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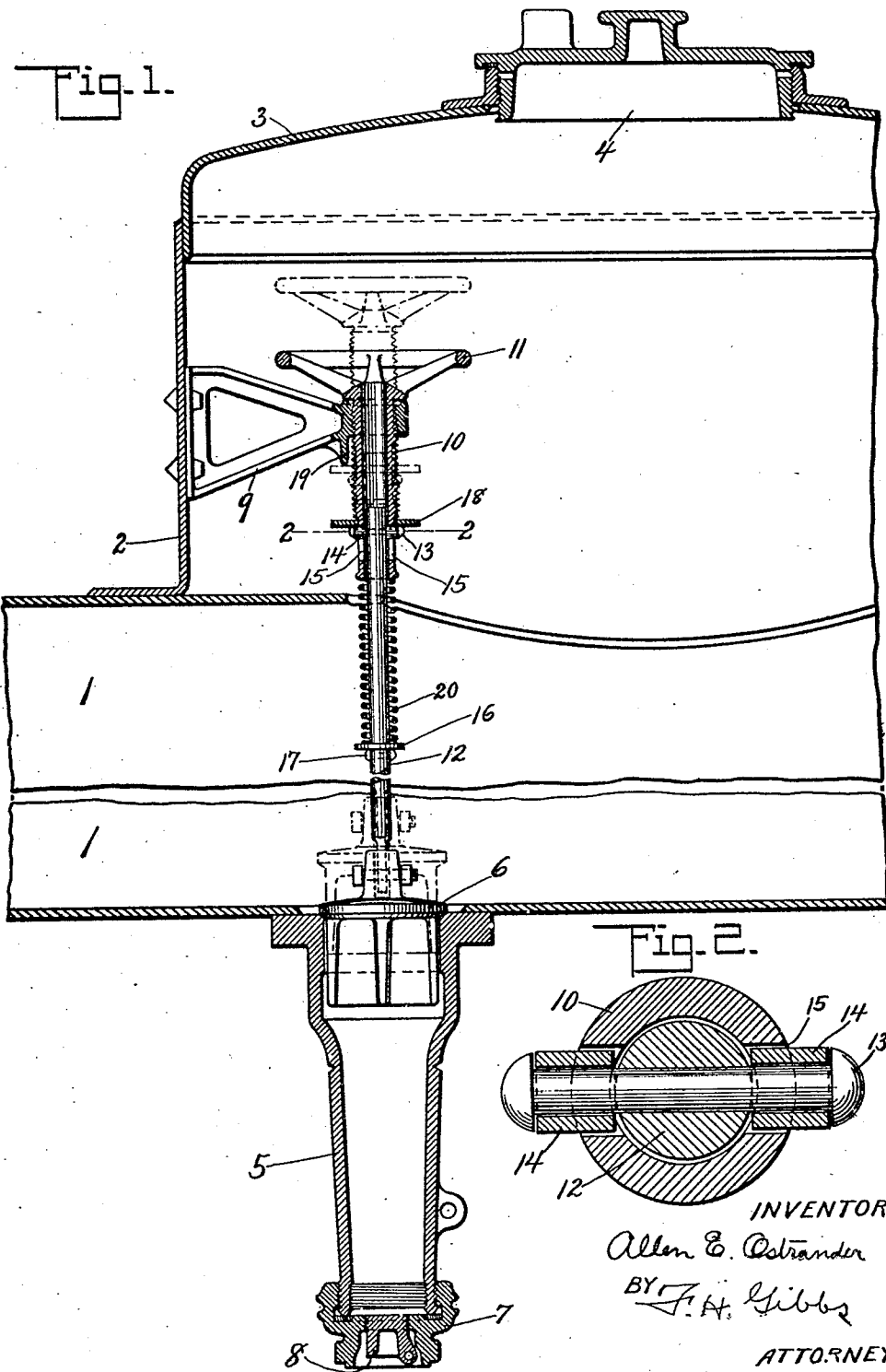
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DISCHARGE VALVE MECHANISM

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## UNITED STATES PATENT OFFICE.

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## DISCHARGE-VALVE MECHANISM.

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It is to be understood that this 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 broken central vertical sectional view of a railway car tank showing my improved discharge valve mechanism applied thereto; and

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

It is an object of my invention to provide an improved tank discharge valve mechanism of the self-grinding type.

In the preferred embodiment of my invention shown in the drawings, 1 designates a car tank having a dome comprising a dome sheet 2 and a dome head 3 in which is the usual manhole opening closed by a cover 4. Secured to a bottom sheet of the tank as by rivets, not shown, is a discharge outlet casting 5 having a seat at one end for the discharge valve 6 and provided with a screw thread at the other end to receive an outlet cap 7 having a threaded opening closed by a plug 8.

Secured to the dome sheet 2 is a bracket 9 having a threaded opening in which is threaded a sleeve 10 provided with a hand wheel 11. Slidably mounted in the sleeve 10 is a valve rod 12 pivotally connected, at one end, to the valve 6 and carrying at the other end, a pin 13 upon which are mounted rollers 14 which travel in slots 15 in the sleeve 10. A spring 20 surrounds the rod 12 and is confined between an end of the sleeve 10 and a washer 16 held in position on the rod 12 by the pin 17. A washer 18 is slidably mounted on the sleeve 10 and is moved with the valve rod to limit the upward movement of the valve by engagement with a projection 19 on the bracket 9. The washer rests on the pin 13 which forms a part of the pin and slot connection between the sleeve and the valve rod.

With the valve positioned on its seat as shown in Fig. 1, rotating the hand wheel to open the valve 6 will cause the sleeve 10, rod 12 and valve 6 to rotate, the valve 6 turning on its seat and being ground to its seat under the pressure of spring 20 and the sleeve 10 advancing in the bracket 9 until the rollers 14 engage the bottoms of the slots 15

whereupon the valve 6 will be lifted from its seat. The upward movement of the sleeve 10 in the bracket 9 may be continued until checked by the engagement of the washer 18 with the projection 19.

With the valve 6 in the open position, operating the hand wheel 11 to close the valve 6 will cause the sleeve 10, rod 12 and valve 6 to be rotated, the sleeve 10 being lowered in the bracket 9 and lowering the valve 6 to its seat. With the valve 6 in engagement with its seat further rotation of the hand wheel will rotate the valve 6 on its seat under a gradually increasing pressure, as the spring 20 is compressed by the lowering of the sleeve 10 in the bracket 9, until the movement of the sleeve is checked by the engagement of the rollers 14 on the pin 13 with the upper ends of the slots 15.

What I claim is:

1. A tank car discharge valve mechanism comprising a supporting bracket, a lug projecting from said bracket, a sleeve rotatably mounted in said bracket and moved longitudinally upon rotation therein, operating means for said sleeve, a valve rod slidably mounted in said sleeve and rotated by said sleeve, a valve operated by said rod, a yielding means between said sleeve and rod holding said valve to its seat during predetermined longitudinal movement of said sleeve and a ring member slidably mounted on said sleeve and moved with the valve rod to engage said lug and limit the raising of the valve.

2. A tank car discharge valve mechanism comprising a supporting bracket, a sleeve rotatable and movable longitudinally in said bracket, operating means for said sleeve, a rod rotated by and movable longitudinally in said sleeve, a valve connected to said rod, a pin and slot connection between said sleeve and said rod, a washer carried by said sleeve and resting on the pin of said connection, said washer being movable with the rod to engage the bracket and limit the raising of the valve and a spring engaging said rod and said sleeve.

3. A car tank discharge valve mechanism comprising a supporting bracket carried by the tank dome, a projection extending from said bracket, a sleeve movable in said bracket, means to operate said sleeve, a rod operated by said sleeve and adapted to reciprocate in said sleeve, a valve operated by

said rod and yielding means carried by said rod and operatively engaging said sleeve and rod, said valve being forced to its seat and rotated thereon during a predetermined longitudinal movement of said sleeve and a washer slidably mounted on said sleeve and movable with said rod, said washer engaging the projection to limit the raising of the valve.

4. A tank car discharge valve mechanism comprising a supporting bracket, a sleeve rotatable in said bracket, an operating hand wheel directly connected to said sleeve, a rod rotated and moved longitudinally by said sleeve, a pin and slot connection comprising a pin on said rod extending through a

slot in said sleeve for connecting the sleeve to the rod, a valve operated by said rod, a spring on said rod beyond said sleeve operatively engaging said sleeve and rod to yieldingly hold said valve to its seat while said valve is rotated on its seat during a predetermined longitudinal movement of said sleeve and a washer slidably mounted on said sleeve and carried by said pin, said washer being moved with the rod to engage said bracket and limit the raising of the valve.

In witness whereof I have hereunto set my hand.

ALLEN E. OSTRANDER.