

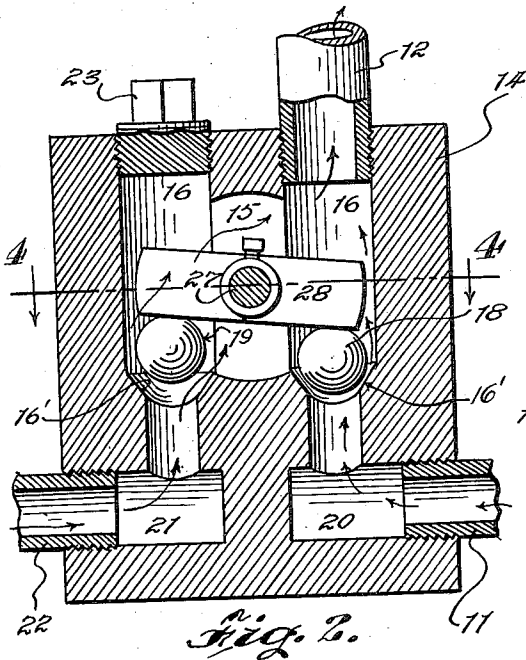
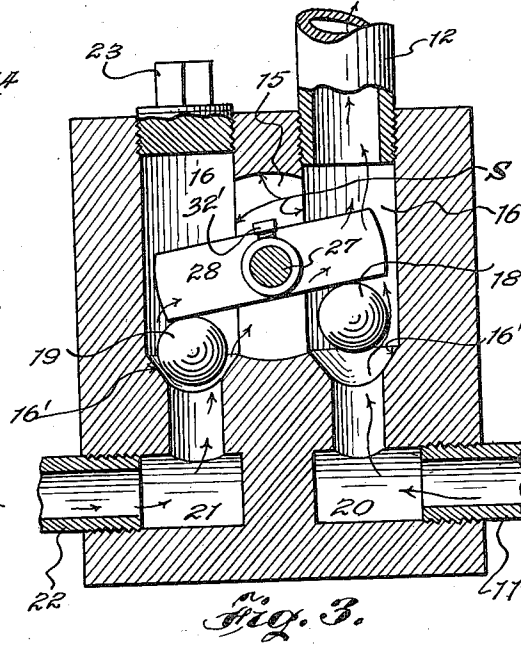
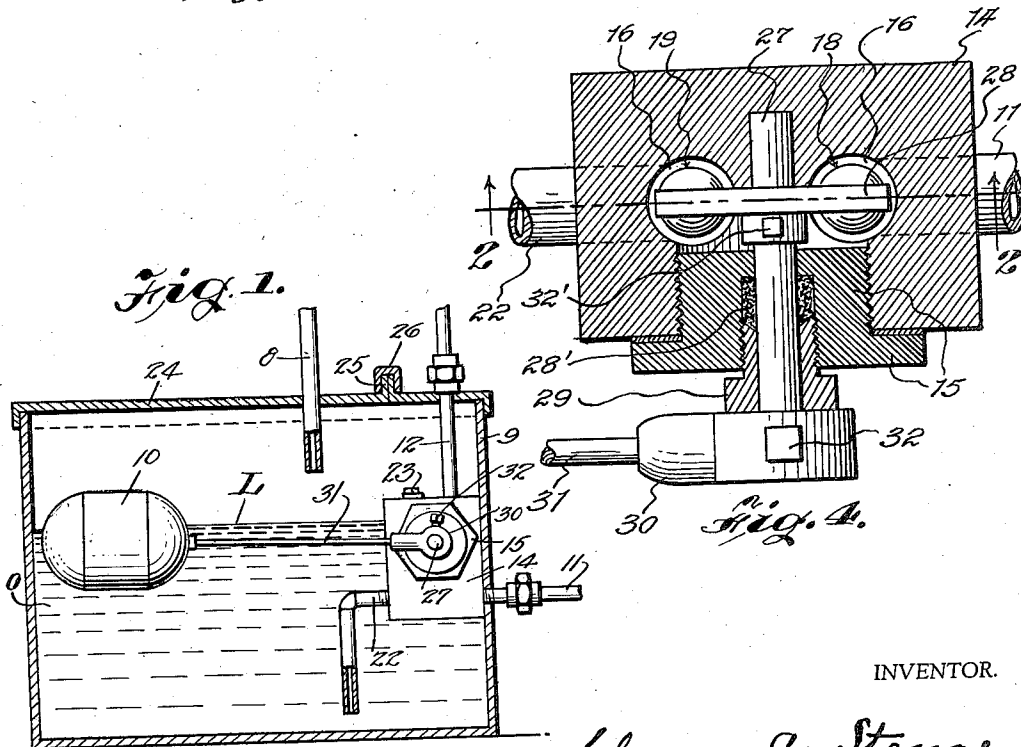
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C. A. STRUVE

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OIL FEEDING AND CONTROL TANK FOR DIESEL ENGINES

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INVENTOR.

Clemens A Struve

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OIL FEEDING AND CONTROL TANK FOR
DIESEL ENGINES

Clemens A. Struve, Anson, Tex.

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1 Claim. (Cl. 137-104)

My invention relates to a new and useful valve for supplying oil, or other liquids, to an overflow tank, such for example, as the overflow tank in common use to supply fuel oil to Diesel engines, and the general object thereof is the provision of an improved, economical and automatic means for feeding fuel oil to such engines or tanks.

More specifically my invention provides a novel, unique valve that can be installed in a control tank, of very small dimensions, situated at any convenient position above ground for the positive control of the overflow of oil, or other liquids, between a supply tank and an overflow tank, thereby eliminating the cost of a large, auxiliary underground tank to receive this overflow liquid, as, at present, must be provided.

Another, and very important object of my invention, is to provide a valve that will cause a constant, never ceasing flow, or movement of liquid between the supply tank the control tank and the overflow tank, thereby causing such liquid to become thoroughly mixed by constant agitation and movement. It is a well known fact that oil, for instance, contains a certain percentage of water which if allowed to gravitate and become separated from the oil, will cause trouble when it enters the engine in its natural state, but if thoroughly mixed, or combined, with the oil will work perfectly, and, in fact, will be a benefit to the engine as a small amount of moisture is desirable.

With the above main and other minor yet important objects in view, my invention will be readily understood from a perusal of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification, and in said drawing:

Fig. 1 is a vertical sectional view of a control tank, in which my valve is installed, and connections between supply tank, overflow tank and overflow pipe.

Figure 2 is an enlarged detail sectional view of the mechanism carried in the control tank, with its valves in one phase of return over-flow position and main line feed position, the view being had on the line 2-2 of Figure 4.

Figure 3 is a view similar to that of Figure 2, but showing the valves and mechanism in another phase of return over-flow position, with over-flow decreased and feed increased, and

Figure 4 is a horizontal sectional view of Figure 2, the view being taken on the line 4-4 thereof.

Proceeding in accordance with the drawing and wherein like parts bear like indicating numerals

and letters, and referring to Figure 1 I show a tank 9 of small dimensions sufficiently large however to contain oil for a float 10 and which I term a control tank. This tank can be disposed in any convenient place and can be operated with oil or other liquids from a gravity flow tank of large dimensions above ground, or an underground tank by suction means, the oil entering the control tank by means of the pipe 11. A pump, not shown, conveys the oil from pipe 11 into the bore 20 through the valve 18, thence through pipe 12 through the pump to an overflow tank not shown. The mechanism which constitutes my invention, in the control tank and which automatically controls the passage and feed of oil or liquids to the overflow tank will now be described in detail.

Referring now to Figures 1, 2, 3 and 4, this control mechanism consists of a metallic block 14 which is bored and threaded to receive a cap head 15. This block is also bored at 16 and reduced at the lower end of the bore to form a seat or seats 18' for a ball valve or valves 18 and 19. These borings 16 have slotted openings in their walls for the disposal of a cross bar 28, referred to later. These bores open into a bore 20, previously referred to, also a bore 21, made at right angles to these passages at the lower end of the block, and have threaded therein the pipe 11 from an outside or extraneous source of oil supply. The bores 16 also have open communication with a pipe 22 through bore 21, the latter pipe opening into the tank 9. Either one of the bores 16 may have connected thereto the pipe 12 leading to the pump and the other bore plugged as at 23. The control tank 9 has a cover 24 with openings for the pipes 8 and 12, the cover being in separable parts with upstanding and abutting flanges 25, embraced or straddled by a channel member 26, as will be obvious.

The cap head 15 is bored to receive a small shaft 27 and rigidly set thereon is a cross bar 28 disposed directly over the ball valves 18 and 19 and limiting the movements of these valves as the float 10 rises or falls accordingly as the level of the oil or liquid O changes. The small shaft 27 traverses a stuffing box 28' in the cap head and a packing nut 29 and has rigidly connected to its outer end a member 30, secured to which is a rod 31 carrying the float 10. A set screw 32 enables the float to be adjusted to desired position. Similarly a cuff having a set screw 32' permits adjustment of the cross bar to the shaft 27.

In the operation of my invention and referring to Figure 3, the oil from an extraneous source of

supply is directed through the pipe 11 into the bore 20, thence upwardly into the bore 16, lifting the ball valve 18 and passing into pipe 12 and is drawn by the pump through the pipe 12.

5 This operation continues whether a suction or gravity feed supply is being utilized, the level of oil in the overflow tank being maintained. The oil or liquid being used from the overflow tank may not co-ordinate with the inflow, consequently there is almost always a fluctuating overflow into the control tank 9 through the pipe 8. Hence the valves 18 and 19 will open or close accordingly as the overflow decreases or increases, there being (as shown by the arrows in the drawing) always some oil passing from the control tank back to the overflow tank and some oil being fed from the main line simultaneously. For instance, at one phase of delivery of the oil, the float 10 is at a point where it tends to rotate the shaft 27 to the right in the drawing, Figure 3, hence the cross bar bears against the ball 19 and almost causes this valve to make a seat, while the ball valve 18 is fully unseated to allow the oil to pass upwardly. Now refer to Figure 2: when the overflow oil from the overflow tank has increased in the control tank through the pipe 8, it causes the float to rise to the level L of oil or liquid O in this control tank. This causes the consequent rise of the float and simultaneously rotates the shaft 27 to the left in Figure 2, brings the cross bar against the ball valve 18 and thus cuts off almost entirely the flow of oil from the main supply source. The tilting of the cross-bar, however, releases the ball valve 19, unseats this valve and permits the overflow or surplus oil to be drawn back into the overflow tank, and the valve 18 is then almost closed. As the surplus oil is removed from the control tank grad-

ually, the float likewise falls to a lower level and the valve 19 is gradually lowered to its former position, i. e., of that shown to the left in Figure 3. It is highly improbable that either of these valves will ever be entirely closed, as the valve 19 will always be "cracked" just enough to keep the oil in the control tank at a uniform level. The extent to which this valve is open will of course be determined by the quantity of overflow oil entering the control tank. This control tank can be operated as stated with gravity flow or suction flow and as explained is automatic in operation and once set requires very little if any attention.

While the disclosure shows a practical working embodiment of my invention, it should be understood that changes and modifications may be made, in keeping with the spirit and intent thereof and in the meaning of the appended claim.

What is claimed as new is:

20 A float valve mechanism adapted to be placed in a tank, and comprising a valve housing or block having bored cavities therethrough and wherein are carried ball valves, a cross bar associated with said valves, slots in the walls of said bored cavities for movement of said cross bar with the valves, a small shaft connected to said cross bar, a float in the tank to be sustained in floating position by liquid carried in the tank, a rod connected to the float and to said small shaft, the rise and fall of the liquid in said tank actuating the float and correspondingly slightly turning the shaft, thereby forcing one ball valve downwardly toward its seat and releasing the other ball valve from its seat accordingly as the liquid in said tank rises and falls.

CLEMENS A. STRUVE.