May 24, 1932. W. P. MURPHY 1,859,338

TANK FOR RAILWAY CARS

Filed Aug. 27, 1930

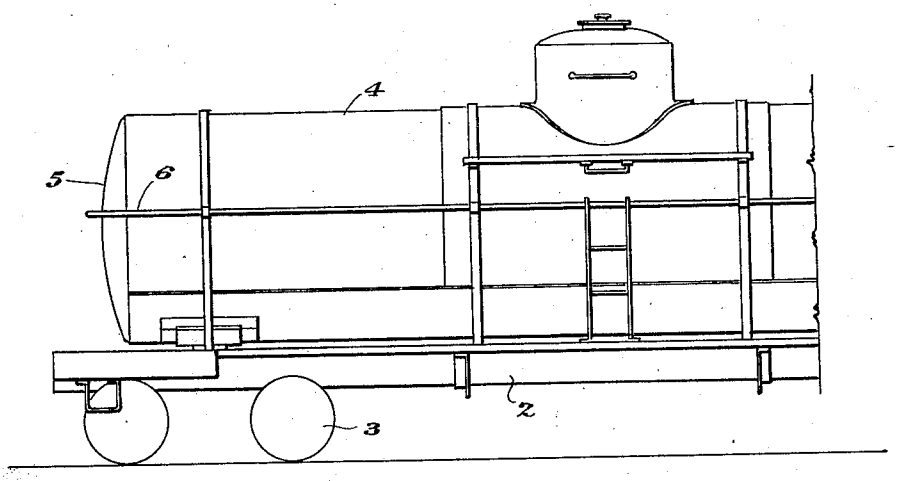


Fig. 1

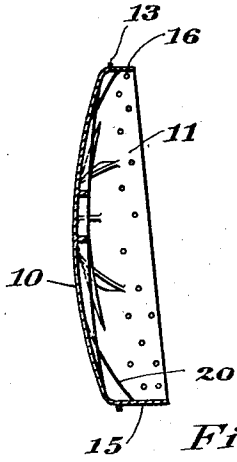


Fig. 3

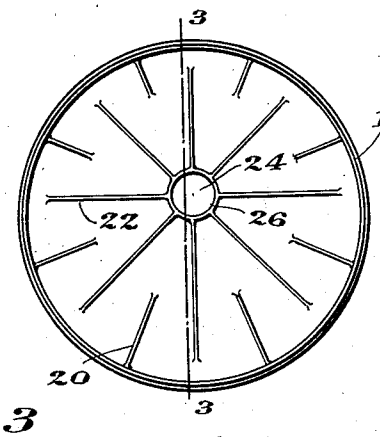


Fig. 2

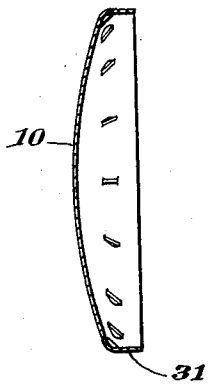


Fig. 5

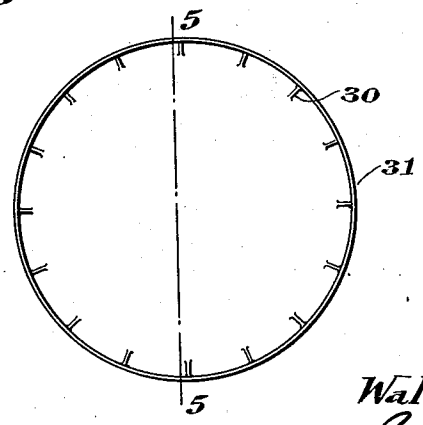


Fig. 4

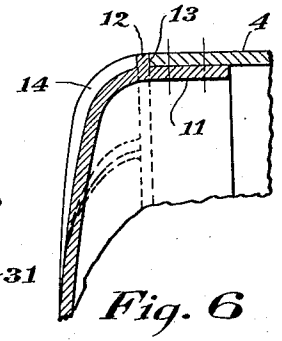


Fig. 6

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UNITED STATES PATENT OFFICE

WALTER P. MURPHY, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNION METAL PRODUCTS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

TANK FOR RAILWAY CARS

Application filed August 27, 1930. Serial No. 478,098.

This invention relates to a tank freight car for railways which comprises a tank mounted in horizontal position upon an underframe, which underframe is mounted upon trucks. Such cars are used for the transportation of materials of liquid or semi-liquid form, such as acids, alcohol, ammonia, oils, paints, milk, vinegar, etc., and even gases are hauled in such cars. The movements of the liquid or semi-liquid loads causes severe impact blows against the ends of the tanks, and one of the objects of this invention is to provide an end for such a tank made of cast metal with integral means to reinforce the tank end against the above mentioned impact blows.

Another object of the invention in making the tank end of cast metal is to obtain an end which resists corrosion, thereby obviating the necessity of lining the end of the tank which, owing to its dome-like shape, is very difficult to line. It is a simple matter to line the cylindrical shell. Such linings are used to keep certain liquids out of contact with the rolled steel parts of the shell which are subject to corrosion.

Another object of the invention in making the tank end of cast metal is to provide means to readily adjust the strength of the end to the strength requirements of the particular part of the tank end.

Another object is to eliminate the cost and delay in fabricating the numerous component parts of the present structural steel car parts.

Another object of forming the car part of cast metal is to eliminate the possibility of loose connections which would permit relative motion between the component parts of the car part, as it is common knowledge that the vibration of the car in motion, due to rough and uneven track, and steel wheels rolling on steel rails, together with longer trains and high speeds in present day practice, cause riveted joints and built up sections to work loose and the railroads look with favor upon any device which reduces the number of parts and joints as these are the weak parts of the car and the more such weak parts are eliminated, the longer the life of the car.

In the drawings:

Fig. 1 shows a part of a typical tank car provided with my improved tank head.

Figs. 2 and 3 show the enlarged tank head in detail, Fig. 3 being a section on line 3—3 of Fig. 2.

Figs. 4 and 5 show a modified tank construction of the tank head, Fig. 5 being a section on line 5—5 of Fig. 4.

Fig. 6 is an enlarged detail showing a preferred relation between the shell and tank head.

In the drawings the usual parts of the car are shown, such as underframe 2; wheels (3) of the truck; 4 tank shell; 5 tank head; and 6 safety railing.

Figs. 2 and 3 show my improved tank head consisting of an integral casting comprising a central portion 10 which is preferably bulged outwardly and a continuous inwardly projecting flange 11 adjacent the perimeter of the central portion to which the shell of the tank is attached. These flanges may be welded or riveted to the tank end. I prefer to provide a rib forming a shoulder 13 on the tank end against which the shell 4 of the tank is abutted. The rib 12 being preferably reinforced by a plurality of exteriorly positioned brackets 14, as shown in Fig. 6. The flange 11 is preferably deepest (15) adjacent the bottom of the tank to accommodate the greater stresses at this portion of the tank, and furthermore, the flange gradually decreases in depth toward the top (16) of the tank, as shown in Fig. 3. The deeper flange permits of more riveting or welding.

To provide a better attachment to the shell the tank end may be further reinforced by a plurality of brackets 20 connecting the central portion 10 of the tank end to the flange 11 which are spaced around the perimeter of the tank end. These brackets are preferably wider and preferably deeper adjacent the deeper part of the flange so as to further reinforce the tank end where the greater stresses occur. The tank end may be further reinforced, if desired, by a plurality of reinforcing ribs 22 in the central portion with their opposite ends merging into the central portion between adjacent brackets,

as shown in Fig. 3. These reinforcing ribs 22 form a spreader with the ribs radiating from a central point 24, which point is positioned above the geometrical center of the circular tank end and to simplify the casting of the tank end I prefer to provide a small circular rib 26 adjacent said central point into which the radiating ribs merge. By making the tank end of cast metal I am able to distribute the metal where it is needed to resist the stresses imposed upon the casting, thereby obtaining a very strong end in consideration of its weight.

Figs. 4 and 5 show a modified form wherein a plurality of smaller brackets 30 are positioned adjacent the perimeter of the central portion 10 to connect it to the flange 31.

The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to 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.

I claim:

1. A railway car having a horizontally positioned tank mounted thereon, said tank comprising a rolled steel shell, and a cast metal tank head consisting of an integral casting comprising a central portion and a continuous flange adjacent the perimeter of said portion secured to the shell, and a plurality of brackets connecting the central portion to the flange.

2. A railway car having a horizontally positioned tank mounted thereon, said tank comprising a rolled steel shell, and a cast metal tank head consisting of an integral casting comprising a central portion and a continuous flange adjacent the perimeter of said portion secured to the shell, said flange being deepest adjacent the bottom of the tank, and a plurality of brackets connecting the central portion to the flange which are deepest adjacent the deepest part of the flange.

3. A railway car having a horizontally positioned tank mounted thereon, said tank comprising a rolled steel shell, and a cast metal tank head consisting of an integral casting comprising a central portion and a continuous flange adjacent the perimeter of said portion secured to the shell, a plurality of brackets connecting the central portion to the flange, and a plurality of reinforcing ribs for said portion with their opposite ends merging into said portion between said brackets.

4. A railway car having a horizontally positioned tank mounted thereon, said tank comprising a rolled steel shell, and a cast metal tank head consisting of an integral casting comprising a central portion and a continuous flange adjacent the perimeter of said portion secured to the shell, said flange being deepest adjacent the bottom of the tank and gradually decreasing in depth toward the top of the tank, a plurality of brackets connecting the central portion to the flange which are deepest adjacent the deepest part of the flange, and a plurality of reinforcing ribs for said portion with their opposite ends merging into said portion between said brackets.

5. A railway car having a horizontally positioned tank mounted thereon, said tank comprising a rolled steel shell, and a cast metal tank head secured to the shell, said tank head provided with a rib forming a continuous shoulder against which the shell abuts.

6. A railway car having a horizontally positioned tank mounted thereon, said tank comprising a rolled steel shell, and a cast metal tank head consisting of an integral casting comprising a central portion and a continuous flange adjacent the perimeter of said portion secured to the shell, said tank end provided with a rib forming a continuous shoulder against which the shell abuts, and a plurality of brackets positioned exteriorly of the shell so as to reinforce said rib.

7. As an article of manufacture, a cast metal tank head consisting of an integral casting comprising a central portion, a continuous flange secured to the shell, a plurality of brackets connecting the central portion to the flange, and a plurality of reinforcing ribs for said portion with their opposite ends merging into said portion between said brackets.

WALTER P. MURPHY.

DISCLAIMER

1,859,338.—*Walter P. Murphy,* Chicago, Ill. TANK FOR RAILWAY CARS. Patent dated May 24, 1932. Disclaimer filed November 19, 1932, by the assignee, *Union Metal Products Company.*

Hereby enters this disclaimer to that part of the claims in said specification which is in the following words, to wit:

"3. A railway car having a horizontally positioned tank mounted thereon, said tank comprising a rolled steel shell, and a cast metal tank head consisting of an integral casting comprising a central portion and a continuous flange adjacent the perimeter of said portion secured to the shell, a plurality of brackets connecting the central portion to the flange, and a plurality of reinforcing ribs for said portion with their opposite ends merging into said portion between said brackets."

"5. A railway car having a horizontally positioned tank mounted thereon, said tank comprising a rolled steel shell, and a cast metal tank head secured to the shell, said tank head provided with a rib forming a continuous shoulder against which the shell abuts."

"7. As an article of manufacture, a cast metal tank head consisting of an integral casting comprising a central portion, a continuous flange secured to the shell, a plurality of brackets connecting the central portion to the flange, and a plurality of reinforcing ribs for said portion with their opposite ends merging into said portion between said brackets."

[*Official Gazette December 13, 1932.*]