R. TIPPETT & D. L. JAUSS.

METAL TANK.

No. 192,310. Patented June 19, 1877.

Fig. 3.

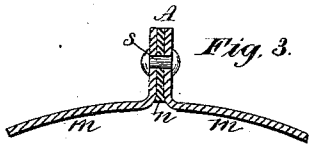


Fig. 1.

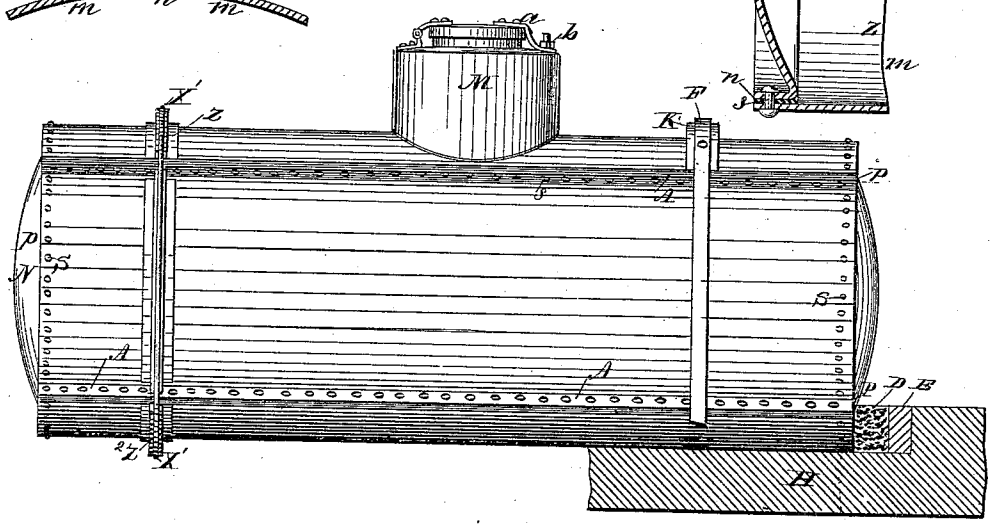


Fig. 4.

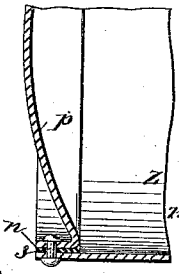


Fig. 2.

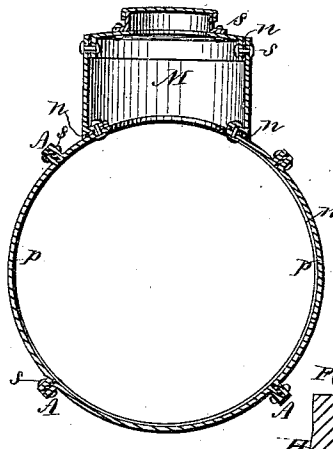


Fig. 5.

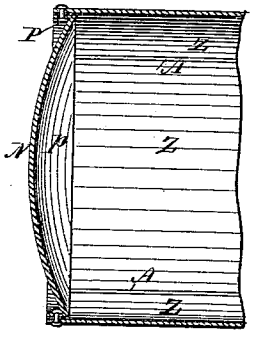


Fig. 6.

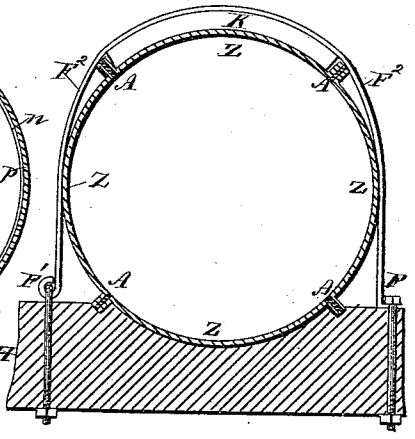
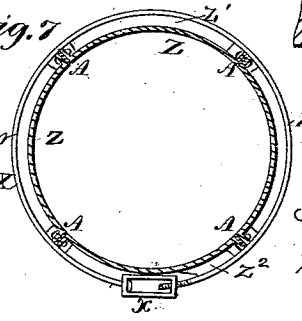


Fig. 7.



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UNITED STATES PATENT OFFICE.

ROBERT TIPPETT AND DAVID L. JAUSS, OF HARRISBURG, PA.

IMPROVEMENT IN METAL TANKS.

Specification forming part of Letters Patent No. **192,310**, dated June 19, 1877; application filed April 27, 1877.

To all whom it may concern:

Be it known that we, ROBERT TIPPETT and DAVID L. JAUSS, both of the city of Harrisburg, county of Dauphin, and State of Pennsylvania, have invented certain Improvements in Tanks and other analogous vessels for storing and transporting coal-oil and other liquids, of which the following is a full, clear, and accurate description, sufficient to enable one skilled in the arts to which it pertains to make and use the same, reference being had to the accompanying drawing, and the references marked thereon, making a part of this specification, in which—

Figure 1 represents a longitudinal or side elevation of our improved tank mounted on section of car-platform. Fig. 2 represents a transverse sectional view of our improved tank made by a plane passed through the dome vertically. Fig. 3 represents a sectional view of the longitudinal seam of tank. Fig. 4 represents a sectional view of the seam or joint uniting the tank head and side. Fig. 5 represents a sectional view of our improved tank side and head, specially showing the curvature of the latter. Fig. 6 represents a sectional view of our tank and car-platform, specially showing our tie devices employed for anchoring the tank on said platform. Fig. 7 represents a transverse sectional view of our tank, having applied thereon our devices for banding the same.

In the several views similar references refer to like parts in all views.

To show the nature and intent of our invention, it may be premised that the present mode of joining the tank plates or sheets by simple lap-joints is objectionable for several grave reasons, some of which may be stated as follows: First, the present mode of constructing tanks and other analogous structures is objectionable because the rivets must be inserted from inside to outside, requiring the attention of at least two workmen for inserting each rivet—viz., one inside the tank to present and bear against the rivet, and one outside to do the clinching, as no simple labor-saving machine is extant to do such work satisfactorily.

Second, the rivet-work, however well executed when the tanks are new or repaired, soon becomes impaired and shaky at joints by use, owing to the fact that the rumble and thud of the car-platforms on which oil-tanks are usually transported strain the tank-joints, tending to abrade and thin the plates by friction, thus lessening the firmness of the rivet-clinches and producing leaky tanks.

Third, the riveting when thus impaired cannot be thoroughly retightened without chipping out the old rivets and inserting new ones at the usual high heat, thus endangering the lives of the workmen by explosions resulting from the combustible residuum in tanks which have been used coming in contact with the hot rivet, unless such tanks have been well cleaned and scoured before the repairing re-referred to is attemped.

Fourth, the present form of tank also takes more rivets, has its heads exposed to dinging, and cannot be securely packed at ends.

Our improved tank presents such novel and useful features as to effectually overcome all the foregoing objections without raising new ones, and to attain advantages in other directions, mainly by the use of, first, longitudinally arranged seams or joints for such work, having the sheets or plates near their edges turned up to such degree as to enable such plates to be riveted together wholly on the outside of tank, and to do the work of punching and riveting in a superior manner by the use of suitable machinery; second, closed tanks for transporting oil or other fluids, provided with seams composed of the tank iron or steel plates, flanged as before described, connected by rivets, and having interposed between them a strip of sheet copper, galvanized iron, or other suitable metal, inserted to calk, braze, or solder the seam, after riveting has been accomplished, specially suited for repairs by recalking, or by retightening rivets and recalking, rebrazing, or soldering entirely from the outside of tank, or when new on both sides thereof, if preferred; third, a tank made in longitudinal sections, and seamed in such manner as to lessen the number of rivets, and to facilitate the work of riveting, and specially to lessen the liability to undo at seams by transverse strain while being transported; fourth, providing a closed oil-tank, having longitudinal raised seams, with circles of arched braces spanning the tank-sections from seam to seam, and held taughtly applied about the tank by adjustable bands; fifth, a peculiar arrange-

ment and combination of parts to hold the tank to its place properly on the car-platform.

We construct our improved tank, preferably, of sheet steel, as only about one-half the thickness of sheet steel is requisite to equal the tensile strength of iron, while the cost of steel is only about one-third more than that of iron, and we construct it in the usual cylindrical form, as that is strongest and most economical, most suitable for storage and transportation, and less liable to impair by vibration while being transported.

We make our tank-body of two or more flanged longitudinal sections, Z, extending, preferably, the whole length of tank. Said flanged edges *m o* form, by the union of adjacent flanges, the standard-seams A, as shown, which are turned out to facilitate work in riveting, and to secure safety to workmen while repairing. Said standard-seams A have the rivets S wholly on one side of the tank, that is on the outside, that they may be inserted, held, and clinched without going into the tank. Said seam A may be made with the edges or flanges *m o* united simply by rivets S, and soldered on the crevice of the joint, or they may be made with said flanges *m o* united by having interposed between them a liner or strip, *n*, of copper or other soft metal, perforated and held in place by the same rivets S which connect said flanges. Said liner *n* is a calking-strip, employed to hermetically seal the joint, and may be soldered or brazed on its edges with the adjacent sheets or flanges, and may be battered on its inner edge to fill the joint-crevice more perfectly.

The tank-heads *p* are convexed as usual at N, but are reversedly curved or flanged at P in a novel manner, and joined to tank-shell or sections Z by rivets S, also wholly treated on outside of tank. Said heads are so shaped, not only to facilitate riveting, but also to attain great strength for the heads, and to secure them against dinging by the car-platform timbers E, as said heads are protected by the rims formed by the standard seams at P, besides, packing usually inserted at D, between head *p* and cross-timber E, is less liable to work out of its proper place by our form of tank-head.

The tank-dome M is built in the usual form, and may be joined to the tank-body by internal or external flange-joint, and with or without soft metal interposed, as its seams and joints are not as severely put to strain as those of the tank-body, and are not so liable to be impaired.

To anchor the tank securely down onto the transporting car-platform H, two or more round or strap iron ties, F^2, may be applied thereto, as shown in Figs. 1 and 6, each of which has the joint at F^1 at head of bolt B^1, and is drawn down at F, by head of bolt B. At the middle of a tie, F^2, it is passed over a grooved liner or brace, K, made arch-form to fit the curve of the tank, and to extend from a seam, A, to its adjacent seam A, as shown. The tie F^2 may be bolted or riveted fast to brace K, so that the device will hold the tank not only against vertical displacement, but also against rolling or casting in the bed made for it in the car-platform.

When, for various reasons, it may be preferred to make our improved tank of very light grade of sheet metal, we girdle it with several circles of arched braces, Z^1 Z^2, as shown in Fig. 7, embraced and tightened by bands X^1, each of which is provided with a swivel, X, of any approved make, by which the band may be tightened. Said arched braces Z^1 Z^2 are of correct length to extend from seam to seam, as shown, and are grooved on their crowns to let the band X′ set partially embedded therein, and section Z^2 has its crown partly cut away next to the swivel X to allow the latter to be freely operated.

It may be observed that our improved standard tank-seam adds strength to tank-shell, and that the rivets are not exposed to the fluid, as the soldering, brazing, or calking, makes a closed seam or crevice by itself.

Having thus fully and clearly described our invention, what we regard as new and useful, and what we desire to secure by Letters Patent of the United States, is embraced in the following claims:

1. A tank or closed vessel employed for transporting oil or other fluids in bulk on car-platforms, when made of two or more longitudinal sections, outwardly flanged on their edges, and riveted together thereby, wholly on the outside of tank, substantially as and for the purpose set forth.

2. A closed vessel for transporting oil, or other fluids in bulk, composed of two or more longitudinal sections, provided with outwardly-turned flanges on their edges, and riveted together mediately by having interposed between the flanged sheets forming the seam a strip of soft metal for calking the seam, substantially as set forth.

3. A closed tank, as described, composed of sections riveted together by means of outwardly-turned flanged-seams, and soldered or brazed at the seam crevice to exclude the oil from the rivets, substantially as set forth.

4. The oil-tank provided with raised seams A, as described, in combination with one or more anchoring-ties, F^2, bearing on tank-body by means of braces K, as and for the purpose set forth.

5. The series of two or more girdling braces, Z^1 Z^2, in combination with the adjustable band X X′, and applied to an oil-tank, substantially as and for the purpose herein set forth.

In testimony that we claim the foregoing as our invention we have hereunto set our hands and seals this 24th day of April, 1877.

ROBERT TIPPETT. [L. S.]
DAVID L. JAUSS. [L. S.]

Witnesses:
THEOPHILUS WEAVER,
PETER STUCKER.