R. H. DAVENPORT.

NON-LEAKABLE DISCHARGE NOZZLE.

APPLICATION FILED JAN. 2, 1917.

1,244,710. Patented Oct. 30, 1917.

Fig. 1.

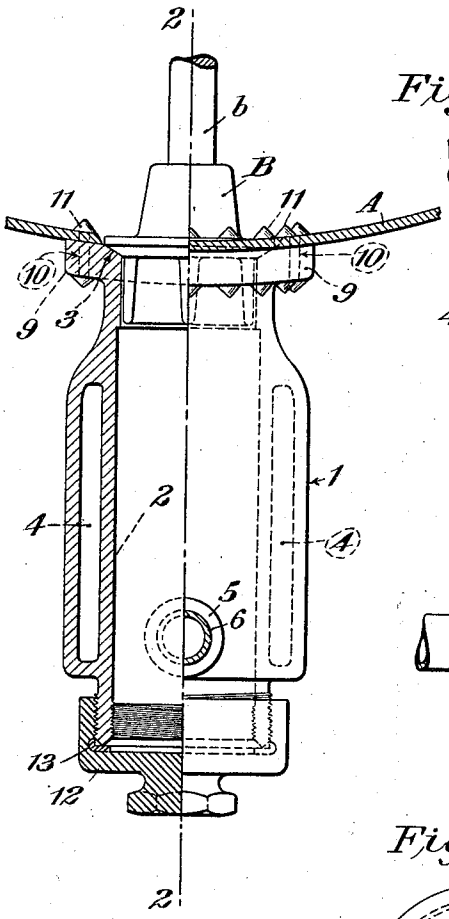


Fig. 3.

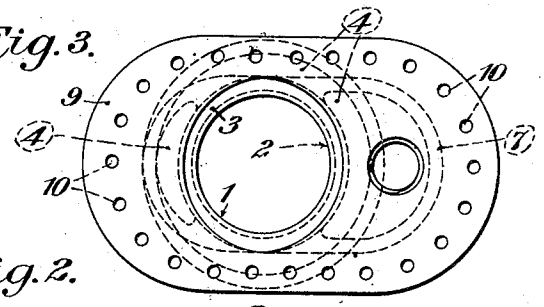


Fig. 2.

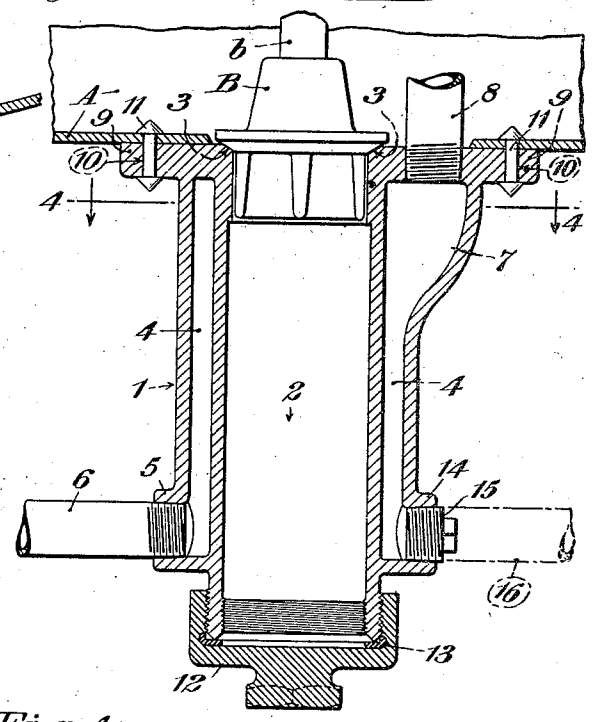
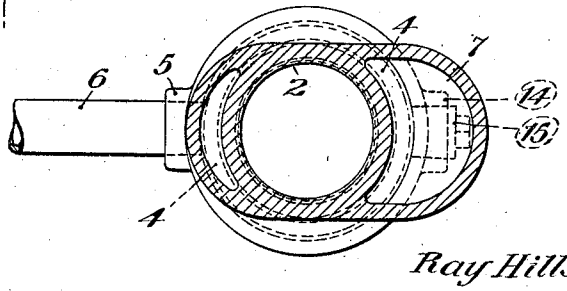


Fig. 4.



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NON-LEAKABLE DISCHARGE-NOZZLE.

1,244,710. Specification of Letters Patent. Patented Oct. 30, 1917.

Application filed January 2, 1917. Serial No. 140,100.

To all whom it may concern:

Be it known that I, RAY HILLS DAVENPORT, residing at Roselle, Union county, State of New Jersey, and being a citizen of the United States, have invented certain new and useful Improvements in Non-Leakable Discharge-Nozzles, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which 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.

In said drawings:

Figure 1 is a composite view showing my improved discharge nozzle in elevation on the right and in transverse vertical section on the left, said nozzle being attached to the under side of a tank;

Fig. 2 is a central vertical section taken on the line 2—2 of Fig. 1;

Fig. 3 is a plan view of the discharge nozzle with the tank and outlet steam pipe removed; and

Fig. 4 is a horizontal section through the discharge nozzle, being taken on the line 4—4 of Fig. 2 and viewed in the direction of the arrows.

This invention relates to a discharge nozzle adapted to be applied either to a stationary storage receptacle or to a tank car, wherein either the receptacle or tank is adapted to contain such lading as tar, lard, heavy road oils and other commodities, the characteristics of which are such that they may be fed into the receptacle or tank in a liquid form, but tend to solidify or become viscous after their admission to the same.

At such times as it is desired to discharge the lading, it is customary to apply heat to the same to improve its fluidity, after which it may be readily discharged through the nozzle.

It is an object of this invention to provide a discharge nozzle adapted to be attached to the exterior of a single shell receptacle having an aperture arranged for communication with a discharge conduit in a nozzle. The discharge nozzle is also positioned entirely outside of the shell of the receptacle, where it may be inspected in its entirety.

A further purpose is that the discharge nozzle shall be of a unitary character, whereby it may be very cheaply manufactured, the expense of machining and fitting a plurality of coöperative parts being avoided.

The unitary feature permits of such a merging of the elements of the discharge nozzle that lading entering the latter from the tank or receptacle, cannot find unintended paths of egress at any time.

It is also proposed that the improved discharge nozzle shall contain a steam jacket, which is adapted to cause lading to become fluid to facilitate its discharge.

Other features of novelty will become apparent hereinafter.

Referring specifically to the parts, A indicates a portion of a single shell tank, which may be part of a tank car, said tank containing an opening adapted to communicate with a lading passage in the discharge nozzle 1. Said discharge nozzle is in the form of a unitary casting attached to and being completely outside of tank shell A. Said casting comprises a fluid-discharge conduit 2 reduced in its upper portion and there provided with a valve seat 3, a steam jacket 4, provided with an apertured boss 5 internally threaded to receive an inlet pipe 6, and a protuberance 7 adapted to register with an outlet pipe 8, and an attachment flange 9. Attachment plate or flange 9 surrounds the opening in the shell of tank A and is provided with holes 10, through which rivets 11 pass to project through the shell of tank A and hold the discharge nozzle in proper relation to said tank.

A valve B projects into the upper end of lading conduit 2 and is adapted to bear against seat 3, said valve being provided

with a stem *b*, operable by any suitable means, which is usually located at the upper side of the tank. The cylindrical wall of lading conduit 2 projects below the steam jacket 4 and is externally and internally threaded, a closing cap 12 being threaded onto the external screw threads. Cap 12 is provided with annular lead or other suitable packing 13, which is adapted to be forced into contact with the V-shaped ridge at the bottom of lading conduit 2, thereby providing a suitable seal against the escape of any liquid lading that may be in conduit 2. When desired, a plug may be substituted for cap 12 and have screw-threaded engagement with the internal threads of lading conduit 2.

The discharge nozzle is provided with another apertured boss 14, preferably diametrically opposite from boss 5, said boss 14 being internally threaded to receive a closing plug 15. The apertures through bosses 5 and 14, and that through attachment flange 9, which is provided for the reception of outlet pipe 8, permit of the positioning of the core employed in the mold, which core is used to create the space between the walls of jacket 4 and internal lading conduit 2. Plug 15 is provided to close the ordinarily unneeded aperture in boss 14, but in some heating systems it is desirable to divide the passageway for the steam, and a pipe, indicated in dot and dash lines at 16, may be screwed into boss 14, when such an arrangement is desirable.

From the foregoing, it will be seen that, with the attachment flange 9 of the discharge nozzle properly riveted to the tank, and with pipes 6 and 8 threaded into boss 5 and flange 9 and plug 15 screwed into boss 14, and preferably sealed by the use of white lead, if cap 12 is tightly secured into place, so that the V-shaped ridge at the bottom of conduit 2 engages the packing 13, there is no opportunity for leakage of the lading contained in tank A, even though valve B should accidentally be imperfectly seated.

It is apparent from the drawing that the attachment flange 9 is of the nature of a plate which closes, except for the port for pipe 8, the upper end of steam jacket 4. This attachment plate usually will be curved, as the type of discharge nozzle illustrated is peculiarly adapted for attachment to railway tank cars. As the discharge nozzle is designed to be entirely exterior to the tank to which it is to be attached, its use may be practically universal, for there is no requirement to adapt it to the interior construction of any particular type of tank.

Desiring to discharge lading, steam from any convenient source is caused to pass through inlet pipe 6 into the steam space within jacket 4, filling the same and passing out through outlet pipe 8, it being understood that pipe 8 is included in a heating system of pipes, the conduit of which is isolated from the interior of tank A, in which valve B is caused to be raised by any suitable operating means. By this arrangement, the lading in the tank nearest the discharge nozzle will become heated first and maintained in a fluid condition while passing through conduit 2 of the discharge nozzle 1, said conduit 2 being maintained at a high temperature until all of the lading in the tank A, or other receptacle, has been discharged.

What I claim is:

1. The combination with a single tank shell provided with a lading-egress opening, of an integral nozzle comprising a discharge conduit adapted to communicate with the tank shell opening, a jacket for fluid adapted to regulate the temperature of said conduit, the space in said conduit and that in said jacket being permanently isolated one from the other, there being inlet and outlet ports in said jacket, one of which is arranged to communicate directly with the interior of said tank and a valve seat in said conduit.

2. In combination in a device of the class described, a single tank shell provided with a lading-egress opening, a heat conduit inlet portion extending into the tank shell, a nozzle in the form of a single casting adapted to be attached to the exterior of said shell, said casting comprising inner and outer spaced walls and a top attachment wall, said walls merging and forming a discharge conduit adapted to communicate with said tank shell opening, a steam jacket beyond which said conduit extends, said jacket being provided with inlet and outlet ports, one of which forms a juncture with said heat conduit portion at a location permitting said conduit portion to enter said tank shell.

3. In combination in a device of the class described, a tank shell having a lading-egress opening, a nozzle in the form of a unitary casting outside of and depending from said tank, said casting comprising a tubular discharge-conduit wall, a top wall forming an attachment flange adapted to be secured to the tank shell exterior, and a shell merged with said conduit and top walls to form a steam jacket, there being inlet and outlet ports in the latter, and steam piping connected with said jacket ports and extending into the tank shell.

4. In combination in a device of the class described, a tank shell having a lading egress opening, a unitary nozzle comprising integral walls forming a discharge conduit, a steam jacket surrounding the same and having a plurality of apertures permitting

different steam pipe connections to said jacket and direct communication with a conduit within the tank.

5. As an article of manufacture, a discharge nozzle for a tank consisting of a single casting including a centrally disposed conduit having an attaching flange at one end, a jacket surrounding a portion of said conduit and spaced therefrom, with an ingress opening through said jacket and a discharge opening therefrom leading through the flanged end of said nozzle structure.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

RAY HILLS DAVENPORT.

Witnesses:

MARGUERITE JOOST,

C. L. BELCHER.