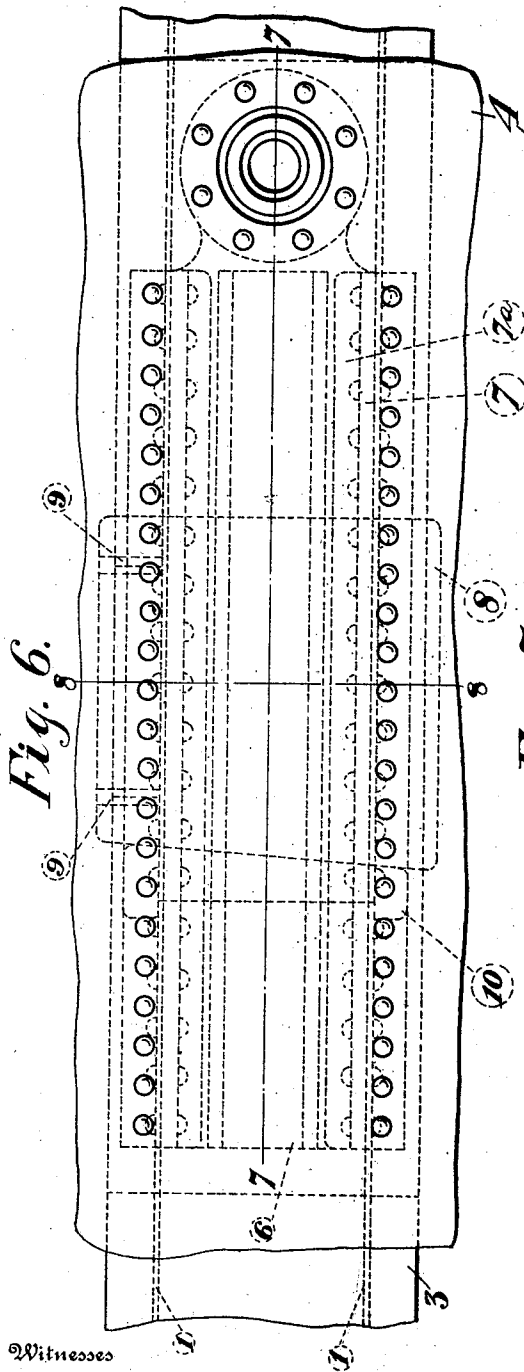
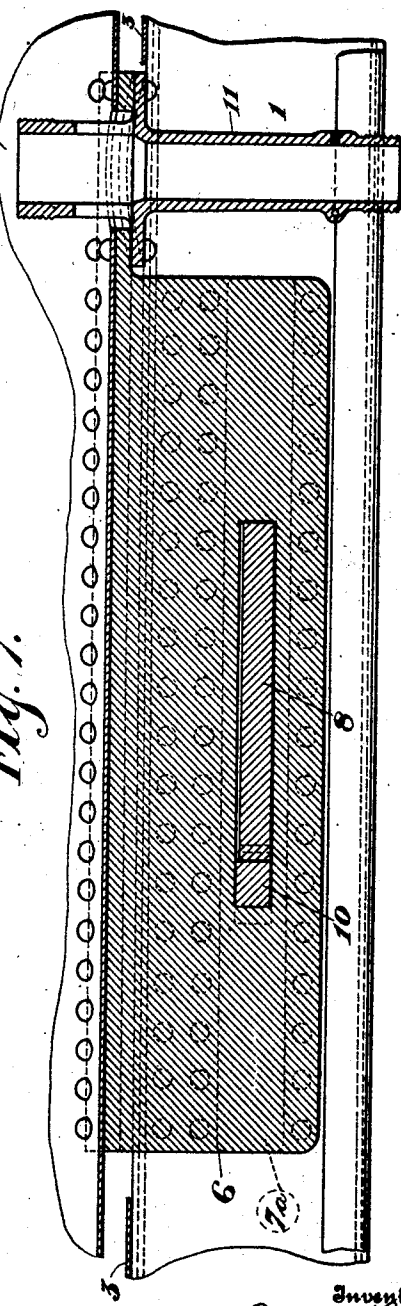


Fig. 6.

Fig. 7.



Witnesses

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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 CONSTRUCTION.

1,021,539.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed April 2, 1909. Serial No. 487,507.

To all whom it may concern:

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

10 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 at substantially 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.

15 A specific object of the present invention is to provide a tank car construction of such a character in which the tank is securely fastened to the underframe, but in such manner that it may be easily and quickly removed therefrom. For producing these results the wedge key principle is applied as a means for holding the tank securely to the underframe in such a manner as to prevent any relative movement between the tank and underframe except that due to expansion and contraction of metal.

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

25 Figure 1 is a side elevation of the tank and underframe of a car embodying the invention. Fig. 2 is a plan view of a portion of the tank, tank securing means and a portion of the underframe. Fig. 3 is a longitudinal vertical section on the line 3—3, Fig. 2. Fig. 4 is a transverse vertical section on the line 4—4, Fig. 2. Fig. 5 is a horizontal longitudinal section on the line 5—5, Fig. 4. Fig. 6 is a view similar to Fig. 2, showing a modified construction. Fig. 7 is a longitudinal vertical section on the line 7—7, Fig. 6. Fig. 8 is a transverse vertical section on the line 8—8, Fig. 6. Fig. 9 is a longitudinal horizontal section on the line 9—9, Fig. 8.

30 Referring now in detail to the drawings: the underframe of the car consists substantially of center sills 1 and saddles or cradles 2, located at or near each end of the under-

frame. As shown in the drawings there are two center sills 1 spaced apart by cover plates 3 and forming 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, but not permanently secured thereto.

Any suitable number of tank stays or bands 5 may be employed for assisting in holding the tank to the underframe. These stays or bands may also be located in any suitable position relative to the length of the car.

For securely and detachably holding the tank to its underframe and preventing relative longitudinal movement between the tank and its underframe I employ, in the form of the invention shown in Figs. 1 to 5 inclusive, an anchor casting or member 6 riveted to the bottom of the tank, preferably at or near its longitudinal center and provided with one or more legs 6^a having lateral extensions 6^b with perforations 6^c. These perforated extensions provide wide bearing surfaces. In horizontal line with the perforations 6^c in the depending legs 6^a of the anchor castings 6, the center sills 1 are perforated to receive the combined reinforcing or bearing castings or plates 7 provided with perforated extensions 7^a providing wide bearing surfaces and projecting through the perforations in the center sills 1 in horizontal line with the perforations in the depending legs 6^a. As shown in the figures referred to each of the legs 6^a of the anchor castings 6 and each of the combined reinforcing castings or plates 7 are provided with one or more perforations, (in Figs. 1 to 5 there being two shown); each perforation being in horizontal line with its corresponding perforation in the adjacent part and the several perforations in the parts being shown in the same horizontal plane. It is obvious, however, that any number of perforations may be employed in each of the several parts and that the lines of perforations may be arranged on different horizontal planes if desired, without departing from the spirit of the invention. In connection with castings 6 and plates 7 for the purpose of securely fastening the tank to the underframe, a wedge or key 8 is passed through each line of perforations, just described, and secured in place by a key pin 9

dropped through a suitable perforation in the projecting portion of the wedge or key 8. To form a tight connection between the parts and to prevent relative movement between the same, as well as to enable the making of the slots in the sills and projections of the same length, thereby reducing the cost of production, gib 10 is preferably employed which is inserted through a line of perforations before the wedge or key is driven home. In order to provide for drawing or driving the several parts together into a tight fit wherein relative movement of the parts will be impossible, the several perforations in a line transverse the underframe are arranged in the same horizontal plane but may be in slightly different vertical planes to allow for what is technically known as "draft."

In the form of construction shown in Figs. 6 and 7 a single line of perforations is illustrated but the principle of construction is the same as that shown in Figs. 1 to 5 inclusive. It is also obvious that the dimensions of the several parts may be varied in the connection to fulfil different requirements as to strength of parts and incidental to different types of tank cars. Furthermore, the securing means described may be located at any position relative to the length and width of the car, but the same is located at the longitudinal center of the car for the purpose of allowing for a free expansion and contraction of metal in the tank in both directions from the longitudinal center of the same, the ends of the tank as already described being so mounted on the saddle that a relative expansion movement between the tank and saddle may take place; vertically it is preferred to make the location at or near the neutral axis of the sills to equalize the stresses on top and bottom of sills where the cutting away of material is of the least importance. It is also intended that the provision for "draft" may be dispensed with, if desired, as shown in the construction illustrated in Figs. 6 and 7, wherein the perforations are in line with each other vertically and horizontally, and the wedge or key 8 may be of any suitable shape.

In the construction shown the tank discharge nozzle 11 is shown to one side of the longitudinal center of the car and riveted to the tank securing or anchoring member 6, although the same may be located in any other suitable position on the tank. By so locating the nozzle on the anchoring member 6, it is possible to extend the anchoring member 6, for strength, to any desired length over the tank bottom without necessitating the location of nozzle a great distance from the center of the tank. Furthermore, by riveting the nozzle to the anchoring member instead of directly to the tank, it is easier to rivet the same in place, as the riveting

will not then be obstructed by the projecting portions of anchoring member 6. Also, if desired, the extensions 7^a or 6^b may extend in directions opposite to those shown on Figs. 4 and 5. For instance, in Figs. 8 and 9 extension 7^a is shown extending in a direction opposite that in Figs. 4 and 5, and the depending portion of anchor 6 may be made correspondingly narrower and may further be changed to have a single depending portion with bosses on the side as shown in these figures. Either construction may be used.

This method of holding a tank to an underframe provides a fastening free from loose motion, and, therefore, equally as good as if the tank was riveted by the usual means to the frame, and permits of the easy removal of the tank from the frame for purposes of repairs without the cutting of rivets, all that is necessary is to remove a wedge or two and the tank can be removed. A further advantage incidental to this method of fastening a tank to a car underframe is that all shocks are absorbed by parts, such for instance as the wedge or key, which may be replaced easily when worn.

This construction I consider as new and desire to claim broadly regardless of minor changes in details of construction which can readily be made by those familiar with the art.

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, an understructure, a tank, and a wedge carried by one of said members and passed through the other of said members for securing said tank to the understructure.

2. In a tank car, an understructure and a tank having overlapping portions, and a wedge passed through said overlapping portions to secure the tank to the underframe.

3. In a tank car, an underframe and a tank having overlapping portions and key and gib means passed through said overlapping portions for securing said tank to the underframe.

4. In a tank car, an understructure and a tank having overlapping members and gib and key means carried by one of said members and passed through the other of said members for interlocking said members.

5. In a tank car, an understructure and a tank having securing members and a wedge carried by one of said members and passed through the other of said members for connecting said securing members.

6. In a tank car, a tank having an anchor member, an underframe comprising beams and a key wedge carried by said member and passed through said beams securing said anchor member and beams together.

7. In a tank car, a tank having a plurality

of anchor members, an underframe comprising a plurality of beams and wedge means carried by said members and passed through said beams for securing said anchor members and beams to each other.

8. In a tank car, a tank having a depending anchor member, an underframe comprising a beam overlapping said member, and a wedge for securing said beam and member together.

9. In a tank car, comprising a pair of sills, a tank having a depending anchor member adjacent each sill and wedge means carried by said members and passed through said sills for securing said members and sills to each other.

10. In a tank car, a pair of sills, a tank having a plural legged casting depending between said sills and key means for securing said casting and sills to each other.

11. In a tank car, a perforated beam, a plate secured to said beam and having a perforated extended bearing portion, a tank, perforated extension on the tank and a key passed through the perforations in said extension and plate to secure the tank to the underframe.

12. In a tank car, a perforated beam, a plate secured to said beam and having an extended perforated portion, extending through the perforations in said beam, a tank, a perforated extension on said tank and a key passed through the perforation in said extension and the perforation in said plate to secure the tank to the underframe.

13. In a tank car, a perforated beam, a plate secured to said beam and having a perforated extended bearing portion, a tank, an extension on said tank having a perforated bearing portion and a wedge passed through the perforated bearing portions of said extension and plate.

14. In a tank car, an understructure, perforations in said understructure, a tank, an extension on said tank having a perforation out of alinement, in one plane, with perforations in the understructure, and a key passed through the understructure and extension perforations.

15. In a tank car, the combination with a pair of beams and a tank, a casting secured to said tank having two legs extending between said beams, said beams and legs being perforated out of alinement, in one plane, with each other and a key passed through the perforations in said beams and casting to secure the tank to the beams.

16. In a tank car, a plurally perforated beam, a tank having a plurally perforated extension overlapping said beam, a plurality of gibs and a plurality of keys passed through the perforations in said beam and extension to secure the tank to the beam.

17. In a tank car, perforated beam, a perforated combined reinforcing and bearing

plate secured to said beam and extending through the beam perforation, a tank, a plate secured to said tank and having a perforated extended bearing portion and a key passed through the plate secured to the tank and the plate secured to the beam.

18. In a tank car, a tank and an understructure, an extension on one of said members at the longitudinal center of the car and a wedge securing said extension to the other of said members.

19. In a tank car, a tank and an understructure, an anchoring device on the tank and an anchoring device on the understructure both devices being at the longitudinal center of the car and a wedge uniting said anchoring devices to secure the tank to the understructure.

20. In a tank car, a tank and an understructure, perforated anchoring device on the tank and a perforated anchoring device on the understructure, and a wedge passed through the perforations in said anchoring devices, said perforations being out of alinement to provide for draft.

21. In a tank car, a tank and an understructure, an anchoring device secured to one of said members, and a removable bar extending, in a direction transverse the car, and passed through said device and the other member to secure the tank to the underframe.

22. In a tank car, a tank, an understructure, overlapping anchoring devices interposed between said tank and understructure and a removable bar extending in a direction transverse the car through said anchoring devices to lock the tank to the understructure.

23. In a tank car, a tank, an understructure, overlapping anchoring devices interposed between said tank and understructure and a wedge extending in a direction transverse the car, through said anchoring devices to secure the tank to the underframe.

24. In a tank car, a sill, a tank, a depending anchor device on said tank and overlapping said sill and a transverse tapered wedge bar extending through said device and sill to secure the tank to the sill.

25. In a tank car, a pair of sills, a tank, an anchor for said tank, U-shape in section, depending between said sills and having a concave upper surface and a tapered key securing said anchor to said sills.

26. In a car, an underframe comprising a sill, a tank having a projecting anchoring device, and a tapered wedge bar passed through said anchoring device and through the neutral axis of said sill to secure the tank to the underframe.

27. In a tank car, a tank, a sill, and a removable wedge key passed through the neutral axis of said sill and secured to said tank.

28. In a tank car, a sill perforated in its

neutral axis, a tank and a tapered wedge key passed through the perforations in said sill and connected to said tank to secure the latter to said sill.

5 29. In a tank car, a tank and a discharge nozzle in combination with a tank anchoring member interposed between said tank and nozzle.

30. In a tank car, a tank, an underframe

and an anchoring member riveted to said tank, in combination with a discharge nozzle riveted to said member.

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

CHARLES A. LINDSTRÖM.

Witnesses:

G. C. LAMBE,

M. C. BLEST.