

Oct. 9, 1923.

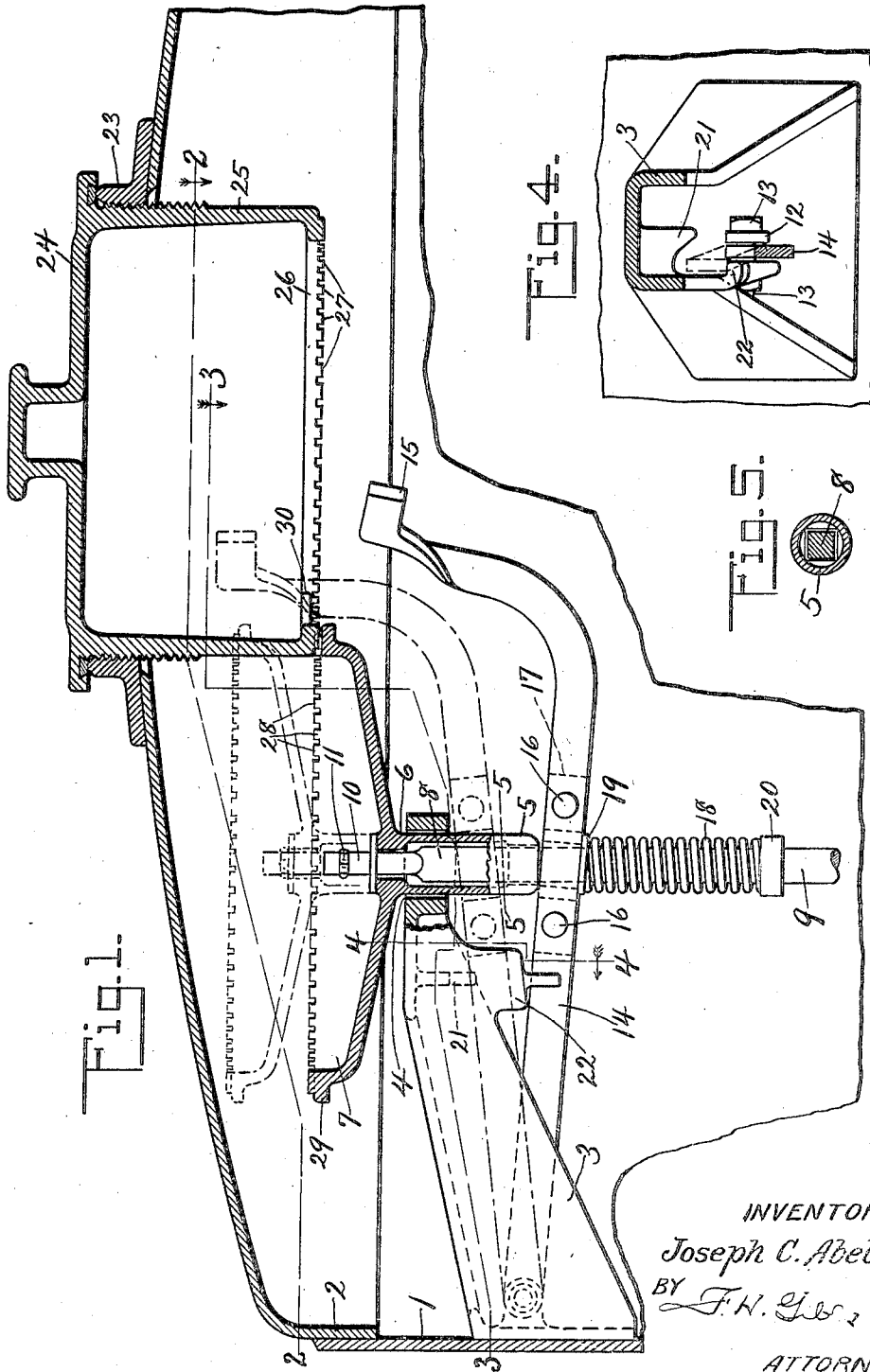
1,470,340

J. C. ABEL

TANK CAR VALVE OPERATING MECHANISM

Filed Feb. 19, 1921

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 2.

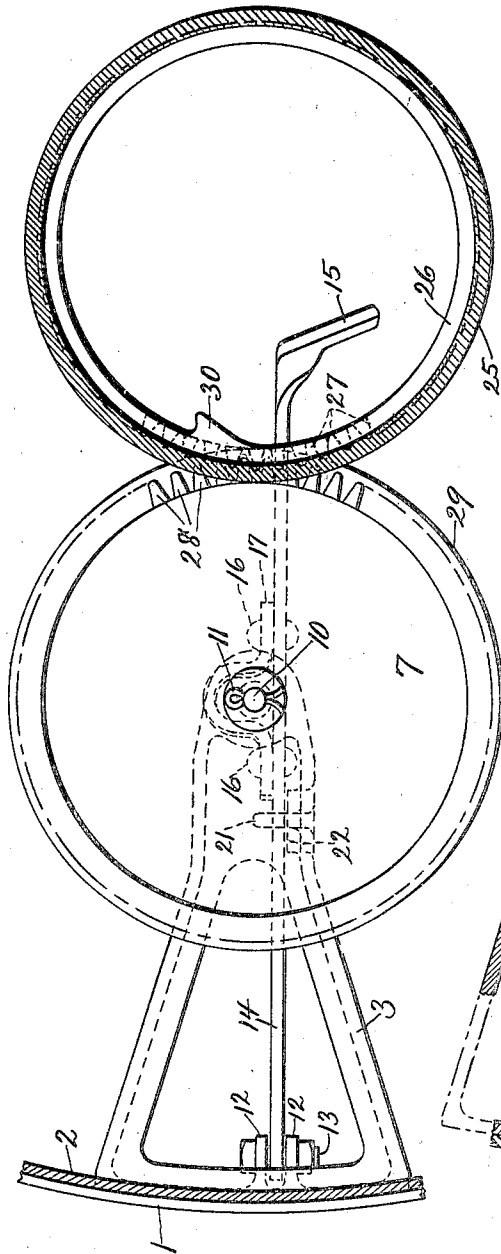
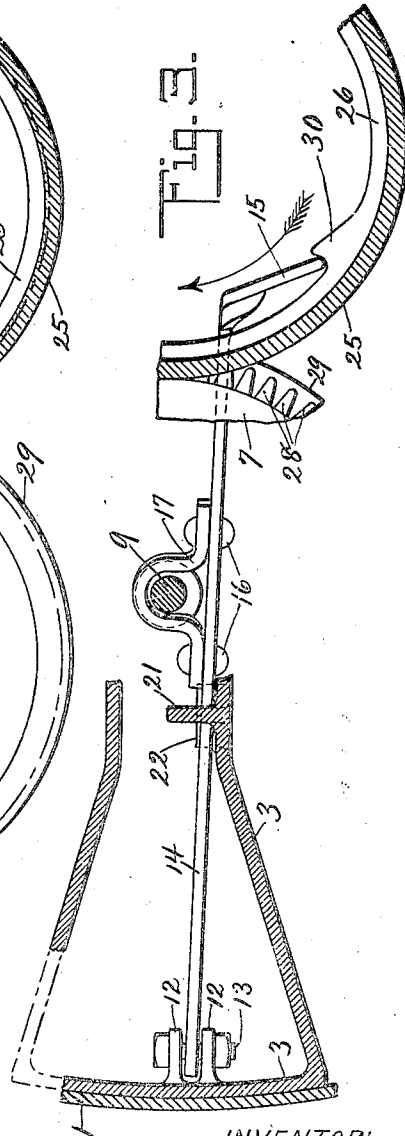


Fig. 3.



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## UNITED STATES PATENT OFFICE.

JOSEPH C. ABEL, OF BROOKLYN, NEW YORK, ASSIGNOR TO AMERICAN CAR AND  
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## TANK-CAR VALVE-OPERATING MECHANISM.

Application filed February 19, 1921. Serial No. 446,233.

*To all whom it may concern:*

Be it known that I, JOSEPH C. ABEL, residing at Brooklyn, in the county of Kings and State of New York, and being a citizen of the United States, have invented certain new and useful Improvements in a Tank-Car Valve-Operating 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 section through a tank car dome showing my improved valve operating mechanism, partly in section, and its relation to the manhole cover of the dome;

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

Figure 3 is a section on the line 3—3 of Fig. 1 with the operating lever shown in raised position;

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

Figure 5 is a section on the line 5—5 of Fig. 1.

It is the object of my invention to provide an improved operating mechanism for the discharge valves of tank cars of the type wherein the seating of the valve is insured by the seating of the manhole cover.

In the drawings 1 designates the usual dome sheet having secured thereto the dome head 2 provided with the usual manhole opening. Secured to the dome sheet 1 is the bracket 3 having the opening 4 in which is journaled the sleeve 5 projecting from the hub 6 of the hand wheel 7. The sleeve 5 is provided at its lower end with a rectangular bore in which is fitted the squared portion 8 of the valve operating rod 9. The squared portion 8 has a reduced cylindrical end 10 that projects through the bore in the hub 6 and is provided with a split pin 11 to secure the hand wheel 7 to the rod 9.

Pivoted to lugs 12 on the bracket 3 by the bolt 13 is a lever 14 bent upwardly at its free

end and having a handle 15 substantially perpendicular to the body of the lever. Secured by the rivets 16 to the lever 14 midway of its length is a strap 17 which forms a loop surrounding the rod 9 just beneath the sleeve 5 of the hub 6. Surrounding the rod 9 is a spring 18 confined between a washer 19 bearing against the strap 17 and a collar 20 secured to the rod 9.

Cast integral with the bracket 3 is a beveled rib 21 overhanging a shelf 22, the rib being adapted to engage the lever 14 when the lever is lifted and guide it to a seat on the shelf 22.

Surrounding the manhole opening is the usual flanged collar 23 having a screw threaded opening in which is mounted the manhole cover 24. The screw threaded flange 25 of the cover 24 is extended and ends in a rim 26 provided with gear teeth 27 adapted to mesh with gear teeth 28 on the rim 29 of the hand wheel 7. Formed integral with the rim 26 is a projection 30 adapted to engage with the handle 15 when the latter is in its raised position as shown in Fig. 3.

Assuming the valve to be closed and the manhole cover 24 seated on the flanged collar 23, rotating the cover 24 to release it will, owing to the engagement of the teeth 27 and 28, cause the hand wheel 7 and the valve to be rotated, the teeth 27 and 28 being kept in engagement by the spring 18 forcing up the hand wheel 7 as the cover 24 is raised in the flanged collar 23. The hand wheel 7 will be kept in engagement with the cover 24 during several revolutions of the latter, after which the cover 24 will rotate without rotating the valve. With the cover 24 removed, the valve is operated by raising the lever 14 until the lever engages the beveled rib 21 and is thrown on to the shelf 22 which serves to support the lever 14 and hold the valve open.

With the valve open and the lever 14 resting on the shelf 22, the cover 24 may be placed in the opening in the collar 23 and screwed part way down without operating the valve while further rotation of the cover 24 will cause the projection 30 to engage the handle 15 and force the lever 14 from the shelf 22 permitting the lever 14 and rod 9 to drop and seat the valve. Further rotation of the cover 24 will cause the teeth 27

and 28 to engage, rotating the hand wheel and rotating the valve and grinding it to its seat. After the teeth 27 and 28 have engaged, the cover 24 will require several complete turns before it will be seated on the collar 23 and as it is lowered in the collar it will force down the hand wheel 9 against the action of the spring 18 thus gradually increasing the pressure holding the valve to its seat.

What I claim is:

1. In a tank car, a valve operating mechanism comprising a lever, a valve rod and a manhole cover adapted to operate the lever to seat the valve and to operate the rod to grind the valve to its seat.

2. In a tank car, a valve operating mechanism comprising a lever, a shelf to support said lever to hold the valve in open position and a manhole cover adapted to move said lever from its position on said shelf to seat the valve.

3. In a tank car, a valve operating mechanism comprising a lever, means to support said lever to hold the valve in open position, a manhole cover adapted to move said lever from its support to seat the valve and means operated by said cover to vary the pressure exerted upon the valve.

4. In a tank car, a valve operating mechanism comprising a hand wheel adapted to rotate the valve, a manhole cover adapted to operate the hand wheel and yielding means holding said hand wheel and said cover in engagement.

5. In a tank car, a valve operating mechanism comprising a hand wheel adapted to rotate the valve, a manhole cover adapted to operate said hand wheel while being

opened and a lever for raising the valve from its seat.

6. In a tank car, a valve operating mechanism comprising a hand wheel adapted to rotate the valve and a manhole cover adapted to operate the hand wheel and to gradually vary the pressure exerted upon the valve.

7. In a tank car, a valve operating mechanism comprising a toothed hand wheel adapted to rotate the valve, a lever adapted to operate the valve and a manhole cover having teeth adapted to mesh with the teeth of the hand wheel and a projection adapted to engage the lever.

8. In a tank car, a valve operating mechanism comprising a hand wheel slidably mounted in its support and a manhole cover adapted to slide the hand wheel in its support to vary the pressure on the valve.

9. In a tank car, a valve operating mechanism comprising a hand wheel for rotating the valve and a lever for moving the valve to and from its seat and a common operating means for said hand wheel and lever.

10. In a tank car, a valve operating mechanism comprising a hand wheel for rotating the valve, a lever for moving the valve to and from its seat, means for supporting the lever with the valve in open position and means for moving the lever from its support.

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

JOSEPH C. ABEL.

Witnesses:

OSCAR HOCHBERG,  
JOSEPHINE MITCHELL.