

Sept. 23, 1924.

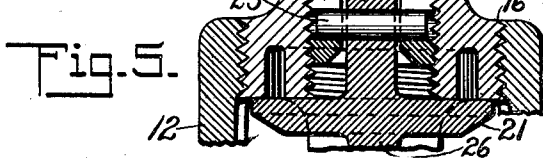
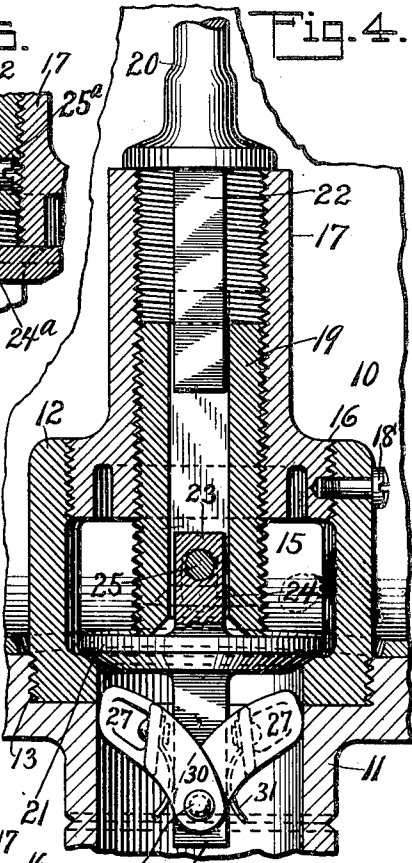
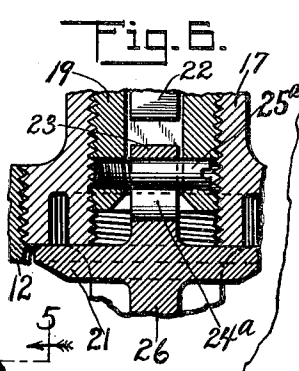
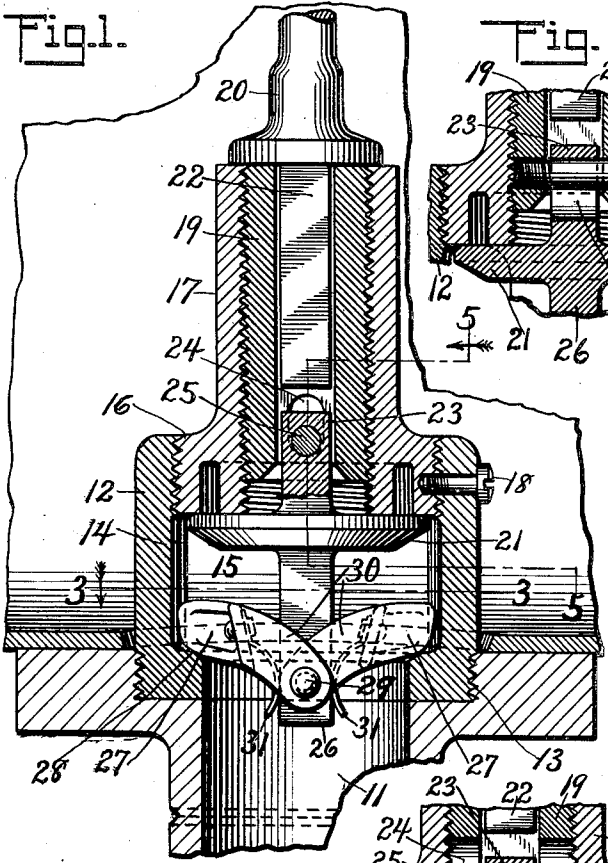
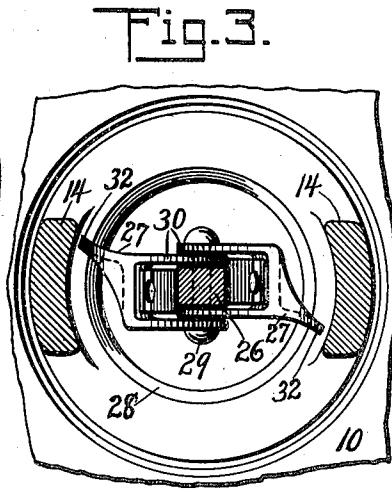
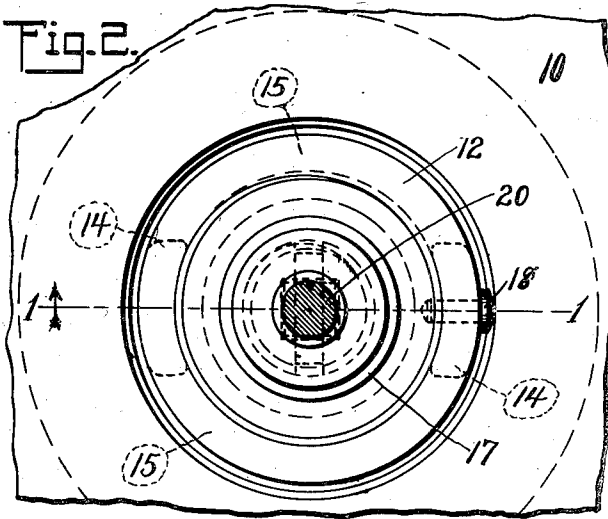
1,509,146

O. HOCHBERG

TANK DISCHARGE VALVE MECHANISM

Filed Jan. 5, 1921

2 Sheets-Sheet 1



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# UNITED STATES PATENT OFFICE.

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## TANK-DISCHARGE-VALVE MECHANISM.

Application filed January 5, 1921. Serial No. 435,158.

*To all whom it may concern:*

Be it known that I, OSCAR HOCHBERG, residing at New York, in the county and State of New York, and being a citizen of the United States, have invented certain new and useful Improvements in a Tank-Discharge-Valve Mechanism, 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 vertical longitudinal section taken on line 1—1 of Fig. 2 looking in the direction indicated by the arrow, and showing the preferred form of my invention;

Figure 2 is a plan view of the same;

Figure 3 is a horizontal section taken on the line 3—3 of Fig. 1 looking in the direction indicated by the arrow;

Figure 4 is a sectional view similar to Fig. 1, but showing the valve locked upon its seat;

Figure 5 is a vertical section taken on line 5—5 of Fig. 1, looking in the direction indicated by the arrow, and showing the flexible connection between the valve and valve supporting and locking member;

Figure 6 is a view similar to Fig. 5 showing a modified form of flexible connection;

Figure 7 is a view similar to Fig. 1 showing a further modification; and

Figure 8 is a horizontal section taken on line 8—8 of Fig. 7, looking in the direction indicated by the arrow.

My invention relates to the class of outlet valves employed in tanks used for the transportation of oil, asphalt and like commodities, and is of the type adapted to prevent extraction of tank contents except upon manipulation of certain valve controlling mechanism within the tank.

One object of my invention is to provide means for positively locking the valve upon its seat.

Another object is to effect the locking of

the valve through the medium of a reciprocatory valve-supporting member having telescopic engagement with said valve.

A further object is to provide means for wiping the valve seat, and other means associated therewith for subsequently grinding said seat prior to the locking of the valve thereon.

In said drawings, 10 designates the tank at the bottom of which is arranged the usual discharge outlet 11 with which is associated a valve cage 12 preferably secured to the outlet by means of an exteriorly threaded annular base portion 13 let into the discharge outlet. The valve housing further comprises two or more posts 14, spaced apart to provide openings 15 for the egress of the tank contents, and connected at their upper ends by an annular screw-tapped portion 16.

Within the screw-tapped portion 16 is fitted the valve-mechanism housing 17 held from rotation therein by set-screw 18, or the like. The housing 17 and valve cage 12 are shown and described as separate members, and such construction is preferred because of the greater convenience and economy in the renewal and repair of worn or broken parts, but the housing and cage members may each be made an integral part of the other without affecting the functions of the moving parts hereinafter to be described.

The housing 17 is tapped to receive a reciprocatory valve-supporting and locking sleeve 19 with which is associated an operating shaft 20 extending upwardly from and resting upon said housing and a valve 21 is supported below the lower end thereof. The sleeve 19 is socketed to receive a polygonal stem portion 22 of operating shaft 20 and the stem portion 23 of valve 21.

Both operating shaft 20 and valve 21 have telescopic engagement with the reciprocatory valve-supporting sleeve 19 through the medium of their respective stem portions 22 and 23. Valve stem 23 is flexibly secured to sleeve 19 by a pin and slot connection comprising slots 24 in the sleeve 19 and cooperating pin 25 in the valve stem 23 or, as shown in Fig. 6, the locations of pin and slot may be reversed, and slot 24<sup>a</sup> may be formed in valve stem 23 and pin 25<sup>a</sup> supported in sleeve 19. The operation in either case is the same.

Depending from valve 21 is a stud shaft 26 supporting a pair of wipers 27 for clean-

55 Another object is to effect the locking of 26 supporting a pair of wipers 27 for clean- 110

ing the valve-seat 28 formed in the base portion 13 of the valve cage 12. In Fig. 1 these wipers are shown pivoted to the stud shaft 26 by means of pin 29 passing through wiper jaws 30. The weight of the wipers at their ends is believed to be sufficient to cause the wipers to ride over the valve-seat 28 with a pressure great enough to scrape off any matter which might accumulate upon the valve-seat. Should the weight alone of the wipers be found insufficient for this purpose, springs 31 may be secured to the wipers with their free ends pressing against stud shaft 26 to further urge said wipers with increased pressure against the valve-seat. By locating the ends 32 of the wipers forwardly of the body portions thereof, the matter scraped from the valve-seat will be directed downwardly through the discharge nozzle.

In certain cases it may be desirable to keep the discharge opening clear of parts extending entirely below the valve member. To this end I have shown in Fig. 7 a modified form of mechanism in which valve 21<sup>a</sup> is hollowed out to receive a pair of valve-seat wipers 27<sup>a</sup> supported within same by means of a yoke member 33 mounted on stud shaft 26<sup>a</sup> and held by supporting pin 29<sup>a</sup>. The wipers are held for rotation with the valve by means of suitable jaws 34 between which said wipers play. In this embodiment, only the scraping end portions 32<sup>a</sup> of wipers 27<sup>a</sup> protrude beyond the valve-member 21<sup>a</sup>. The wipers are pivotally supported on yoke 33 by pins 35, or the like, and hang normally with their scraping end portions 32<sup>a</sup> in the path of valve-seat 28<sup>a</sup>, but are so proportioned as to weight and dimension that upon movement of the valve member 21<sup>a</sup> downwardly to valve-seat 28<sup>a</sup> the scraping end portions 32<sup>a</sup> of the wipers will engage the valve-seat with a pressure having its source in the weight of the mass of material in the wipers located on one side of a vertical plane passing through the longitudinal axis of respective wiper pin 35.

In this form of valve, the valve stem 23<sup>a</sup> is cylindrical with slots 24<sup>a</sup> in its walls for engagement with pins 25<sup>a</sup> in the valve-supporting and locking sleeve 19<sup>a</sup>. The sleeve 19<sup>a</sup> is threaded for reciprocation within the housing 17<sup>a</sup> and is perforated at 36 to receive a polygonal stem portion 22<sup>a</sup> of operating shaft 20<sup>a</sup>.

In operation, assuming the valve to be in locked closed position shown in Fig. 4, the operating shaft 20 is rotated to open the valve carrying with it sleeve 19. Said sleeve, urged by the rotating shaft 20, threads its way upwardly within the housing 17, and receding from valve 21 continues to rise until the bottoms of slots 24 of the sleeve engage pin 25 in the valve stem 23. During this period of operation

the valve 21 has not left its seat 28 but has continued to grind therein, although the sleeve 19 has risen to a point where the pin engages the bottom of the slots 24. Further rotation of shaft 20, and continued upward movement of sleeve 19 with pin 25 nested in the bottoms of slots 24, will cause valve 21 to be lifted from its seat and carried upwardly to the full open position shown in Fig. 1.

During the opening movement of the valve, the valve-seat wipers 27 will be carried upward in their folded position on stud shaft 26 until they reach valve-seat 28, when they will unfold within the larger area of the valve-cage 12 and ride with their ends upon the valve-seat 28.

Upon reverse movement of operating shaft 20, sleeve 19 will move downwardly from the full open position shown in Fig. 1, carrying with it valve 21 and wipers 27, all of the moving parts continuing to rotate until they have reached the full closed position shown in Fig. 4. During this period of movement, and prior to the seating of valve 21, the wipers 27 will have swept the valve-seat 28 clear of all accumulated matter, whereupon continued downward movement will cause said wipers to be drawn into the more restricted area of the discharge nozzle and retracted.

Upon reaching valve-seat 28, the valve 21 will grind therein until the upper ends of slots 24 in the downwardly moving sleeve engage pin 25 in the valve stem 23, or until the lower end of sleeve 19 engages the upper side of valve 21.

What I claim is:

1. In a tank discharge outlet valve mechanism including a valve seat, a reciprocatory valve member, a relatively reciprocatory locking member for said valve, and means carried by the valve for wiping said valve seat prior to the seating of said valve, said locking member being adapted to subsequently lock said valve in its seat.

2. In a tank discharge outlet valve mechanism including a valve seat, a reciprocatory valve member having a depending stud shaft, and a pair of valve seat wipers carried by said shaft and adapted to be retracted upon downward movement of said valve.

3. In a tank discharge outlet valve mechanism, the combination comprising a housing, an operating shaft supported upon said housing and having a portion within the same, a valve member, and a reciprocatory valve supporting and locking member threaded into said housing and having telescopic engagement with both valve member and shaft, said shaft, locking member and valve being held against relative rotation only.

4. The combination in a tank discharge

outlet valve mechanism comprising a housing, of an operating shaft supported upon said housing and having a portion within the same, a valve member, and a reciprocating valve supporting and locking member threaded into said housing and having telescopic engagement with both valve member and shaft, said shaft, locking member and valve being connected for simultaneous

rotation throughout their range of movement. 10

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

OSCAR HOCHBERG.

Witnesses:

WM. K. AUCHINCLOSS,  
LEOPOLD ALMQUIST.