W. D. McCRABB.

AUTOMATIC SHUT-OFF FOR OIL TANKS.

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1,235,825. Patented Aug. 7, 1917.

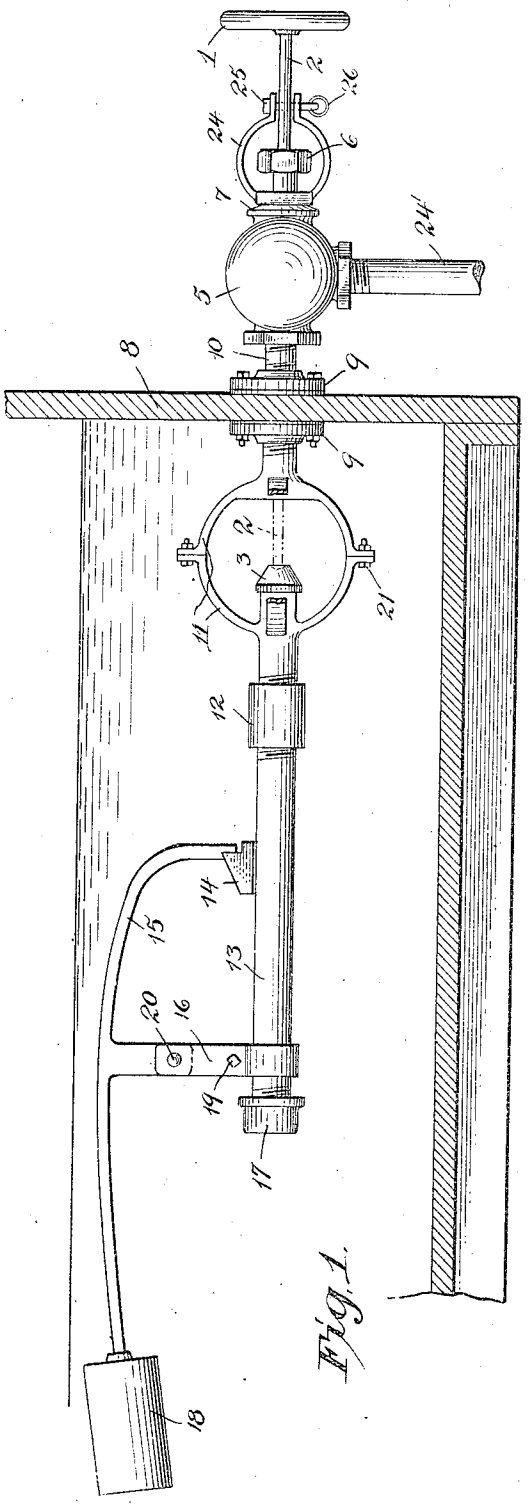


Fig. 1.

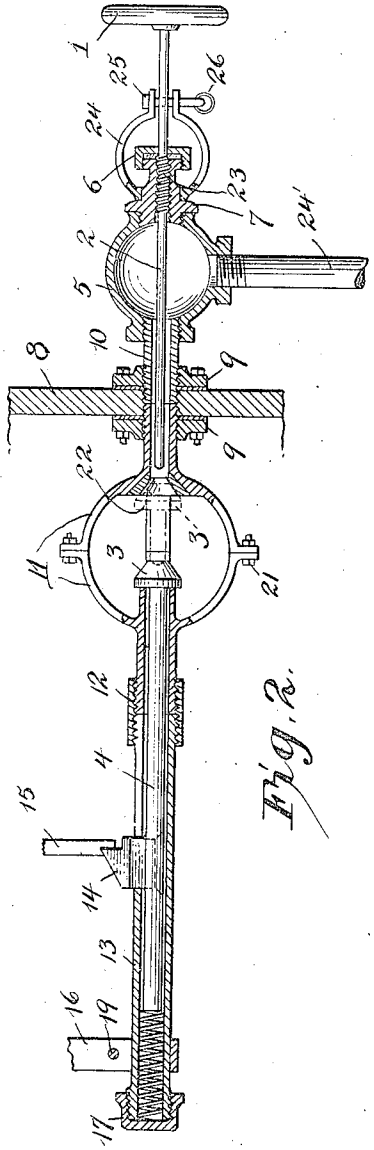


Fig. 2.

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AUTOMATIC SHUT-OFF FOR OIL-TANKS.

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Application filed November 13, 1916. Serial No. 131,112.

To all whom it may concern:

Be it known that I, WALTER D. McCRABB, a citizen of the United States, residing at Nowata, in the county of Nowata and State of Oklahoma, have invented a new and useful Automatic Shut-Off for Oil-Tanks, of which the following is a specification.

My invention relates to a shutoff that closes automatically when the oil in the tank gets down to said shutoff and the object of my invention is to prevent air from entering the oil line leading away from the tank.

Other objects and advantages will be apparent in the course of the following description taken in conjunction with the accompanying drawings, and the particular features of novelty will be pointed out in the appended claims.

Referring to the drawings in which similar characters of reference denote similar parts in all the views:

Figure 1 is a side elevation of the structure of the invention, the same being mounted in a tank, the tank being shown in section,

Fig. 2 is a longitudinal section thereof, some parts being shown in elevation.

The numeral 8 refers to the wall of the tank to which is secured relatively near the lower edge thereof plates 9, 9, one of which is secured to the outer face of the wall 8 and the other to the inner face of the said wall. A nipple 10 is secured within the plate 9 carried on the outer face of the wall 8 and has mounted thereon a bell 5 which is provided with a plug 7 diametrically opposed to the jointure of the nipple 10 with the bell 5. The plug 7 is provided with U-shaped members 24, the ends of which are adapted to receive a seal bolt 25 which is adapted to be passed through a shaft 2 to hold the shaft in a locked position, as is shown in Figs. 1 and 2. The shaft 2 is provided at its outer end with a hand wheel 1, the turning of which enables the shaft 2 to be given a reciprocatory motion with respect to the nipple 10, the plug 7, and the packing caps 6 mounted upon the end of the plug 7, all of which the shaft 2 passes through, by means of screw threads 23 provided thereon and adapted to engage homologous screw threads carried centrally within the plug 7.

Within the tank there is provided a frame formed in two sections 11, 11 which are fastened together by means of bolts 21, one half of the said frame being provided with an elongated projection adapted to be secured centrally to the plate 9 carried by the inner face of the wall 8. The other half of the said frame is provided with an elongated member which is secured to a guide member 13 by means of a coupling 12. Within the guide member 13 there is provided an elongated plunger 4, one end of which extends through the elongated member carried by the inner half of the frame and is provided with a valve 3 adapted to seat within the valve seat 22. The other end of the plunger 4 engages a coil spring carried within the guide member 4 and is held in a contracted position by means of a screw cap 17. A catch 14 is mounted on the plunger 4 and extends upwardly through the guide member 13 and is adapted to engage the end of an arm 15 pivotally connected by means of a bolt 20 to an upright 16 clamped to the guide member 13 at its rear end. The arm 15 is provided with a float 18 at an end opposed to that which is adapted to engage the catch 14 carried by the plunger 4.

The operation of my device is as follows: Assume that the tank is full of oil and the valve 3 is seated within the seat 22, and that the shaft is in a position as shown in Fig. 2, it being locked in such a position by means of a seal bolt 25 passed through the U-shaped members 24 and the shaft 2 and secured therein by the seal 26, and it is desired to empty the contents of the tank. By breaking the seal 26, removing the seal bolt 25 and revolving the hand wheel 1 in a clockwise direction, the shaft 2 moves into engagement through the action of the screw threads 23 of the shaft 2 within the plug 7, with the valve 3 which is lifted from its seat 22 and carried backwardly together with the plunger 4 and catch 14 within the tank until the arm 15 engages the catch 14, in the manner as is shown in Fig. 2. The hand wheel 1 is then rotated in an anti-clockwise direction and the shaft is brought back into the position shown in Fig. 2, for a reason which will obviously appear later in this description.

The oil, upon the lifting of the valve from its seat 22, is allowed to pass through the opening provided within the elongated member which is fastened to the inner plate 9, through the nipple 10, into the bell 5, and from the bell 5 out through the pipe 24

which is secured thereto. The arm 15 is held in the position as is shown in Fig. 2 because of the buoyant effect of the oil upon the float 18. When the level of the oil has been lowered sufficiently to destroy its buoyant effect upon the float 18, the arm 15 is released from the latch 14 and under the influence of the coil spring carried within the guide member 13, the plunger 4 together with the valve 3 is seated into the valve seat 22, thereby automatically cutting off the flow of oil from within the tank.

I claim:

1. In combination, a tank, an outlet therefor, a valve in said tank for closing said outlet, a spring tending to close said valve, means extending through said outlet for manually opening said valve from the exterior of said tank, a latch for holding said valve opening, a float arranged to release said latch and permit the valve to close when the liquid in the tank falls below a certain level.

2. In combination, a tank, an outlet therefor, a valve in said tank for closing said outlet, a spring tending to close said valve, means extending through said outlet for manually opening said valve in the exterior of said tank, a catch for holding said valve open, said catch having a cut out portion in the front wall thereof, a float pivotally secured to the guide member, carrying an arm, one end of said arm being notched to receive the said catch, means for releasing said catch to permit the valve to close when the liquid within the tank falls below a certain level.

3. In combination, a tank, an outlet therefor, a frame comprising halves located within the said tank, one of said halves being secured to a plate mounted on the inner wall of said tank, the other half of said frame being coupled to a guide member, a plunger carried within the guide member, a valve carried by said plunger, a spring tending to close said valve, a catch mounted on the said plunger, an arm adapted to engage the said catch, a float arranged to release said arm from said catch and permit the valve to close when the liquid in the tank falls below a certain level.

WALTER D. McCRABB.