Sept. 23, 1924. 1,509,151

J. W. KING

TANK CAR DISCHARGE VALVE

Filed Aug. 5, 1920

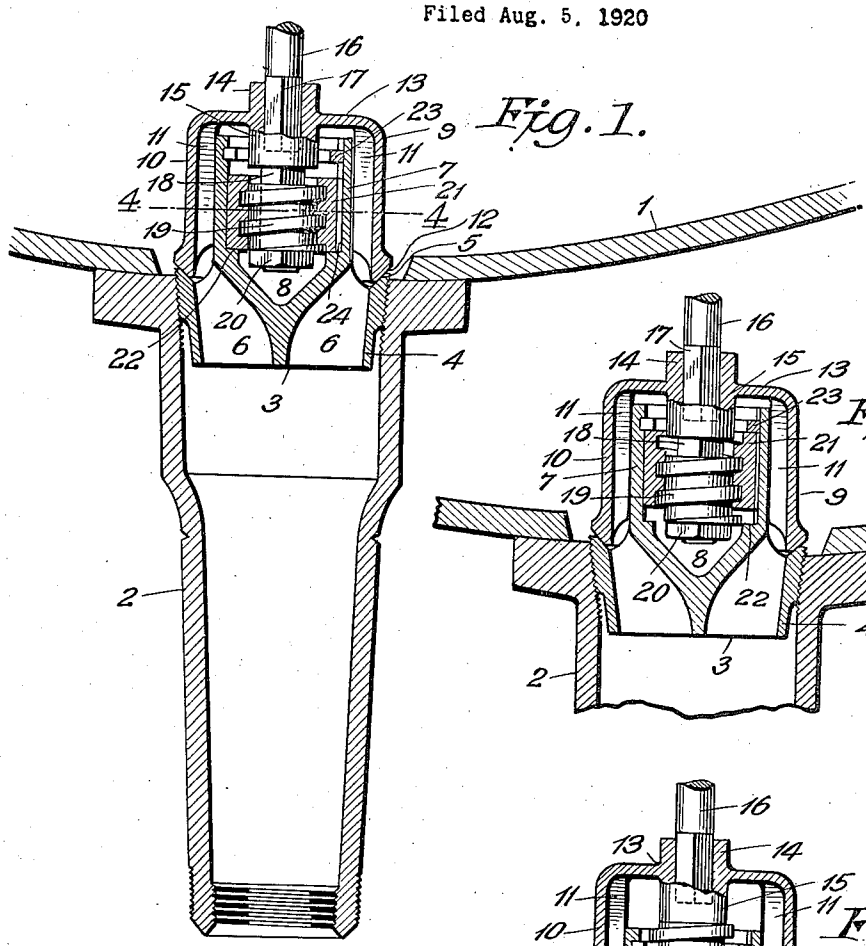


Fig. 1.

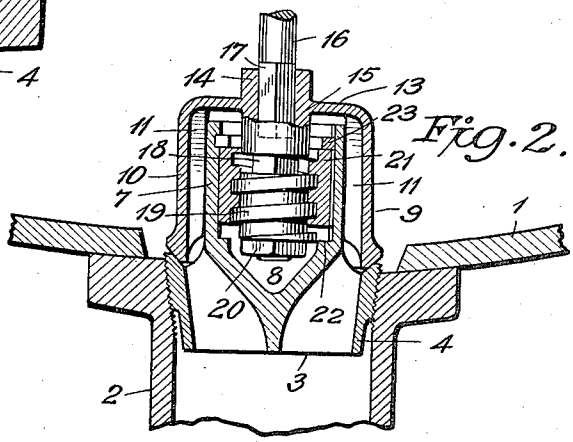


Fig. 2.

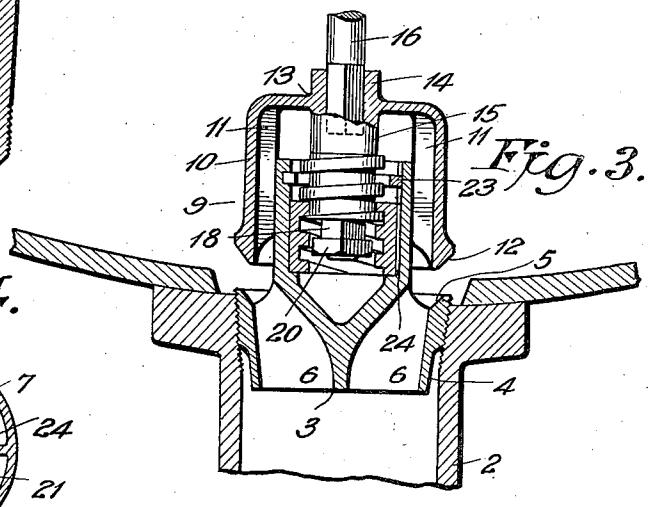
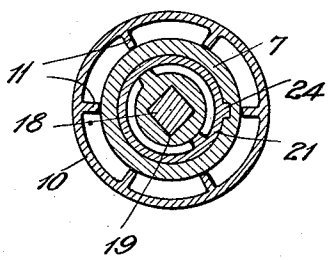


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN W. KING, OF SAYVILLE, NEW YORK, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TANK-CAR-DISCHARGE VALVE.

Application filed August 5, 1920. Serial No. 401,294.

To all whom it may concern:

Be it known that I, JOHN W. KING, residing at Sayville, in the county of Suffolk and State of New York, and being a citizen of the United States, have invented certain new and useful Improvements in a Tank-Car-Discharge Valve, 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 view, partly in section and partly in elevation of my improved tank car discharge valve, the parts being positioned so that the valve rests upon its seat;

Figure 2 is a view similar to Fig. 1 with the parts positioned so that the valve is forced to its seat;

Figure 3 is a view similar to Fig. 1 with the valve raised from its seat; and

Figure 4 is a section on the line 4—4 of Fig. 1.

It is the object of my invention to provide an improved tank car discharge valve of the type wherein the valve will be rotated on its seat at each operation so as to keep the contacting surfaces of the valve and seat clean and properly fitted and the valve will be forced to its seat under considerable pressure by the final movement of the valve operating means in closing the valve.

In the drawings, 1 indicates the bottom sheet of a car tank to which the usual outlet discharge casting 2 is secured in any desired manner as by riveting. The casting 2 is interiorly screw threaded at the tank end and has mounted therein the valve seat member 3. The valve seat member 3 comprises an exteriorly screw threaded annular rim 4 that screws into the discharge outlet casting 2 and is provided with a valve seat 5. Vanes 6 extend inwardly from the rim 4 and are joined together at the center and join with the projecting cylindrical wall 7 to form a chamber 8 that is closed at the bottom.

The valve member 9 comprises a cylindrical wall 10 provided with inwardly extending projections 11 that engage the wall 7 and serve to guide the valve member 9 and a surface 12 at one end adapted to engage with the valve seat 5. The other end of the cylindrical member 9 is closed by a wall 13 provided with bosses 14 and 15 extending in opposite directions from its center. A valve operating shaft 16 provided with a squared end 17 is fitted to an opening in the bosses. Extending from the boss 15 is an angular stud 18 on which the screw threaded sleeve 19 is adapted to slide, the sleeve 19 being held on the stud 18 by the nut 20. The screw threaded sleeve 19 engages with an interiorly screw threaded sleeve 21 adapted to have a limited travel in the chamber 8 between the shoulder 22 and the spring ring 23 mounted in a slot in the wall 7. The sleeve 21 is held against rotation in the chamber 8 by the integral lug 24 which engages in a slot in the wall 7.

With the valve constructed as described the operating mechanism is located in a chamber in the valve seat member 3 and shielded by the valve member 9 from contact with the contents of the tank and the valve operating mechanism is much less liable to be rendered useless by the contents of the tank solidifying around the operating mechanism of the valve.

Assuming the valve member 9 to be forced against the seat member 3, as shown in Fig. 2, operation of the shaft 16 to open the valve will rotate the sleeve 19 in the sleeve 21 causing the sleeve 21 to travel in the chamber 8 from the position in which it engages the spring ring 23 to a position in which it engages the shoulder 22, whereupon continued rotation of the shaft 16 will cause the sleeve 19 to rotate in the sleeve 21 and to travel along the square stud 18 until it engages the boss 15, the valve member 9 meanwhile moving on the seat member 3 so that the contacting surfaces 12 and 5 rub, thus cleaning the surfaces and fitting them to each other. Continued rotation of the shaft 16 after the sleeve 19 engages the boss 15 causes the sleeve 19 to rotate in the sleeve 21 and to lift the valve member 9 from the seat member 3 as shown in Fig. 3.

With the valve member 9 away from the seat member 3, as shown in Fig. 3, operation of the shaft 16 in the opposite direction will

cause the sleeve 19 to rotate in the sleeve 21 and bring the valve member 9 to engage the seat member 3, the valve member 9 sliding on the seat member 3 while continued rotation of the shaft 16 causes the sleeve 19 to rotate in the sleeve 21 and travel along the stud 18 until it engages the nut 20 after which rotation of the sleeve 19 in the sleeve 21 causes the sleeve 21 to travel in the chamber 8 until it engages the spring ring 23 which prevents further movement of the sleeve 21 in the chamber 8 whereupon a further movement of the operating shaft 16 will cause the sleeves 19 and 21 to bear against the nut 20 and spring ring 23 with greater force and thus through the nut 20, stud 18 and boss 15 cause the valve member 9 to bear with greater force upon the seat member 3.

What I claim is:

1. In a tank car discharge valve, a valve member, a valve seat member and a plurality of relatively movable sleeves adapted to be moved with respect to said valve member to move the valve member with respect to the valve seat member.

2. In a tank car discharge valve, a valve seat member having a chamber, a plurality of engaging sleeves movable in said chamber and a valve member operated upon the relative movement of said sleeves.

3. In a tank car discharge valve, a valve member, a valve seat member having a chamber, a sleeve adapted to reciprocate in said chamber and a second sleeve adapted to move relatively to said first sleeve and to move said valve member.

4. In a tank car discharge valve, a valve seat member having a chamber, a sleeve adapted to reciprocate in said chamber, a valve member having a stud thereon and a second sleeve engaging said first sleeve and adapted to travel on said stud to operate said valve member.

5. In a tank car discharge valve, a valve seat member, a valve member rotatable with respect to said valve seat member and a plurality of relatively movable sleeves engaging said valve and seat members and adapted to move said valve member with respect to said seat member upon rotation of said valve member.

6. In a tank car discharge valve, a valve seat member, a valve member rotatable with respect to said seat member, a sleeve engaging said seat member and movable with respect thereto and a second sleeve engaging said valve member and said first sleeve and adapted to move said valve member with respect to said seat member upon rotation of said valve.

7. In a tank car discharge valve, a valve seat member having a chamber therein, a screw threaded sleeve adapted to move in said chamber, a valve member having a squared projection extending into said chamber and a screw threaded sleeve mounted upon said squared projection and engaging said first sleeve.

8. In a tank car discharge valve, a valve seat member having a chamber, a valve member rotatable with respect to said seat member and having a squared projection extending in said chamber, a threaded sleeve adapted to reciprocate in said chamber and held against rotation therein and a second threaded sleeve mounted to reciprocate on said squared projection and engaging said first threaded sleeve, said second sleeve being adapted to travel in said first sleeve and to move said valve member with respect to said valve seat member upon rotation of said valve.

9. In a tank car discharge valve, a valve seat member having a chamber, a threaded sleeve slidable in said chamber, a rotatable valve member, a second threaded sleeve engaging said first sleeve and rotatable with said valve member to move said valve member with respect to said valve seat member and means for rotating said valve member.

10. In a tank car discharge valve, a valve member, a valve seat member and a plurality of relatively movable sleeves movable with respect to said valve and valve seat members and adapted to move said valve with respect to said seat.

11. In a tank car discharge valve, a valve seat member having an annular wall extending therefrom, a valve member surrounding said annular wall and having a projection surrounded by said annular wall and means within said annular wall and engaging said wall and said projection to move said valve member with respect to said valve seat member.

12. In a tank car discharge valve, a valve seat member having a chamber, a valve member having a projection extending into said chamber and means in said chamber engaging said projection and said valve seat member to move said valve with respect to said seat member.

13. In a tank car discharge valve, a valve member and a plurality of engaging sleeves movable relatively to the valve member and adapted to cause successive longitudinal movement of each other to operate the valve member.

14. In a tank car discharge valve, a valve member, a valve seat member, a valve operating member, a threaded sleeve adapted to rotate with said valve member and movable on said valve operating member, a second sleeve operated by said threaded sleeve said second sleeve being guided by said valve seat member independently of said valve member.

15. In a tank car discharge valve, a valve

member, a sleeve rotated by said valve member and a second sleeve reciprocated by said first sleeve and adapted to reciprocate said first sleeve to reciprocate said valve member.

16. In a tank car discharge valve, a valve member, a valve seat member, a valve operating member, a threaded sleeve adapted to rotate with said valve member movable on said valve operating member, and a second sleeve operated by said threaded sleeve, said second sleeve being shifted with respect to said valve member by said first sleeve.

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

JOHN W. KING.

Witnesses:
R. W. SMITH,
JOSEPHINE MITCHELL.