

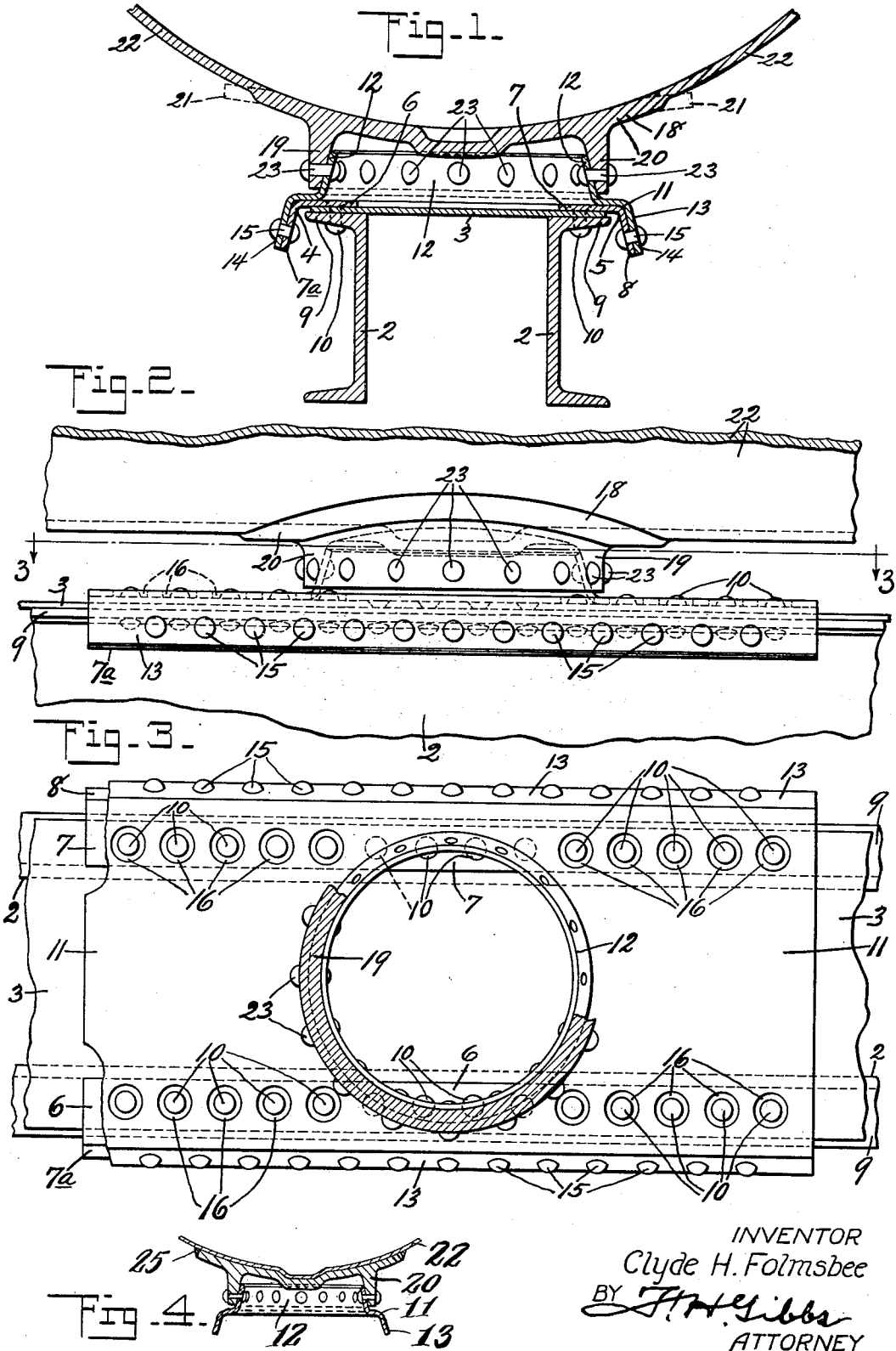
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TANK ANCHOR FOR WELDED TANKS

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TANK ANCHOR FOR WELDED TANKS

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This invention relates generally to car tank anchors, and particularly to the provision of means for anchoring welded tanks to the underframe where a portion of the anchor is
5 welded to or integral with the shell of the tank.

The present invention contemplates the use of an anchoring means a portion of which is welded to the shell of the tank and
10 the other portion is riveted or otherwise suitably secured both to the tank portion of said means and to the underframe of the car.

Where anchoring means riveted to car tanks have been used the possibility of leakage around the rivets has always been
15 present. This method is particularly objectionable where the contents of the tanks are such as to produce corrosion of the rivets. Furthermore, when the tanks are
20 used for carrying corrosive fluids, protective caps sealed to the inside of the tank shell for covering the rivet heads are required, and a prescribed test for tightness is also necessary. This involves considerable time
25 and expense.

One of the objects, therefore, of the invention is to provide an anchoring means for a car tank which is integral with or welded to the shell of the tank and thereby eliminating
30 the above mentioned objections, as well as the protective caps and the prescribed tests for tightness.

Another object of this invention is to provide a type of tank anchor securing means
35 which will prevent the shearing of the rivets used in securing the anchor flange to the means securing this flange to the underframe of the car.

Tank anchors having straight depending
40 flanges or fins have been welded to tank shells before but considerable difficulty has been experienced in effecting alinement between this anchor flange or fin and the underframe of the car where this method has been used.
45 This is due to the fact that it has been found almost impossible to weld this flange or fin to the tank shell which will result in perfect alinement with the longitudinal center line of the completed tank. Consequently,
50 extra working of the connections between

this member and the frame has been necessary in order to effect the proper alinement thereof.

A further object, therefore, of this invention is to obviate this objection and provide
55 a tank anchor welded to the tank shell which can easily be applied and secured to the underframe, without requiring extra working of the connections.

Other objects and advantages will be more
60 apparent to those skilled in the art from the following description of the accompanying drawing, which illustrates the preferred form of the invention, though it is to be understood that the invention is not limited to
65 the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In said drawing:

Figure 1 is a transverse sectional view taken through a fragment of the bottom sheet of the tank of a tank car and trans-
75 versely through the center sills and the anchoring means embodied in this application;

Fig. 2 is a fragmentary side elevational view showing at the upper part in section a fragment of the bottom sheet of the tank and at the bottom of the view a fragment of
80 the upper portion of the center sill with the anchoring means shown in elevation;

Fig. 3 is a fragmentary plan view, parts in section taken on the line 3—3 of Fig. 2, showing a plan view of part of the tank
85 anchor in section with parts broken away, a plan view of the anchor securing means, and a fragmentary plan view of the center sill; and

Fig. 4 is a sectional view showing a modification of the attaching means for the anchor structure.

Referring more particularly to the drawing and to Fig. 1, 2—2 indicate the center sills of an ordinary tank car underframe,
95 which sills are ordinarily spaced a convenient distance apart and in the present instance are connected by means of the transversely disposed top sill cover plate 3. Mounted on each side of the cover plate 3
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are anchor securing plates 4 and 5 having flanged inner portions 6 and 7 overlapping the cover plate 3 and downwardly projecting flanges 7a and 8 extending over the edges of the cover plate 3 and center sill upper flanges 9. The plates 4 and 5 are riveted to the center sill flanges 9 by the rivets 10, which pass through and also secure the cover plate 3 thereto. Mounted upon the cover plate 3 is an anchor securing plate 11 which extends longitudinally of the underframe as shown in the plan view Fig. 3. This anchor securing plate is mounted above the plates 4 and 5 and has an upwardly extending annular flange 12 which is formed by pressing the metal of the plate 11 upwardly as shown in Fig. 1 in the form of an annulus adapted to closely contact with the flange of the anchor structure fully described. In the instance shown the annular flange 12 tapers upwardly from the plate 12 as shown in Fig. 1 to snugly and, in effect, wedgingly engage within a depending flange 19 formed on the anchor structure as is best shown in Fig. 1 as will be hereinafter more clearly described. Integral with plate 11 are outwardly and downwardly extending flanges 13 which overlap the plates 4 and 5 and are riveted thereto at 14. In order that the flanges 13 on the plate 11 may be adapted to fit in close contact with the plates 4 and 5 said flanges 13 are provided with holes 16 of sufficient size to fit over the heads of the rivets 10 used to secure the plates 4 and 5 to the center sill flanges 9. Within the zone of the anchor structure the rivets 10 are countersunk for the same purpose as is best shown in Figs. 2 and 3.

During the process of forming the tank a portion 18 of the tank shell is prepared by forging or welding and is connected in position as a part of the tank structure to form an anchor structure indicated generally at 20, said structure 20 including the before mentioned annular flange 19. The inner surface of flange 19 is preferably complementary with the upward taper of flange 12 whereby the two flanges are, in effect, wedgingly inter-fitted or engaged to prevent horizontal shifting of the tank in all directions.

It is obvious that the plate 18 or anchor structure may be connected with a complete cylinder by welding to the exterior thereof or it may be formed as shown in the drawing as a part of such cylinder. This plate 18 has extensions 21 (shown in dotted lines in Fig. 1) which overlap with edges of the tank sheet 22. This plate, by hammer welding or by any other suitable form of welding, is secured to the tank sheet 22, the extensions 21 assuming the form as shown in Fig. 1, and the plate 18 thus forms an integral part of the tank sheet.

As clearly shown in Fig. 1, the integral depending annular portion of the anchor

member 19 overlaps and encloses the annular flange 12 on the plate 11 to which it is secured by rivets 23, and thus firmly anchors the anchor member 19 and the tank sheet 22 to the center sills. It is thus seen from Fig. 1, and the foregoing description, that the anchor securing plate 11 forms an attaching element for securing the tank anchor member or structure 19 to the sills, since the plate 11 is riveted to the plates 4 and 5 at 14 and the latter plates are riveted to the center sill flanges 9.

While Figs. 1, 2 and 3 show the anchor structure 20 as being formed with the tank sheet 22 whereby to form in effect an integral part of said sheet, the anchor structure 20 may, of course, be welded to the outer surface of the tank shell 22 as shown clearly in Fig. 4, the weld connection being indicated at 25.

The cover plate 3 may be omitted if desired and in which case the anchor securing plates 4 and 5 may be combined into one plate extending transversely across the sills and forming a substitute for the plate,

While the drawing and description shows the invention as applied to center sills formed of spaced channels, it will be readily apparent to those skilled in the art that the invention can be applied to other forms of center sills.

In practice, the parts are assembled as follows: first, the cover plate 3 is put in place on the upper flanges 9 of the center sills 2, both the plate and the flanges having been punched to receive the securing rivets. The anchor securing plates 4 and 5 are then assembled in place on top of the cover plate 3, these plates having also been punched to receive their securing rivets. The plates 4 and 5 and the cover plate 3 are then machine riveted in position. The annular flange 12 on the anchor securing plate 11 is next adjusted to position within the depending anchor flange 19 so that the lower flange portions 13 on the plate 11 will be parallel to the longitudinal axis of the tank. The anchor securing plate 11 is thus adjusted so as to position its up-standing flange 12 within the flange 19, the rivets 23 are then driven thereby securing the anchor securing plate firmly to the tank after which the tank is lowered to a position where the flanges 13 of plate 11 will overlap the depending flanges 7a and 8 whereupon the machine rivets 15 are driven and the tank is secured to the underframe. The tank may again be dismounted after cutting said rivets 15. It will be obvious that due to the annular conformation of the respective interengaged flanges the tank is restrained against sidewise shifting in all directions. It will also be apparent that due to the particular conformation of the respective cooperating anchor members they are retained in connected wedg-

ing relation, thus tending to aid the stability of the entire construction.

What is claimed is:

1. In a tank car, the combination with its center sills, of a tank having an anchor structure, and means for anchoring the tank at said structure to the sills comprising an anchor plate secured to said sills having an upward flange wedgingly interfitted with the said anchor structure and secured thereto.

2. In a tank car, the combination with its center sills, of a tank having an anchor structure, and means for anchoring the tank at said structure to the sills comprising an anchor plate connected with said sills having an upward extension enclosed within said anchor structure and secured thereto.

3. In a tank car, the combination with its center sills, of a tank having an anchor structure integral therewith, and means for anchoring the tank at said structure to the sills comprising an attaching element connected with said sills having an annular upward extension overlapped by said anchor structure and secured thereto.

4. In a tank car, the combination with its center sills, of a tank having an annular anchor structure, and means for anchoring the tank at said structure to the sills comprising an anchor plate having an annular upward extension extending into and secured to the anchor structure and downward extensions connected with said sills.

5. In a tank car, the combination with its center sills, of a tank having an anchor structure integral therewith, securing means attached to said sills, and means for anchoring the tank at said structure to the sills comprising an attaching element having an upward extension extending into and secured to the anchor structure and downward flanges secured to said securing means.

6. In a tank car, the combination with its center sills, of a tank provided with an anchor structure, securing means over said sills and attached thereto, and means for anchoring the tank at said structure to the sills comprising an anchor securing plate having an upward extension extending into and secured to the anchor structure and downward extensions secured to said securing means.

7. In a tank car, the combination with its center sills, of a tank having an anchor structure integral therewith, securing means over said sills and attached thereto, and means for anchoring the tank at said structure to the sills comprising an attaching element having an upward extension extending into and secured to the anchor structure and downward extensions secured to and overlapping said securing means.

8. In a tank car, the combination with its center sills having upper flanges, of a tank having an anchor structure integral therewith, a cover plate for said flanges, securing

means overlapping said cover plate attached thereto and to said flanges, and means for anchoring the tank at said structure to the sills comprising an attaching element having an upward extension extending into and secured to the anchor structure and downward extensions secured to and overlapping said securing means.

9. In a tank car, the combination with its center sills having upper flanges, of a tank having an anchor structure integral therewith, securing means overlapping said flanges and attached thereto, and means for anchoring the tank at said structure to the sills comprising an attaching element having an upward extending flange complementary with and secured to the anchor structure and outwardly and downwardly extending flanges secured to and overlapping said securing means.

10. In a tank car, the combination with its center sills, of a tank having an anchor structure integral therewith, plates overlapping said sills and attached thereto and a plate for anchoring the tank at said structure to the sills comprising a flange extending upward into and secured to the anchor structure and outwardly and downwardly extending flanges secured to and overlapping said plates.

11. In a tank car, the combination with its center sills having upper flanges, of a tank having a depending anchor structure integral therewith, plates overlapping said sills and attached thereto, and a plate for anchoring the tank at said structure to the sills comprising a flange extending upward into said anchor structure and secured thereto and outwardly and downwardly extending flanges secured to and overlapping said plates.

12. In a tank car, the combination with its spaced center sills having upper flanges, of a tank having a depending anchor member integral therewith, said member having an annular flange, a cover plate for said sill flanges, plates overlapping said cover plate riveted thereto and to the said sill flanges, and a plate for anchoring the tank at said member to the sills comprising an annular flange extending upward into said anchor structure and riveted thereto and outwardly and downwardly extending flanges riveted to and overlapping said plates.

13. In a tank car, the combination with its center sills, of a tank having an anchor structure welded to the outside surface thereof, and means for anchoring the tank at said structure to the sills comprising an attaching element secured to the sills having an attaching flange projecting upwardly above the top portions of the sills and extending into and secured to the anchor structure.

14. In a tank car, the combination with its center sills, of a tank having an anchor structure forming a part of said tank and welded

thereto, and means for anchoring the tank at said structure to the sills comprising an attaching element secured to said sills having extensions projecting upwardly beyond the top portions of the sills and into the said anchor structure in wedging engagement therewith and secured thereto.

15. In a tank car, center sills, a tank, and cooperating members on said sills and tank arranged in rigidly connected wedging relation for anchoring said tank to the sills in such a manner as to prevent relative shifting of the tank and sills in all directions.

16. In a tank car, center sills, a tank, and annular members on said sills and tank arranged in interfitting wedging relation for anchoring the tank to the sills.

17. In a tank car, center sills, a tank, and means for anchoring the tank to the sills comprising complemental members on said sills and tank arranged in interfitted wedging relation, and fasteners rigidly connecting said members whereby to prevent relative movement of the tank and sills in all directions.

18. In a tank car, center sills, a tank, and means for anchoring the tank to the sills comprising cooperating complemental members on the sills and tank respectively, said members being interengaged in wedging re-

lation, and fasteners rigidly connecting said members.

19. In a tank car, center sills, a tank, and means for anchoring the tank to the sills comprising cooperating annular members on the sills and tank respectively, said members being complemental in form and being interengaged in connected wedging relation.

20. In a tank car, center sills, a tank, and means for anchoring the tank to the sills comprising complementally formed annular members on said tank and sills respectively, said members being interfittingly connecting one with the other in wedging relation throughout the entire circumference thereof whereby to prevent sidewise shifting of the tank in all directions.

21. In a tank car, the combination with center sills, of a tank having an anchor structure, and means for anchoring the tank at said structure to said sills comprising an anchor plate supported by the sills and provided with a flange projecting upwardly above the tops of the sills and wedgingly interfitted within the anchor structure, and fasteners connecting said anchor structure and anchor plate.

In witness whereof I have hereunto set my hand.

CLYDE H. FOLMSBEE. 95

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