July 8, 1924. 1,500,918

P. W. BOLTON ET AL

OUTLET VALVE

Filed Nov. 30, 1920 2 Sheets-Sheet 1

Fig. 1.

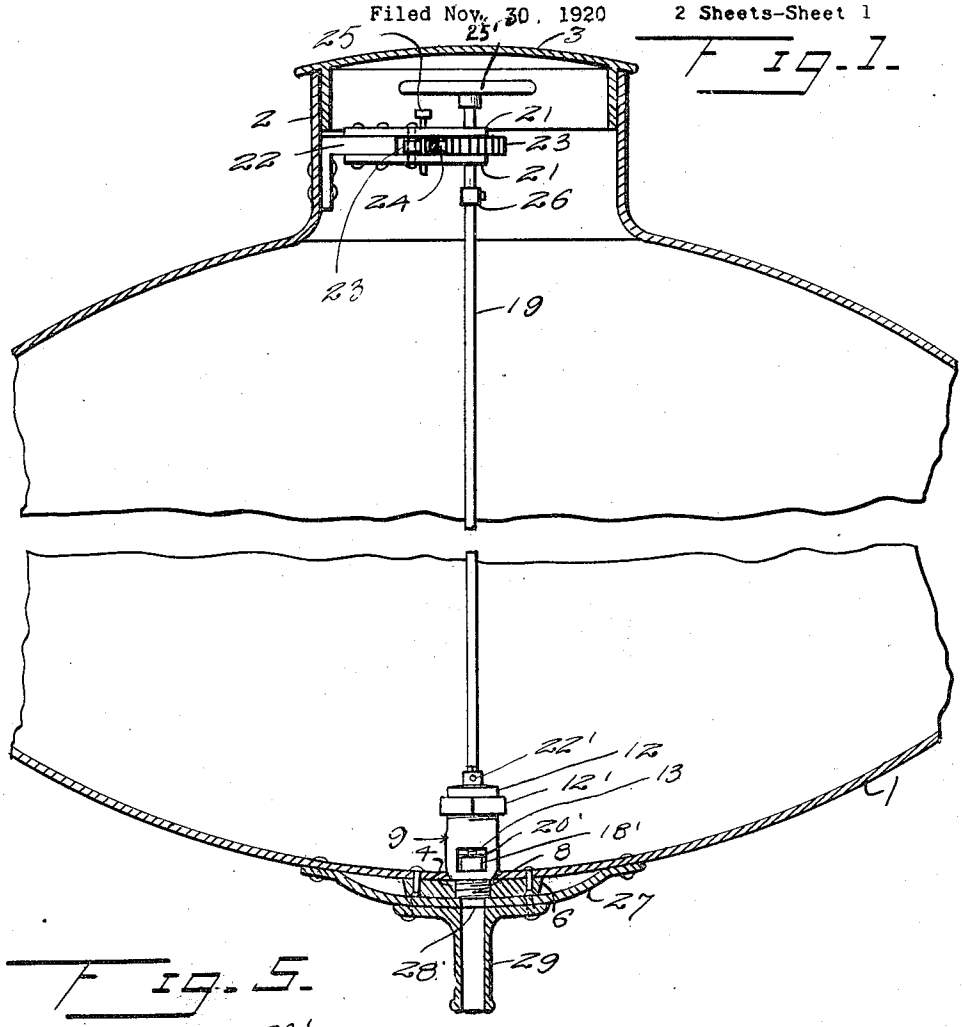
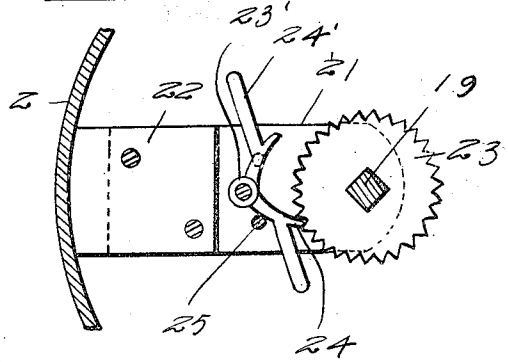


Fig. 5.



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Fig. 2.

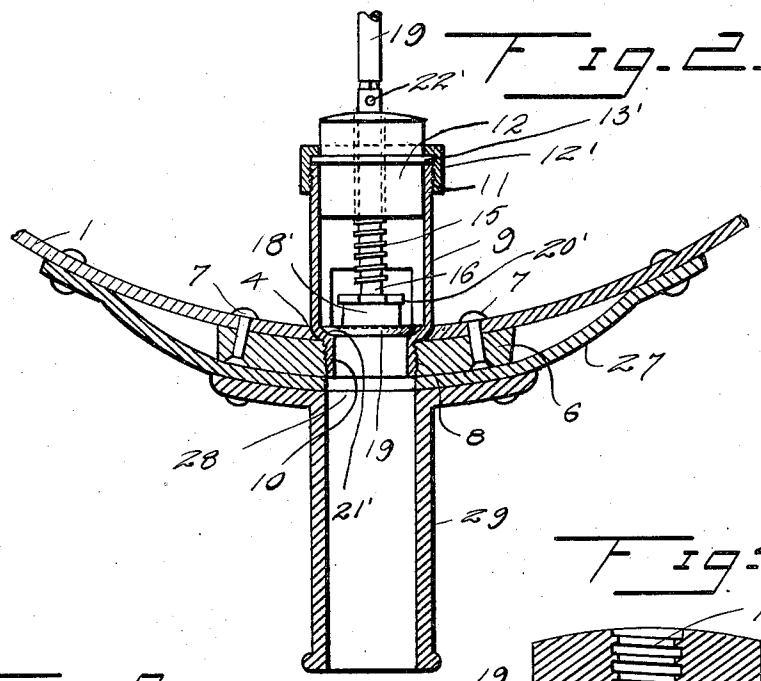


Fig. 4.

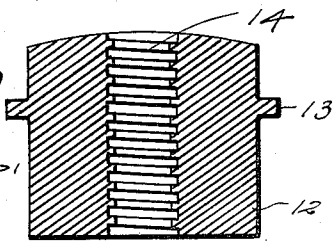
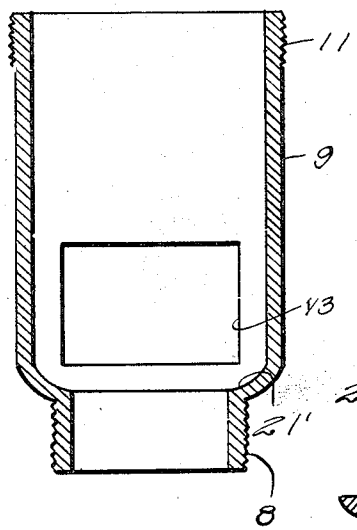


Fig. 3.



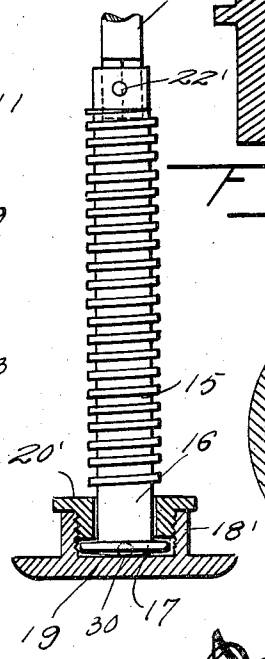
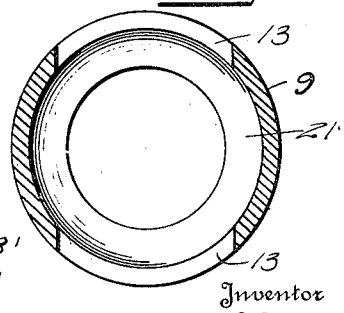


Fig. 7.

Fig. 6.



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UNITED STATES PATENT OFFICE.

PHILIP W. BOLTON AND WILLIAM N. MINNIEAR, OF COFFEYVILLE, KANSAS, ASSIGNORS OF ONE-FIFTH TO GEORGE D. MINNIEAR, ONE-FIFTH TO NOAL G. RYMAN, AND ONE-FIFTH TO BERTHA BOLTON, ALL OF COFFEYVILLE, KANSAS.

OUTLET VALVE.

Application filed November 30, 1920. Serial No. 427,316.

To all whom it may concern:

Be it known that we, PHILIP W. BOLTON and WILLIAM N. MINNIEAR, citizens of the United States, residing at Coffeyville, in the county of Montgomery and State of Kansas, have invented certain new and useful Improvements in Outlet Valves; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in outlet valves for tank cars and has for its primary object the provision of a valve especially adapted for draining the contents of the car by way of a nozzle and which is so secured to the tank of the car that a leak-proof connection is established and also will permit removal of the valve when desiring to repair or examine the same.

Another object of this invention is the provision of means for securing the nozzle to the tank of the car and which will not injure the valve or its connection to the tank in case the nozzle is broken from the tank by an accident and thereby obviate any danger of the contents leaking from said tank.

A further object of this invention is the provision of an outlet valve for tank cars of the above stated character, which will be simple, durable, and efficient, and which may be manufactured and sold at a comparatively low cost.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination, and arrangement of parts as will be hereinafter more fully described and claimed.

For a complete understanding of our invention, reference is to be had to the following description and accompanying drawings; in which:—

Figure 1 is a fragmentary sectional view, illustrating a tank car with an outlet valve applied thereto and constructed in accordance with our invention,

Figure 2 is an enlarged sectional view, illustrating the valve and nozzle,

Figure 3 is a vertical sectional view illustrating the valve casing,

Figure 4 is a sectional view illustrating a feed plug for the valve,

Figure 5 is a detail sectional view illustrating the pawl and ratchet mechanism for the valve shaft,

Figure 6 is a transverse sectional view illustrating the valve crossing,

Figure 7 is a vertical sectional view, illustrating the valve.

Referring in detail to the drawings, the numeral 1 indicates a fragmentary portion of a tank car especially designed to carry fluid and is provided in its top wall with the usual dome 2 closed by a removable cap 3. The bottom wall of the tank 1 is provided with a beveled opening 4 to receive a valve casing 9. A reinforcing plate 6 is secured to the outer face of the bottom wall by means of rivets 7 and is provided with a screw threaded opening 8 to receive a reduced screw threaded neck 10 formed on the lower end of the valve casing 9. The nozzle 10 terminates flush with the outer face of the reinforcing plate 6 and said valve casing 9 is provided with outlet openings 13 on opposite sides thereof and the lower walls of said openings are disposed flush with the bottom wall of the tank 1 so that the contents of the tank may readily drain into the valve casing. The upper end of the valve casing 9 is provided with external screw threads 11 for connection with an attaching cap 12′. The attaching cap 12′ is adapted to secure within the upper end of the valve casing 9 a valve feed plug 12 which is provided with a flange 13′ that rests upon the upper edge of the valve casing 9 and is engaged by the cap 12′. The feed plug 12 is provided with a bore, the wall of which has feed threads 14 formed thereon for cooperation with feed threads 15 formed on the valve stem 16. A disk-shaped head 17 is formed on the lower end of the valve stem 16 and received within an annular internal screw threaded portion 18 of a valve head 19. A locking member 20′ is threaded in the annular portion 18′ and is adapted to retain the disk-shaped head 17 therein. The securing member 20′ is provided with an opening which permits the valve stem 16 to pass freely there-

through and said securing member 20′ is spaced slightly from the disk-shaped head 17 so that a slight pivotal movement may be had between the valve head 19 and the stem 16. The valve head 19 is adapted to engage a valve seat 21′ formed in the lower end of the valve casing 9 for the purpose of preventing the contents of the tank from flowing outwardly through the neck 10.

The upper end of the stem 16 is provided with squared socket to receive the squared lower end of a valve rod 19 and the latter is secured to the stem by means of a pin 22′. The valve rod 19 is disposed vertically and extends upwardly in the dome 2 and is journaled in a pair of spaced plates 21 carried by a bracket 22 and the latter is secured to the dome 2. A ratchet gear 23 is secured to the valve rod 19 between the plate 21 adapted to be engaged by a double end dog 24 which is pivoted between the plates 21 as illustrated at 23′. The double end dog 24 is provided with oppositely disposed handles 24′ which project beyond the plates 21 so that the ends of said dogs may be moved into and out of engagement with the ratchet wheel 23. A removable pin 25 is carried by the plates 21 and is adapted to be changed from opposite sides of the pivot 23′ for the purpose of locking either of the ends of the dog 24 into engagement with the rachet wheel 23. The plates 21 are provided with pairs of openings on either side of the pivot of the dog 24 to receive the bolt 25. A hand wheel 25′ is secured to the upper end of the valve rod 19 so that said rod may be readily rotated for the purpose of raising and lowering the valve within the valve casing to open and close the passage therethrough. A stop 26 is secured to the valve rod 19 adjacent its upper end for the purpose of limiting the upward movement of the valve rod and consequently preventing jambing of the valve against the feed plug 12. The stop 26 is detachable from the valve rod 19 so that when it is desired to remove the valve from the valve casing, the same may be accomplished by the removal of the stop.

An auxiliary plate 27 is secured to the exterior of the tank 1 and overlies the plate 6 and has an opening 28 in alinement with the opening 8. The auxiliary plate 27 is secured to the tank in any desired manner and has secured thereto a discharge nozzle 29 in alinement with the opening 28 so that when the valve is in an open position and the contents of the tank flows through the neck 10 of the valve casing, the same will be directed through the nozzle 29. By having the nozzle 29 secured to the plate 27 and the latter secured to the tank, provides a construction which will not injure or loosen the valve casing from the tank in case the nozzle 28 is broken or torn off of the tank by an accident.

The tank 1 is usually employed for carrying crude oil or similar fluid and the annular member 18′ of the valve head 19 is provided with lubricant openings 30 to permit a small amount of lubricant to enter from the tank into the annular member 18′ for the purpose of lubricating the disk-shaped head 17 and permitting the same to work freely with relation to the valve head 19.

While we have shown and described the preferred embodiment of our invention, it will be understood that minor changes in construction, combination, and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described our invention what we claim is:—

1. In combination, a car tank having an outlet opening, a valve casing secured in said opening and having inlet openings and a discharge neck, a reinforcing plate secured to the tank and having an opening to receive the discharge neck, a second plate secured to the tank and overlying the reinforcing plate and having an opening in alinement with the discharge neck, a nozzle secured to said second plate and in alinement with the discharge neck, and a valve in said valve casing.

2. In combination, a car tank having an outlet opening, a valve casing associated with said opening, a nozzle carried by the tank and associated with said opening, a valve in said casing, a valve rod connected to said valve, a bracket secured to the tank, plates carried by said bracket and rotatably supporting said rod, a hand wheel secured to said rod, an adjustable stop on said rod for limiting the upward movement of the valve, and a pawl and ratchet mechanism carried by the plates and rod.

3. An outlet valve comprising a valve casing, secured in the outlet opening of a tank car, a reinforcing plate secured to the outer face of the tank car and having a screw threaded opening, a reduced neck formed on the valve casing and threaded into said screw threaded opening, a second plate secured to the tank of the car and overlying the reinforcing plate and having an opening, a nozzle secured to the second plate in alinement with the reduced neck, and a valve in said valve casing.

In testimony whereof we affix our signatures in presence of two witnesses.

PHILIP W. BOLTON.
WILLIAM N. MINNIEAR.

Witnesses:
E. C. WRIGHT,
J. S. KLEISS.