



# UNITED STATES PATENT OFFICE.

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## VALVE OPERATOR.

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Reference is 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 the drawings:

10 Figure 1 is a fragmentary sectional view through a tank dome, showing the present invention applied thereto and also showing in section, a portion of the lower part of a tank with its discharge valve;

15 Fig. 2 is a top plan view of a portion of a tank dome showing the securing means for the valve operator, and

Fig. 3 is a detail sectional view of the valve operator.

20 This invention relates to valve operators for controlling the operation of a bottom discharge valve of a tank or the like.

25 One object of the invention is the provision of an operator for engaging the end of a valve rod whereby the latter may be actuated to operate the bottom discharge valve of a tank.

30 Another object of the invention is the provision of an operator for a valve rod which may be easily and quickly assembled and disassembled from its relation with the valve rod.

35 A further object of the invention is the provision of means for mounting an operator for a valve rod in a dome ring associated with the dome of a car tank or the like.

40 Other objects and advantages of this invention will be apparent from the following description taken with the accompanying drawings in which A indicates generally the dome of a car tank or the like, the same being provided with a dome ring B secured to the dome by rivets 2 or the like. The discharge outlet for the tank is shown at C, the latter being provided with a valve 4 arranged with-  
 45 in a cage 6 which latter threadedly engages the interior of the discharge outlet as clearly shown in Fig. 1. The valve and its cage are shown as being of the particular form illustrated, but it is to be understood that this is  
 50 merely by way of example, as obviously other

types of valves and cages may be employed within the spirit of the invention. The valve is adapted to be rotated by means of a valve rod 8, the lower end of which is reduced as at 10, and positioned within the valve as clearly shown in Fig. 1. The upper end of the valve rod 8 is reduced and squared, as shown at 12, for a purpose to be hereinafter described.

The dome ring B has secured thereto by means of the hinge 14 an outer dome cover 16 which normally closes the ring as is usual, and said dome ring is provided with an inwardly extending annular ledge 18 which defines a manhole opening which is normally closed by an inner dome cover 20. The inner dome cover 20 is adapted to be firmly secured in sealing relation to the manhole opening by means of a wedge element 22 shown in Fig. 2, but inasmuch as the dome cover and its particular securing means form no part of the present invention, the same are not described in detail.

The ledge 18 is provided with an opening 24 and the material of the ledge adjacent the opening 24 is formed into upwardly and downwardly extending annular flanges 26 and 28 respectively, which flanges define a guide for a valve rod cap 30 which is of the form shown clearly in Figs. 1 and 3 and which comprises a substantially tubular lower portion or body portion 32 and an end closure 34, the upper end of which is formed into a stem 36 which is preferably squared to receive a wrench or the like whereby the cap may be rotated within the guide. The upper flange 26 has its surface bevelled as shown at 38 to form a seat for the cap 30, the latter being an operator for the valve rod and being provided with an annular flange 40 the underface of which is bevelled in a manner corresponding to the bevelled surface of the upper flange 26. It will be apparent that by reason of the corresponding bevelled surfaces of the upper flange 26 and the annular flange 40, the operator 30 is seated on the flange 26 in a manner such that it may be rotated freely and easily on its seat. The body portion 32 of the operator, as before-mentioned, is tubular and the interior thereof is squared and receives the reduced end 12 of the valve rod whereby

upon rotation of the operator 30 the valve rod may also be rotated.

For securing the operator 30 to its seat in the ledge 18, the lower end of the operator 5 is exteriorly threaded to receive a nut 42, and a spring 44 surrounds the operator 30 and bears against the lower surface of the flange 28 and a washer 46 seated on the nut 42. It will be apparent that loss in tension 10 of the spring 44 may be compensated by adjustment of the nut 42 on the operator 30 whereby to retain the operator 30 firmly and yet resiliently on its seat. As an additional 15 securing means for the operator 30, I have provided a yoke 48 which is arranged around the upper end 34 of the operator, as clearly shown in Fig. 3, and the yoke is provided with a lower annular flange 50 which is 20 adapted to be forced into an annular recess formed in the flange 40 of the operator. For securing the yoke to the operator, bolts 52 are provided, the same extending through the oppositely arranged arms 54 of the yoke and into lugs 56 formed with the ledge 18.

It is believed that the operation of the device of the present invention will be fully apparent to those skilled in the art, but it can be seen that when the yoke 48 is in close engagement with the operator 30, the latter 30 is prevented from rotating, but a few turns on the bolts 52 will release the yoke sufficiently to permit rotation of the operator 30 and consequently a rotation of the valve rod 8 and a resulting operation of the valve 4.

What is claimed is:

1. In a car tank, a bottom discharge valve, a dome ring, a rod for actuating the valve, a cap extending through the dome ring and engaging the rod to rotate the latter upon rotation of said cap, and resilient means normally retaining the cap in position and urging it into engagement with the valve rod.

2. In a car tank, a bottom discharge valve, a dome ring having an inwardly extending ledge, a valved rod, a cap extending through the ledge and seated to rotate thereon, said cap engaging the valve rod to actuate the latter upon rotation of said cap, a spring seat secured to the cap, and spring means interposed between the ledge and spring seat for normally retaining the cap on its seat.

3. In a car tank, a discharge valve, a valve rod releasably engaging said valve, a dome ring, an inwardly extending ledge formed with the dome ring and provided with an opening, oppositely arranged flanges adjacent the opening to define a guide, one of said flanges being bevelled to provide a seat, a cap in said guide and seated on the bevelled surface of said flange, said cap engaging the valve rod to actuate the latter upon rotation of said cap, and resilient means for retaining the cap to its seat and urging it into engagement with the valve rod.

4. In a car tank, a discharge valve, a valve

rod for actuating the valve, a dome ring having an inwardly extending ledge, and means for operating the valve rod comprising a cap rotatably mounted in the ledge and engaging the valve rod, spring means for retaining the cap in position, and a yoke engaging the cap and secured to the ledge for normally restraining the cap against rotation.

5. In a car tank, a dome ring, a discharge valve, a valve rod and means for operating the rod comprising a recessed cap extending through and resiliently connected to the dome ring and capable of rotation, said cap telescopically engaging the valve rod and resilient means urging the cap into engagement with the valve rod.

6. In a car tank, a discharge valve, a valve rod, and means for actuating the valve rod to operate the valve comprising a rotatable cap telescopically engaged with the valve rod and resilient means urging the cap into engagement with the valve rod.

7. In a car tank, a discharge valve, a valve rod, a dome ring having a guideway formed therewith, a seat on the guideway, a cap in said guideway supported for rotation on said seat, said cap telescopically engaging the valve rod, and spring means for retaining the cap on its seat and for urging the cap into engagement with the valve rod.

8. In a tank, a dome having a dome ring, an internal ledge formed with the ring, a bottom discharge valve, a rod engaging the valve for operating the same, and a connector removably and resiliently supported in the ledge and engaging the valve rod.

9. In a car tank, a dome ring provided with an internal annular ledge, a guide formed with the ledge and having an external seat, a discharge valve, a valve rod, a valve rod actuator extending through the ledge in the guide and telescopically engaged with the valve rod, and spring means acting against the ledge for retaining the actuator on its seat and for urging the actuator into engagement with the valve rod.

In witness whereof I have hereunto set my hand.

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