April 21, 1925. 1,534,138

A. E. OSTRANDER

DISCHARGE VALVE MECHANISM

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Fig. 1.

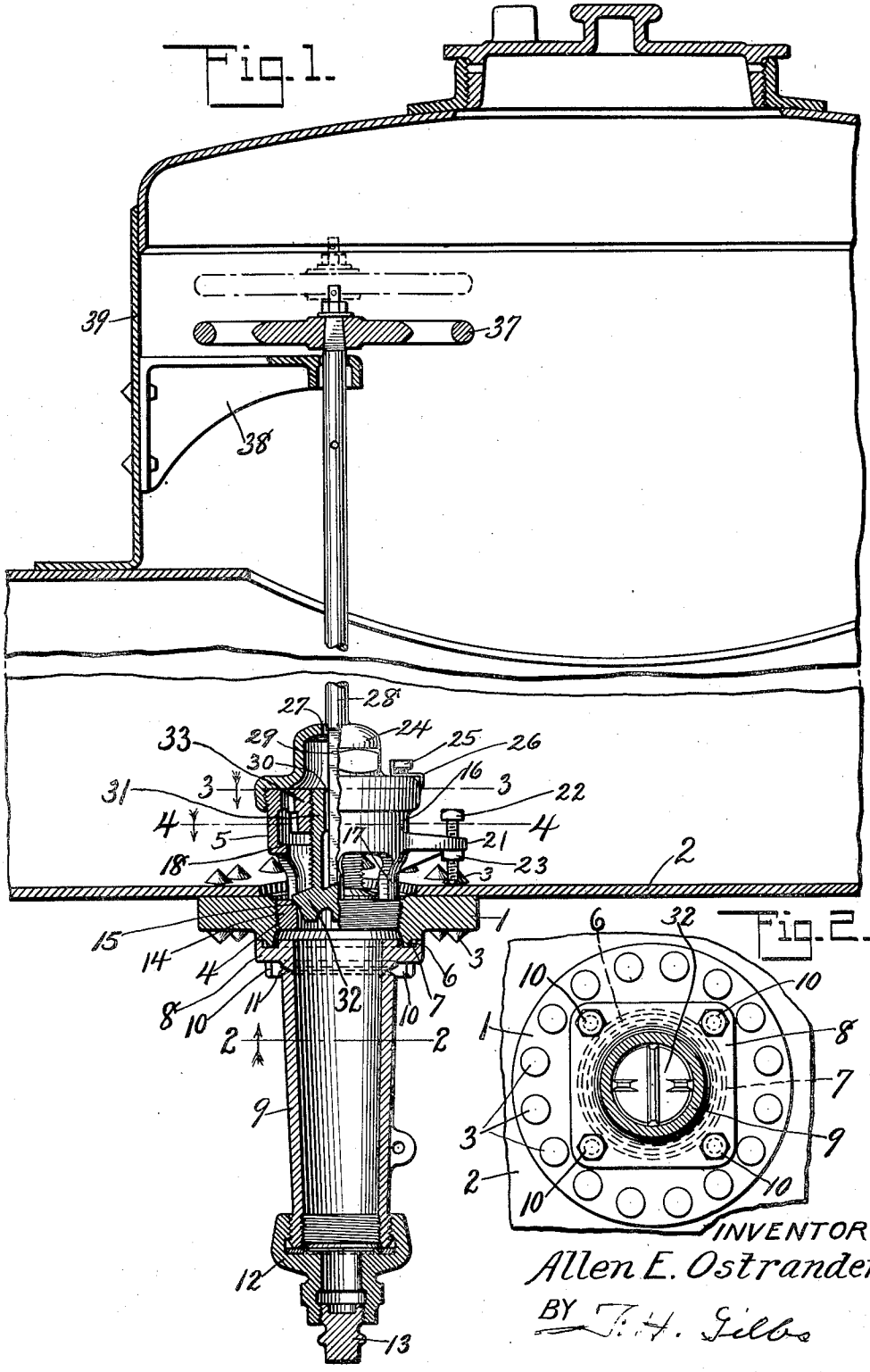

Fig. 2.

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Fig. 3.

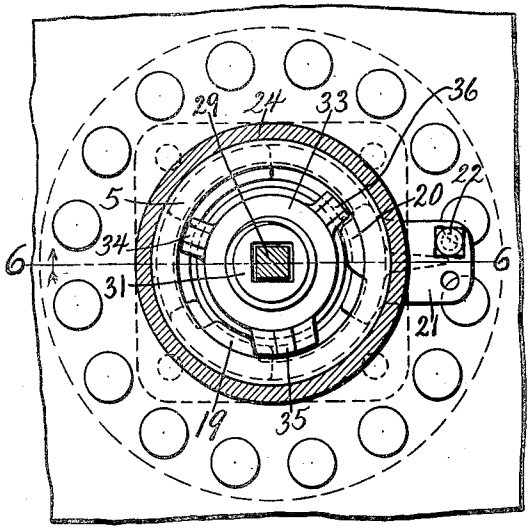


Fig. 4.

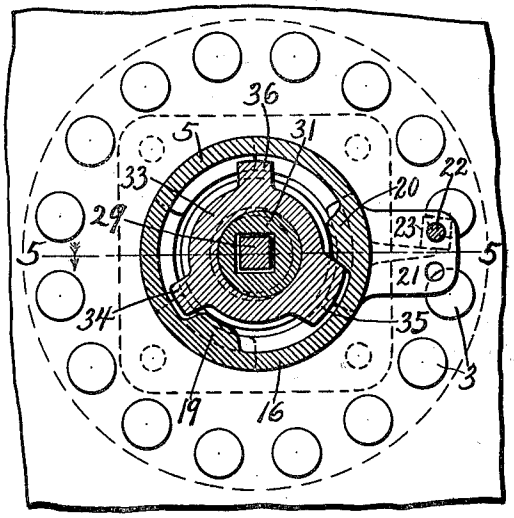


Fig. 5.

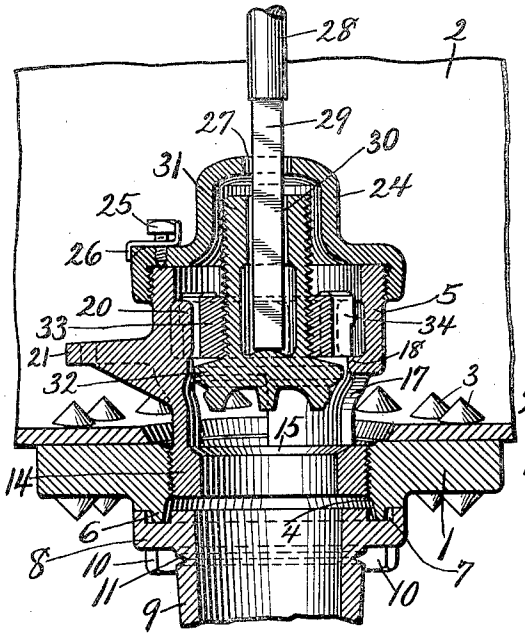
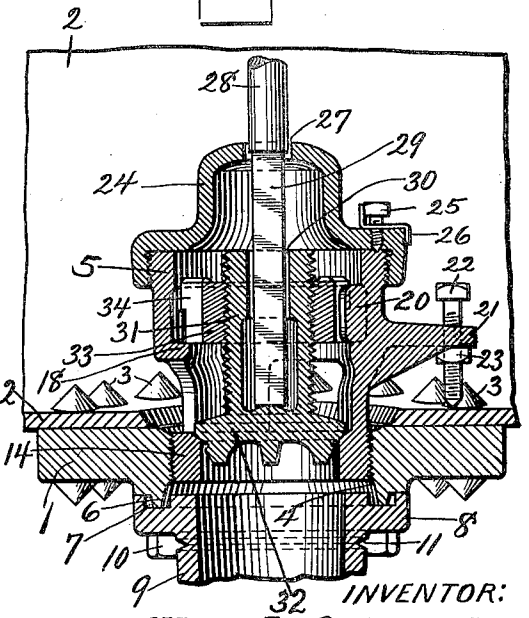


Fig. 6.



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DISCHARGE VALVE MECHANISM

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Fig. 7.

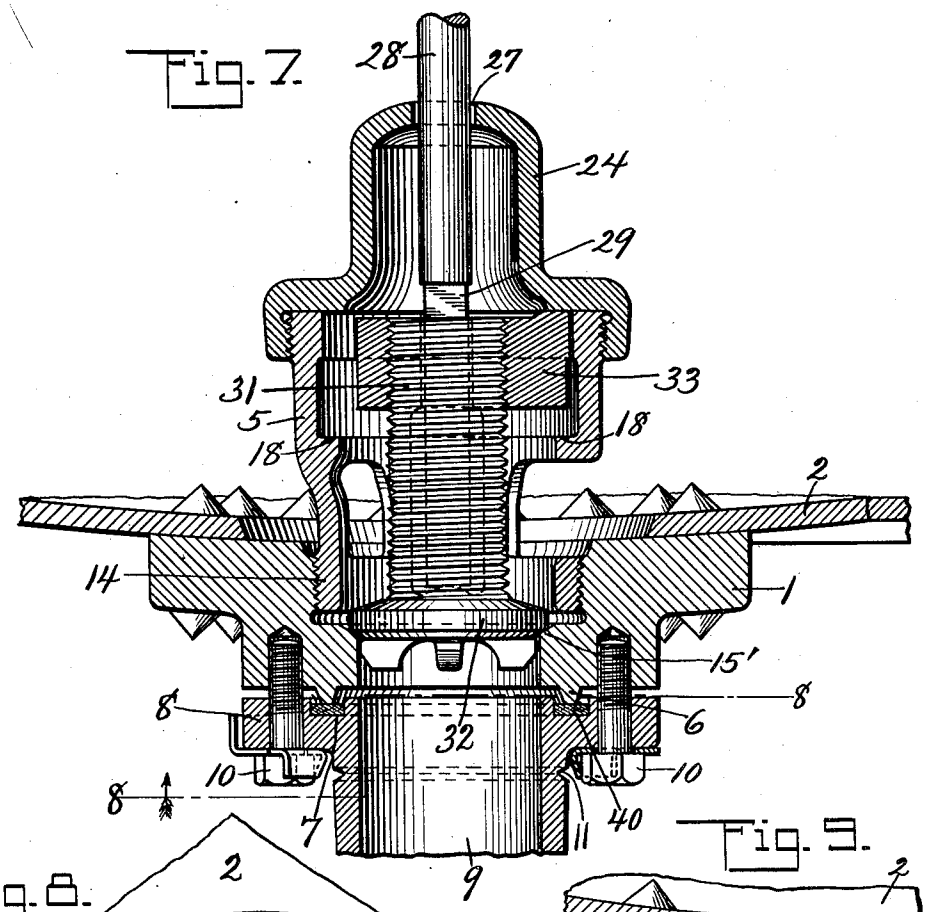


Fig. 8.

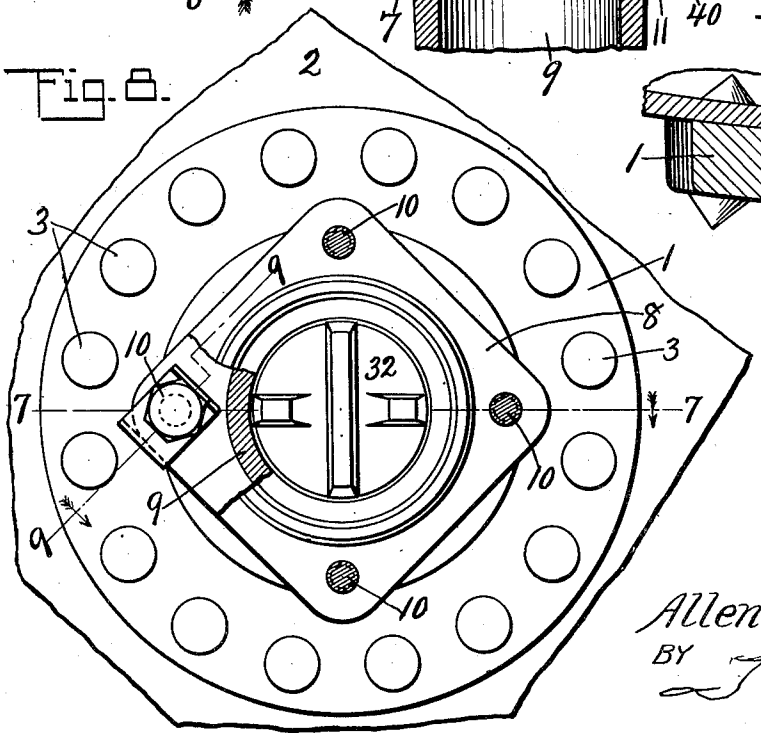
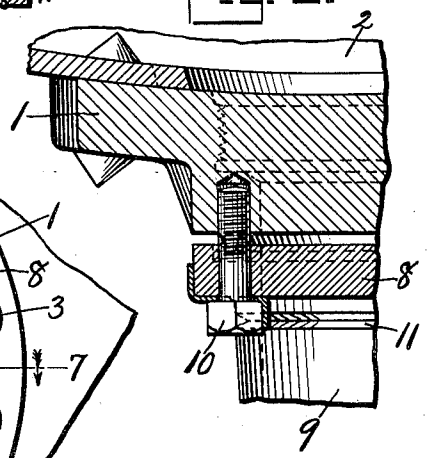


Fig. 9.



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Patented Apr. 21, 1925. 1,534,138

UNITED STATES PATENT OFFICE.

ALLEN E. OSTRANDER, OF BRONXVILLE, NEW YORK, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

DISCHARGE-VALVE MECHANISM.

Application filed May 1, 1922. Serial No. 557,712.

To all whom it may concern:

Be it known that I, ALLEN E. OSTRANDER, residing at Bronxville, Westchester County, State of New York, and being a citizen of the United States, have invented certain new and useful Improvements in a 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:

Fig. 1 is a view, partly in vertical section and partly in elevation, of my improved discharge valve for tanks, the valve being shown in closed position;

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

Fig. 3 is a section taken on the line 3—3 of Fig. 1, with the valve engaging collar in the position taken during the closing of the valve;

Fig. 4 is a section taken on the line 4—4 of Fig. 1 with the valve engaging collar in the position taken during the opening of the valve;

Fig. 5 is a central vertical section of my valve structure taken with the valve in the open position and the valve engaging collar in the position shown in Fig. 4;

Fig. 6 is a central vertical section of my device taken with the valve resting upon its seat and the valve engaging collar in the position shown in Fig. 3;

Fig. 7 is a central vertical section of a modified construction of my device taken at an angle to the section of Fig. 6 and showing the valve forced into engagement with its seat;

Fig. 8 is a section taken on the line 8—8 of Fig. 7; and

Fig. 9 is a fragmentary section taken on the line 9—9 of Fig. 8.

It is an object of my invention to provide an improved discharge valve for tanks of such construction that the valve will grind itself to its seat at each operation thereby maintaining a leak-proof engagement of valve and seat and which will be positively held in engagement with its seat until it is operated to the open position in the proper manner. It is also an object of my invention to provide an improved discharge valve so constructed that the tank contents will not be discharged upon the breaking of the discharge outlet casing and which will permit of the discharge outlet casing being replaced without necessitating the discharge of the tank contents.

With these and other objects in view, my invention comprises a cast member 1 secured to the tank sheet 2 by rivets 3 and having a discharge opening 4 threaded to receive a valve cage 5 and an annular projection 6 adapted to fit into a groove 7 formed in the flange 8 of a discharge outlet casing 9 secured to the member 1 by bolts 10 passing through openings in the flange 8 and engaging in the threaded openings in the member 1. The casing 9 is formed with the usual breaking groove 11 and is threaded to receive a discharge outlet cap 12 which has an opening closed by a plug 13.

The valve cage 5 comprises an annular screw-threaded portion 14, having a valve seat 15, which is adapted to be fitted into the threaded opening 4 in the member 1 and which is connected to the body portion 16 of the cage 5 by the spaced legs 17. The body portion 16 is formed with the inwardly projecting shoulder 18 and lugs 19 and 20 and the outwardly projecting perforated arm 21 in which is mounted a set screw 22 held in position by lock nut 23 and which is adapted to engage with a rivet 3 to keep the cage 5 from being unscrewed from the

opening 4 during the operation of the valve. The cage 5 is exteriorly threaded to receive a cap 24 locked in position by a set screw 25 provided with a lock 26 and provided with an opening 27 to receive a valve operating rod 28.

The valve operating rod 28 is provided with an angular end 29 adapted to loosely engage in a similarly shaped opening 30 in the upper end of the threaded tubular valve stem 31 carrying a valve 32 which is adapted to cooperate with the valve seat 15. Threaded on the valve stem 31 is a collar 33 provided with projecting lugs 34, 35 and 36 which are adapted to engage with the cap 24 and with the shoulder 18 and limit the vertical movement of the collar 33 in the cage 5. The collar 33 is fitted in the cage 5 with the lug 35 between the lugs 19 and 20 of the cage 5 so that rotation of the collar 33 is prevented by the engagement of the lug 35 with one or the other of the lugs 19 and 20. The valve operating rod 28 is provided at its upper end with a hand wheel 37 and is journaled in a bracket 38 attached to the dome sheet 39.

In the modified construction shown in Figs. 7, 8 and 9, the member 1 is provided with a valve seat 15′ engaged by the valve 32, the annular screw threaded portion 14 of the valve cage 5 serving only to connect the cage 5 to the member. In Fig. 7 there is also shown a packing 40 of asbestos, soft metal or other suitable material fitted into the groove 7 in the flange 8 of the casing 9 so as to be engaged by the projection 6 on the cage 5 and make a tight joint therewith.

In the operation of my device continued operation of the valve operating rod 28 in one direction will cause the rotation of the valve 32 on its seat carrying with it the collar 33 until the lug 35 on the collar 33 engages the lug 19 whereupon the collar 33 will be held against rotation and will travel along the valve stem 31 as the valve 32 is rotated on the seat 15 until the lugs 34, 35 and 36 on the collar 33 engage the shoulder 18 formed in the cage 5. Rotation of the valve 32 after the collar 33 rests upon the shoulder 18 will cause the valve 32 to be lifted from the valve seat 15 opening the discharge passage from the tank. With the valve in open position operating the valve operating rod 28 in the opposite direction will cause the valve 32 and collar 33 to be rotated until the lug 35 on the collar 33 engages with the lug 20 formed on the cage 5 whereupon the valve stem 31 is advanced in the collar 33 until the valve 33 engages the seat 15. Further rotation of the valve rod 28 will cause the valve 32 to rotate on the seat 15 and the collar 33 to travel along the stem 31 until the lugs 34, 35 and 36 on the collar 33 engage the cap 24 and force the valve 32 to its seat 15. It will be noted that when the lugs 34, 35 and 36 are in engagement with the cap 24 the valve 32 is held in engagement with its seat 15 and cannot be opened except by operating the rod 28 in the opposite direction.

What I claim is:

1. In a tank discharge valve, a member having a discharge opening and adapted to be secured to a tank sheet, a discharge outlet casing detachably connected to said member and a valve cage carried by said member.

2. In a tank discharge valve, a member having a discharge opening and adapted to be secured to a tank sheet, a discharge outlet casing detachably secured to said member, a valve cage mounted in said discharge opening independently of said discharge outlet casing and means locking said cage in said opening.

3. In a tank discharge valve, a member having a discharge opening and adapted to be secured to a tank sheet, a discharge outlet casing detachably secured to said member, a valve cage carried by said member independently of said discharge outlet casing and a cap carried by said valve cage.

4. In a tank discharge valve, a member adapted to be secured to a tank sheet, a valve cage having a valve seat mounted in said member, a valve in said cage adapted to engage said seat, a cap for said cage and an operating collar carried by said valve and adapted to engage said cap to force said valve to its seat.

5. In a tank discharge valve, a member adapted to be secured to a tank sheet, a valve cage having a valve seat detachably secured to said member, a valve for said seat adapted to be reciprocated in said cage, a cap for said cage and a collar carried by said valve and engaging with said cage and cap to limit the operation of said valve.

6. In a tank discharge valve, a member adapted to be secured to a tank sheet, a valve cage carried by said member, a valve carried by said cage, a cap carried by said cage and a collar carried by said valve adapted to engage with said cage to raise said valve from its seat.

7. In a tank discharge valve, a member adapted to be secured to a tank sheet, a valve cage having a valve seat carried by said member, a valve in said cage adapted to engage said seat, a cap carried by said cage and a collar carried by said valve adapted to engage said cap to force said valve to its seat.

8. In a tank discharge valve, a member having a discharge opening secured to a tank sheet, a valve cage having a valve seat detachably secured to said member in said opening, a valve having a tubular stem adapted to be reciprocated in said cage to and from said seat, a cap for said cage and

operating means for said valve extending through an opening in said cap and slidably engaging said valve stem.

9. In a tank discharge valve, a member having a discharge opening secured to a tank sheet, a valve cage having a valve seat carried by said member, a valve having a threaded stem adapted to engage said seat, a cap for said valve cage, a collar on said valve stem adapted to engage said cage and said cap to shift said valve, and operating means for said valve extending through an opening in said cap and slidably engaging said valve stem.

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

ALLEN E. OSTRANDER.

Witnesses:

ELLEN G. WEBSTER,

R. W. SMITH.