T. S. K. HAWXHURST.

TANK CAR.

APPLICATION FILED JAN. 8, 1916.

1,307,494.

Patented June 24, 1919.

2 SHEETS-SHEET 1.

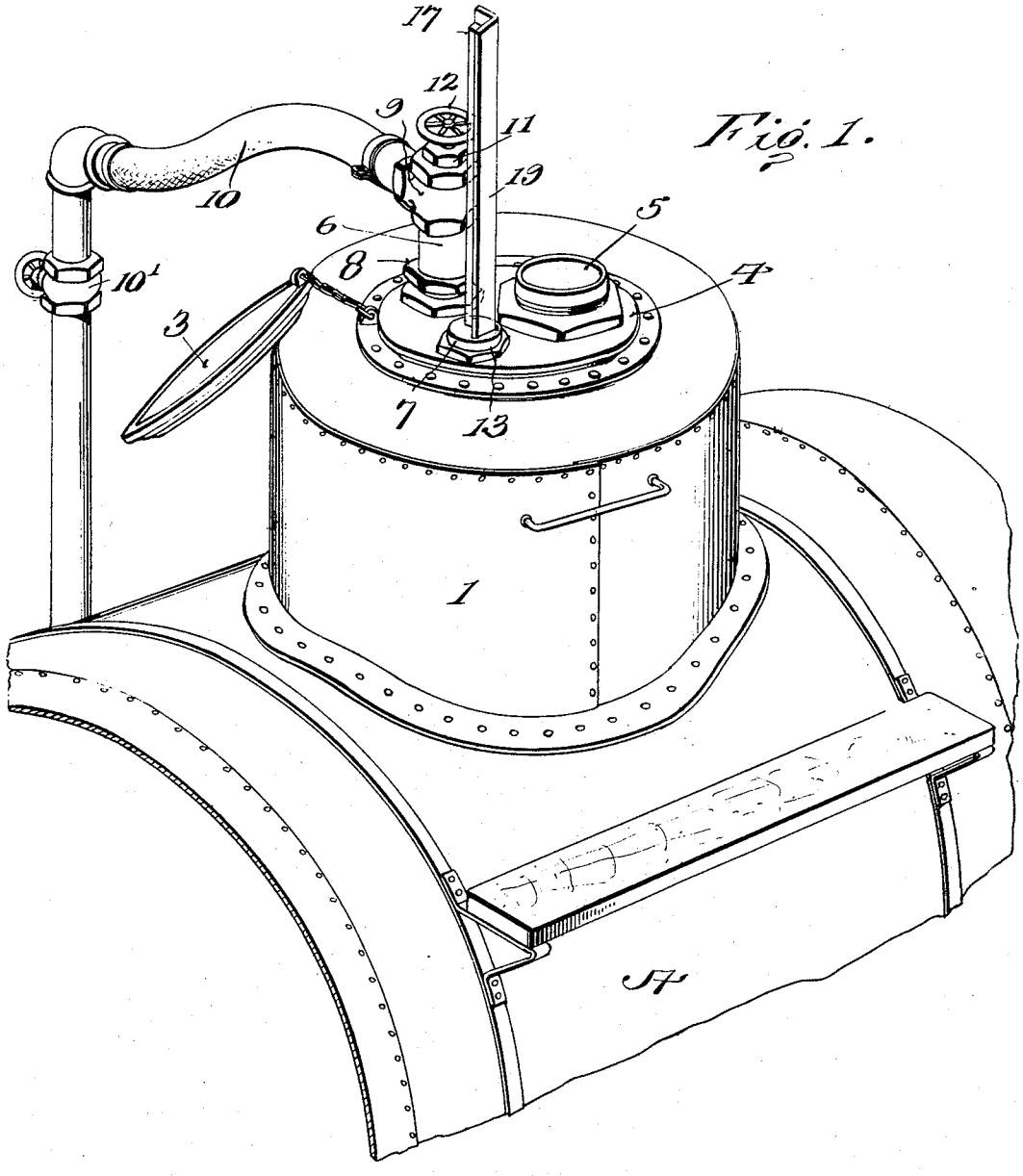


Fig. 1.

Witnesses

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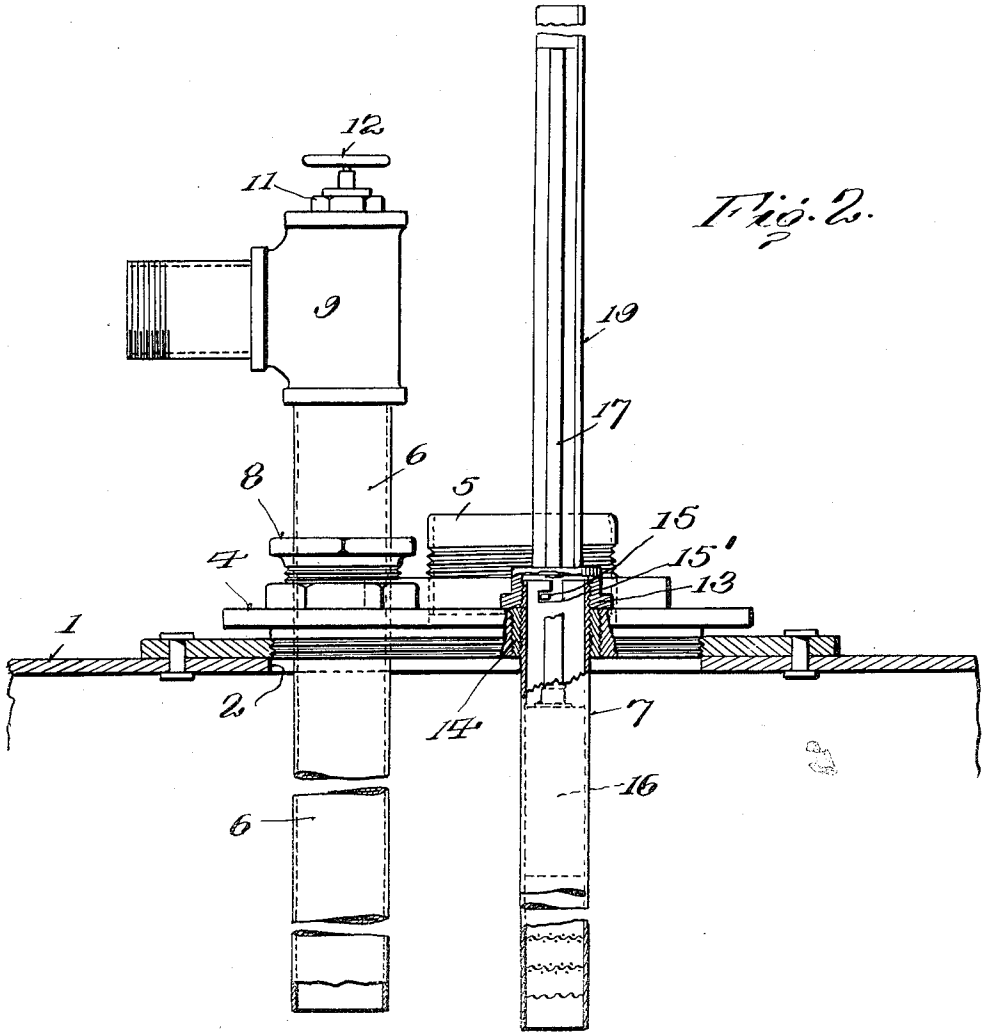


Fig. 2.

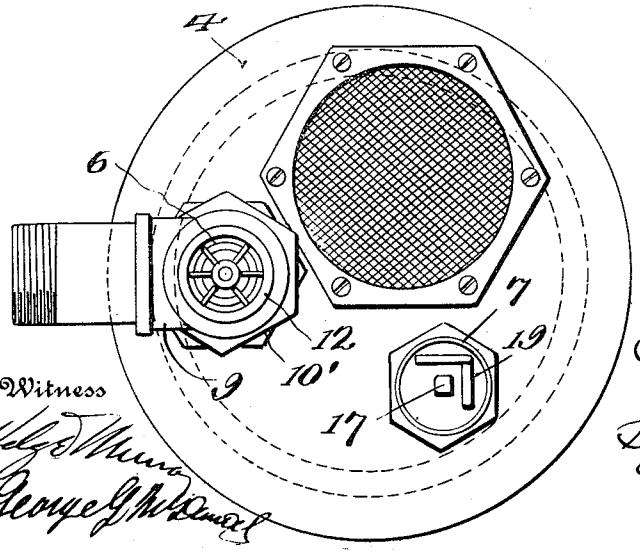


Fig. 3.

Witness

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UNITED STATES PATENT OFFICE.

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TANK-CAR.

1,307,494. Specification of Letters Patent. Patented June 24, 1919.

Application filed January 8, 1916. Serial No. 71,087.

To all whom it may concern:

Be it known that I, TIMOTHY S. K. HAWXHURST, a citizen of the United States, residing at Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Tank-Cars, of which the following is a specification.

This invention relates to tank cars; and it comprises a safety filling or loading device arranged for connection with the opening of a tank car, such device having a head adapted to be attached over the usual opening of a tank car, a filling pipe attached to the head, a vent provided with wire gauze or other material as insulation against sparks and fire, a tube secured to the head and extending into the tank car and provided with a float, a gage rod actuated by the float and an indicator in juxtaposition to the gage rod, whereby a tank car may be loaded with liquid, such as gasolene, naphtha or other inflammable material, from a source of supply and whereby the amount loaded may be accurately gaged and the tank car may be protected against accidental explosion; all as more fully hereinafter set forth and as claimed.

Tank cars as used at the present time usually comprise a steel shell or tank of a definite capacity and a dome which has as one purpose receiving gases and vapors emanating from liquids within the tank. While there is a general similarity in the construction of tank cars, nevertheless they are of different sizes and capacities and for the purpose of the present invention may be considered as being of a number of different classes.

In loading tank cars in the usual ways it is quite difficult to gage accurately the amount of liquid in the car; this being particularly true in loading with inflammable liquids since under the provisions of interstate commerce statutes it is not permissible to fill the car completely, an expansion space of about 2 per cent. being usually required.

The present invention provides means for accurately loading a tank car of any of the ordinary types to the permissible extent, making allowance for the expansion space required by law and at the same time having these means provide against the possibility of explosion of gases or vapors emitted from the liquid during the filling operation.

In the accompanying drawings I have shown one form of my invention.

Figure 1 is a perspective view of a portion of a tank car showing the invention applied thereto;

Fig. 2 is a view in elevation showing the manner of mounting the invention on a car, the portion of the tank car shown being in section; and

Fig. 3 is a top plan view.

Referring to the drawings, A indicates the body of a tank car provided with the usual dome 1. This dome has an opening 2 in the top thereof kept normally closed by a cover 3 which may be provided with screw threads for engagement with corresponding threads in the dome opening. It may have other suitable locking means.

My invention comprises a dome head or temporary filling cover 4 which is secured over or in the dome opening when the tank car is to be loaded. This cover is provided with a plurality of openings, one of the openings being adapted to receive a vent pipe 5 which may be approximately 5 inches in diameter while another opening is adapted to receive a filling pipe 6, which is usually smaller than the vent pipe, being for instance 3 inches in diameter. A third opening receives a tube 7 which may be smaller than either the vent pipe or the filling pipe.

The filling pipe 6, when the filling cover is in position, extends toward the bottom of the tank A. It is held in place by screw threaded collar 8. T-coupling 9 is provided at the upper end of the filling pipe and connected to the coupling is a hose or pipe 10 which leads to the source of supply (not shown). Valve 10′ may be provided for controlling the flow of liquid through this pipe. A plug 11 is secured into the upper end of the T-coupling 9 and connected to the plug is a wheel 12 for the purpose of attaching or releasing the plug. The plug is intended to be removed after filling the car for the purpose of introducing a rod carrying sensitized paper on the lower end; this rod being passed down through the

filling pipe. The rod should be of a length sufficient to reach the bottom of the tank car and is for the purpose of ascertaining the amount of water, if any, in the car, the sensitized paper serving as the indicator.

The tube 7 is attached to the filling cover by means of a bushing 14 having screw connection with the head. A cap 13 is fitted over the top of tube 7 and is provided with internal lugs 15, (advantageously three) which are received in corresponding shaped slots 15′ formed in the top of the tube 7. These lugs serve to lock the cap and the tube together upon rotation of the cap.

The tube is provided with a float 16 connected to a gage rod 17 passing through a complementary shaped opening 18 in the cap. This gage rod may be of any shape and cross section. It is advantageously square. Connected to the top of cap 13 is a V-shaped registering board 19 provided with a plurality of markings, each indicating, when a predetermined portion of the gage rod is on a level therewith, that a car of a certain series or type is loaded with the exact amount of liquid required for that particular car. This registering board is preferably V-shaped in order that markings thereon may be separated. The loading point of cars of a certain series may be marked on one side while the loading point of cars of another series may be marked upon another side. The tube 7 is provided near its lower end with a plurality of layers of wire gauze or other screen material to prevent admission of sparks or fire into the tank.

The vent pipe 5 usually extends above the dome head about three inches and is provided with several layers of wire mesh for the purpose of excluding sparks and fire. If desired suitable piping may be connected to this vent pipe 5 so that during the filling operation vapors from the liquid may be conducted to a condenser or the gases which escape from the car may be led to a gas tank and subsequently used as fuel. When it is not desirable to condense the vapors or utilize the gases they may be allowed to escape directly into the atmosphere. There will be no danger of ignition of the gases and liquid in the car because of the provision of the fire insulation screen in the vent pipe. Tank cars are often filled in railroad yards in proximity to locomotives and it is not an unusual occurrence for sparks to ignite vapors emitted during the loading process, with resultant explosions.

In the present invention when the tank car is in position for filling, the cover 3 is removed and the dome head or filling cover 4 with its filling pipe, float tube and vent is attached in place. The liquid is allowed to flow through the pipe 10 into the car by the way of the filling pipe 9 while the operator watches the gage rod 17. When this gage rod indicates that the correct amount of liquid is in the car the supply is cut off.

What I claim is:

1. A cover for liquid containing receptacles comprising a head, a filling pipe and tube connected to the head, a float in the tube, a gage rod carried by the float for indicating when the tank car has been filled, and a screened vent pipe connected to the head for discharging the gases from the tank car and preventing admission of fire.

2. A removable cover for liquid containing receptacles adapted to fit an opening in said receptacle and removably connected thereto, a filling pipe and tube removably connected to the cover, a float in the tube, an indicator or gage rod carried by the float for indicating when the tank has been filled, and means connected to the head for discharging the gases from the tank car.

3. A safety loading device, comprising a cover having a filling pipe connected thereto for filling the same, a float tube connected to the cover and having a float therein, a cap connected to the tube and a gage rod connected to the float and extending through the cap for indicating when the receptacle has been filled.

4. A safety loading device, comprising a cover having a filling pipe connected thereto, a float tube extending through the cover and having a float therein, a cap connected to the tube, a gage rod connected to the float and extending through the cap, and a register mounted on the cap and coöperating with the gage rod for indicating when the receptacle has been filled.

5. A safety loading device comprising a cover for liquid containing receptacles, said cover being adapted to fit an opening in said receptacle, a filling pipe, vent pipe and float tube carried by the cover, a float in the float tube, a cap for closing an end of the float tube, a gage rod connected to the float and extending through the cap, and a V-shaped register mounted on the cap and coöperating with the gage rod for indicating when the tank has been filled.

6. A safety loading device comprising a cover for liquid containing receptacles, said cover being adapted to fit an opening in said receptacle, a filling pipe carried by the cover, a coupling connected to the filling pipe, means connected to the coupling for conducting oil to the filling pipe and tank, a plug removably connected to the coupling whereby means may be inserted in the pipe and tank for ascertaining the amount of water in the tank, means connected to the head for indicating when the tank has been filled, and means connected to the head for conducting the gases from the tank.

7. A cover for liquid containing receptacles adapted to fit an opening in said recep-

tacle, said cover provided with a plurality of openings, means adapted to be connected to one of said openings to deliver fluid into the tank, means arranged to be connected to another of the openings and adapted to measure the liquid which has been delivered by the first said means, and means for another opening permitting escape of vapors evolved from the liquid which has been filled at the first said means and preventing admission of sparks to the liquid.

In testimony whereof, I affix my signature.

TIMOTHY S. K. HAWXHURST.