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LOADING MEANS FOR TANK CARS.

APPLICATION FILED JUNE 16, 1919.

1,372,466. Patented Mar. 22, 1921.

Fig. 1.

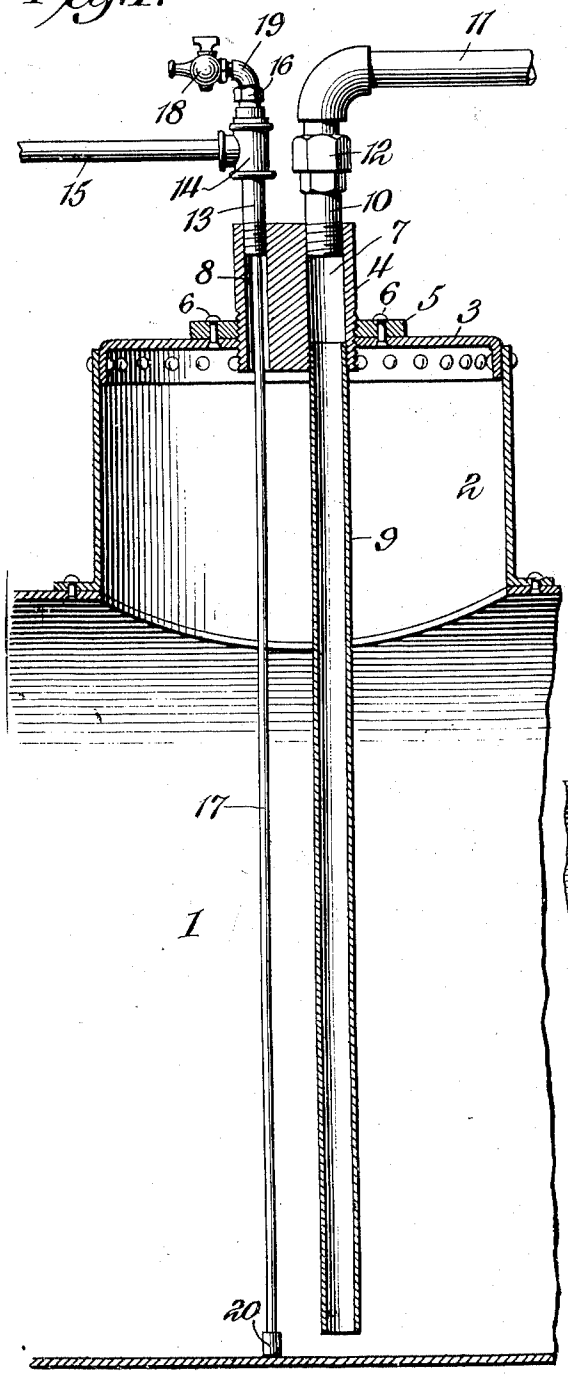


Fig. 2.

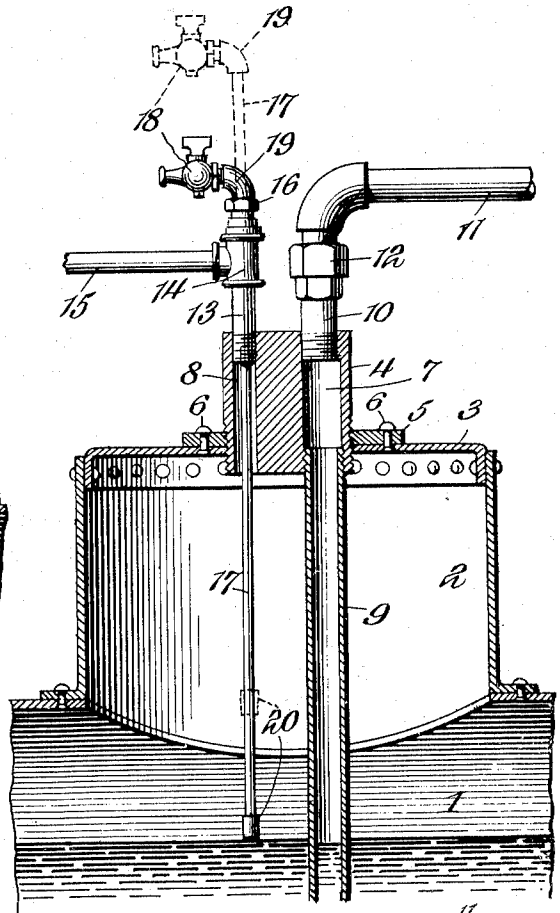
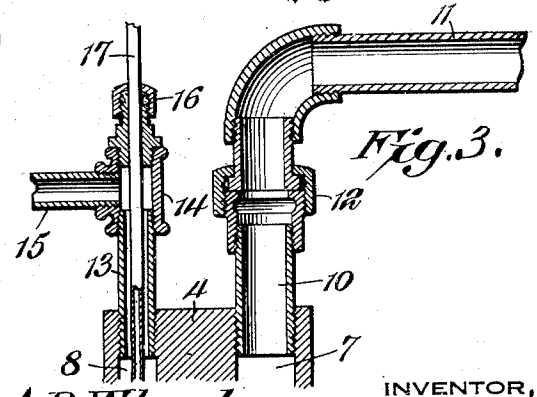


Fig. 3.



WITNESSES

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LOADING MEANS FOR TANK-CARS.

1,372,466. Specification of Letters Patent. Patented Mar. 22, 1921.

Application filed June 16, 1919. Serial No. 304,413.

To all whom it may concern:

Be it known that I, ANDREW B. WHOOLERY, a citizen of the United States, residing at Spencer, in the county of Roane and State of West Virginia, have invented a new and useful Loading Means for Tank-Cars, of which the following is a specification.

This invention has reference to loading means for tank cars, and its object is to provide for the disposition of gases driven from the tank car while the loading proceeds so that in the case of volatile liquids, like gasolene and other petroleum products, there shall be no danger of explosion or fire due to the escape of the driven off gases near a flame or incandescent material.

In loading tank cars volatile material is present in the empty tank and must escape when liquid is placed in the tank. If such volatile or gaseous material be allowed to escape directly into the atmosphere there is always danger of it catching fire and possibly an explosion occurring because of the passage of trains in the vicinity. In accordance with the invention provision is made for conducting the gases forced out of the tank by the incoming liquid to some point of safety. Furthermore, provision is made for determining the depth to which the tank car is filled. The filling means is readily detachable so that when the tank car is being transported it may be properly sealed against escape of either gas or liquid.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Figure 1 is a longitudinal vertical section through a portion of the tank showing the invention applied and some portions of the invention in elevation.

Fig. 2 is a view similar to Fig. 1 but showing a different arrangement of certain of the parts.

Fig. 3 is a detail section through certain of the parts shown in elevation in Figs. 1 and 2.

Referring to the drawing, there is shown a tank 1 which may be considered as indicative of the tank of a railway tank car, and this tank is shown as provided with the usual dome 2, neither of these parts requiring any special description.

The dome 2 is provided with a head 3 as is customary, and secured to such head is a block 4 preferably of cylindrical form and threaded at one end to screw through a ring 5 made fast by rivets 6 or otherwise to the head 3. Extending through the block 4 are passages or ducts 7, 8 respectively. The duct 7 is screw-threaded at each end and opens at one end into the dome 2. At the last-named end there is screwed into the duct 7 one end of a pipe 9 which may be continued to a point near the bottom of the tank 1. At the other or upper end of the duct 7 there is screwed a nipple 10 connected to a supply pipe 11 through a union coupling 12 so that the supply pipe 11 may be connected to or disconnected from the nipple 10 at will. The pipes 9 and 11, in practice, are usually about two inch pipes.

The duct or passage 8 is threaded at the upper end to receive a short nipple 13 which may be considered as a one inch nipple, although not necessarily confined to such particular size. The duct 8 opens directly into the dome 2. At the upper end of the nipple 13 there is applied a T-coupling 14 to the side leg of which there is connected a pipe 15 which may be of one inch size, and this pipe is assumed to be extended to some suitable point of disposition of dangerous vapors. Applied to the end of the T 14 remote from the nipple 13 is a stuffing box 16. Extending through the stuffing box is a pipe 17 which may be of one-eighth inch size, since it is to serve as a vent pipe and a one-eighth inch pipe is sufficiently large for the purpose. Carried by the upper end of the pipe 17 is a pet-cock 18 constituting an escape valve and either directly connected to the pipe or through the intermediary of an elbow 19. The pipe 17 is slidable through the stuffing box 16 and the elbow 19 may be brought into contact with the stuffing box, thus determining the limit of entrance of the pipe 17 into the tank. The pipe 17 may be long enough to bring its lower end into engagement with or close to the bottom of the tank and in order to reinforce the lower end of the pipe 17 a straight coupling 20 may be supplied, this coupling

also avoiding the accidental withdrawal of the pipe 17 from the nipple 13 through which the pipe 17 extends.

For employing the pipe 17 as a gage rod the pressure within the tank, with the pipe 17 below the surface of the liquid in the tank, will cause liquid to be forced out of the pet-cock 18 when the latter is opened. On raising the pipe 17 until it begins to discharge gas instead of liquid, and measuring the distance from the pet-cock to the top of the packing box, will give the depth of liquid in the tank. If it be desired to load the tanks full the pipe 17 need only extend a short distance, say about six inches, below the top of the shell of the tank, see Fig. 2. When liquid, say gasolene, is obtained on opening the pet-cock, the pipe 17 is raised six inches and when gasolene is again obtained, on opening the pet-cock, it indicates that the tank is full. When it is desired to measure the depth of liquid in the tank the pipe 17 is raised, the pipe being long enough to reach the bottom of the tank, until liquid no longer flows from the pet-cock 18 but gas flows therefrom. Then the distance of the pet-cock from the packing gland or stop 16 is measured and this gives the depth of the liquid in the tank.

When the tank is being transported from place to place the block 4 may be removed and the opening through which the block extends is plugged up, or the nipples 10 and 13 may be removed and plugs screwed into the block, the pipe 17 going with the nipple 13.

What is claimed is:—

1. In loading means for tank cars, a depth gage comprising a pipe or tube movable lengthwise into and out of the tank and provided at the outer end with an escape valve, the outward movement of the tube being sufficient to elevate the lower end of the tube above the level of liquid within the tank, whereby the level of the liquid within the tank may be ascertained by the escape of liquid and of gas or vapor from the tank through the tube.

2. An attachment for tank cars comprising a pipe or tube entering the tank above the full level line and movable up and down in the tank, said pipe being provided at the upper end with an escape valve which may be opened and closed at will and having stop means for determining the inner limit of movement of the pipe into the tank, whereby the level of liquid in the tank may be ascertained by the escape of gas through the escape valve when opened and the inner end of the pipe is at substantially the level of the liquid in the tank.

3. An attachment for tank cars comprising a block insertible into the dome of the tank and provided with passages therethrough open at one end into the dome of the tank, nipples in the outer ends of the respective passages, one of the nipples having means for the attachment of a feed pipe thereto, means carried by the other nipple for conducting gases generated in the tank away therefrom, a packing gland carried by the said means in line with the nipple, a tube or pipe extending through the packing gland and through the nipple and passage into the tank, and a manually operable valve at the outer end of the tube, whereby, as liquid is delivered into the tank, gases may be led therefrom to a point of disposal and the valved tube may be withdrawn from the tank to a height corresponding to the level of liquid in the tank to permit the escape of gas or vapor through the tube when the valve is open, whereby to determine the level of the liquid in the tank.

4. An attachment for tank cars comprising a block insertible into the dome of the tank and provided with passages therethrough open at one end into the dome of the tank, nipples in the outer ends of the respective passages, one of the nipples having means for the attachment of a feed pipe thereto, means carried by the other nipple for conducting gases generated in the tank away therefrom, a packing gland carried by the said means in line with the nipple, a tube or pipe extending through the packing gland and through the nipple and passage into the tank, and a manually operable valve at the outer end of the tube, whereby, as liquid is delivered into the tank, gases may be led therefrom to a point of disposal and the valved tube may be withdrawn from the tank to a height, corresponding to the level of liquid in the tank, to permit the escape of gas or vapor through the tube when the valve is open, whereby to determine the level of the liquid in the tank, the length of the tube being such as to reach substantially to the bottom of the tank when the tube is inserted into the tank to the lower limit of its movement, thereby permitting measurement of the depth of liquid in the tank by the distance between the valve and the packing gland when the tube is withdrawn far enough to discharge gas or vapor.

5. An attachment for the tanks of tank cars comprising filling means for the tank and an outlet for accumulated gases within the tank to conduct them away from the car, and a gage associated with the outlet means and manually movable into and out of the tank, said gage comprising a tube opening into the tank and outside thereof provided with a manually operable valve whereby the level of liquid in the tank may be ascertained on the escape of gas or vapor through the valve when the portion of the tube within the car has its open end in close relation to said level.

6. An attachment for the tanks of tank

cars comprising filling means for the tank and an outlet for accumulated gases within the tank to conduct them away from the car, and a gage associated with the outlet means and manually movable into and out of the tank, said gage comprising a tube opening into the tank and outside thereof provided with a manually operable valve whereby the level of liquid in the tank may be ascertained on the escape of gas or vapor through the valve when the portion of the tube within the car has its open end in close relation to said level, said tube being of a length to reach to the bottom of the tank with the valve adjacent to stop means exterior to the tank, whereby the depth of liquid in the tank is ascertainable by the measurement of the distance between the valve and the stop means when the tube is withdrawn from the tank to an extent to cause the escape of gas or vapor from the interior of the tank with the inner end of the tube closely adjacent to the level of liquid in the tank.

7. Loading means for the tanks of tank cars comprising a block or plug extending through the top of the dome of the tank to the interior thereof and having through passages, one of the passages containing a nipple at the outer end with coupling means for a feed pipe and the passage at the inner end having a pipe connected thereto and leading toward the bottom of the tank, escape means for gases accumulated in the tank comprising a nipple screwed into a passage through the block, a T coupling on the nipple, a pipe connected to the T coupling and leading therefrom, a packing gland at the end remote from the nipple, a tube extending through the packing gland, T coupling and nipple to the interior of the tank, and a valve at the outer end of the tube with the gland and valve related to serve as stop means determining one limit of travel of the tube into the tank, whereby the tube may be withdrawn from the tank to an extent to bring the end within the tank to the level of liquid therein and permit the escape of gas within the tank through the valve.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

ANDREW B. WHOOLERY.