June 9, 1931. S. E. WEBB 1,809,432

DELIVERY VALVE FOR LIQUID DELIVERY TRUCKS

Filed Feb. 25, 1930 2 Sheets-Sheet 1

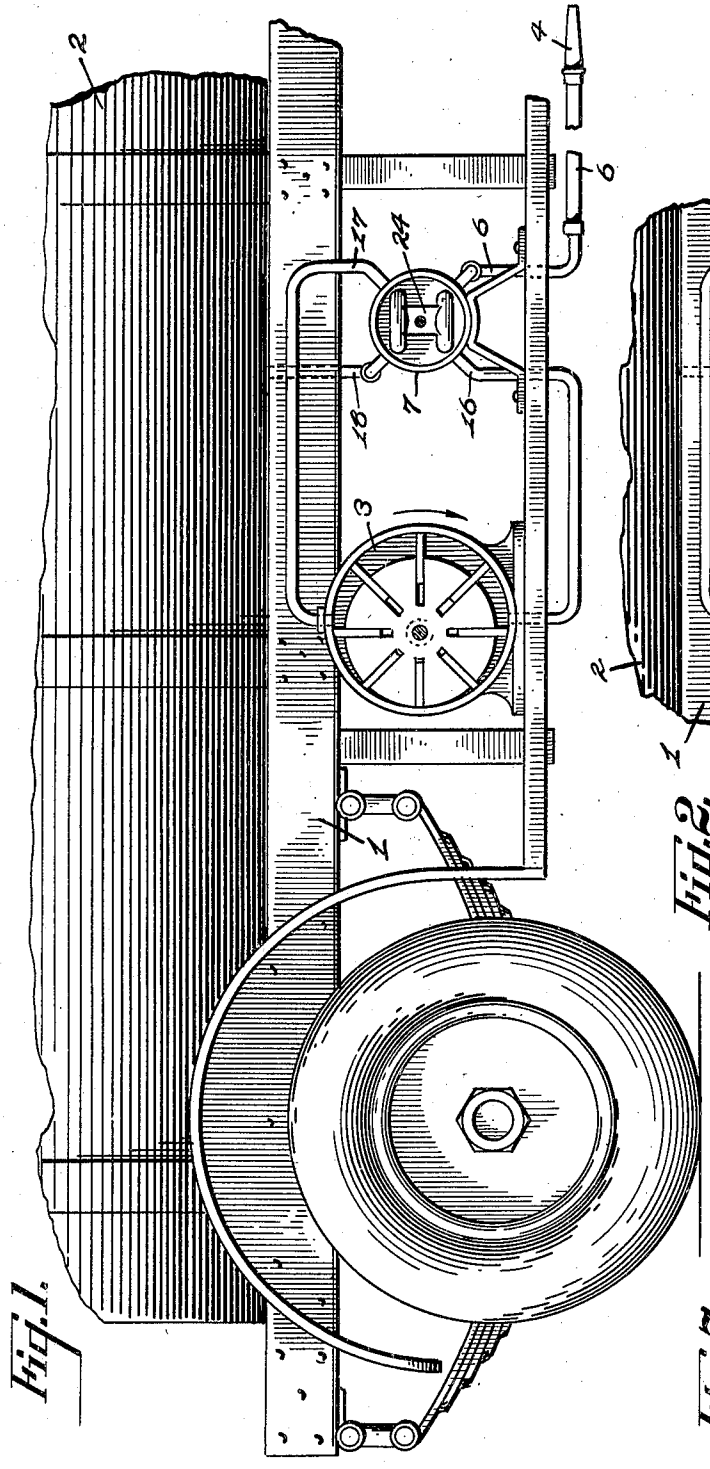


Fig. 1.

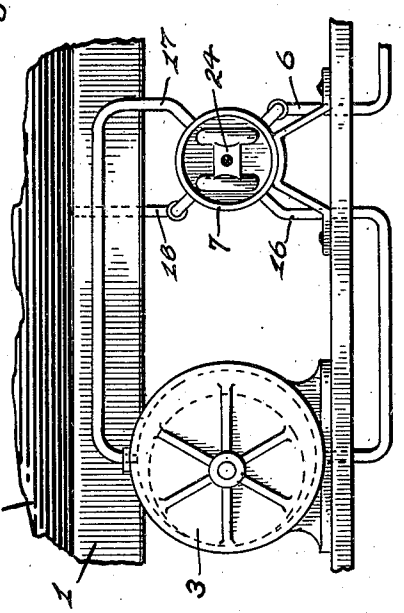


Fig. 2.

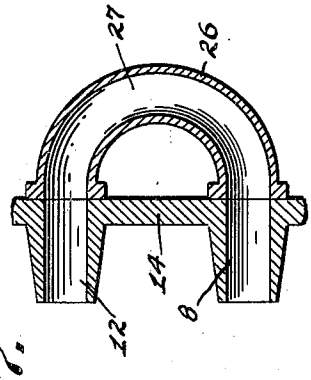


Fig. 3.

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DELIVERY VALVE FOR LIQUID DELIVERY TRUCKS

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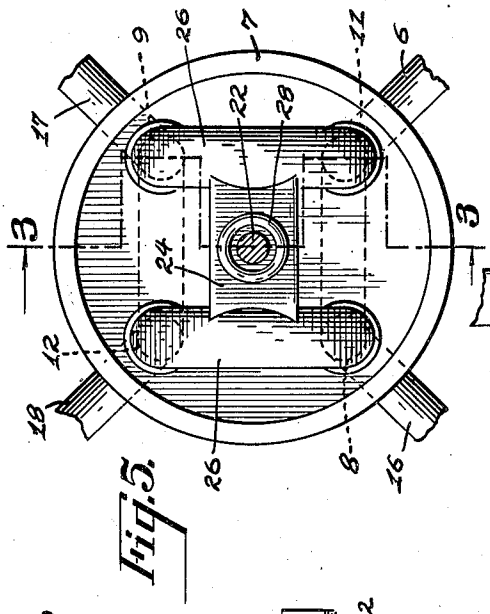


Fig. 5.

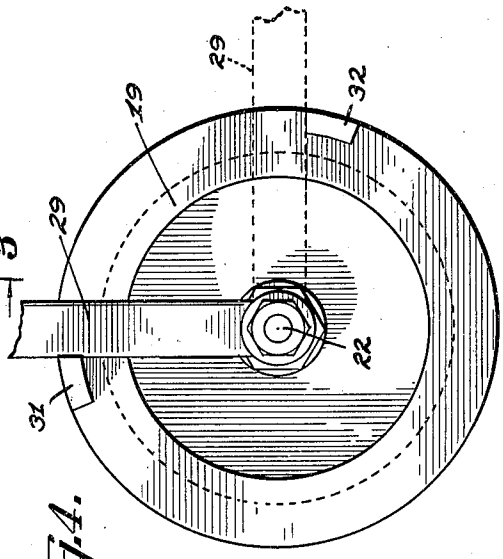


Fig. 4.

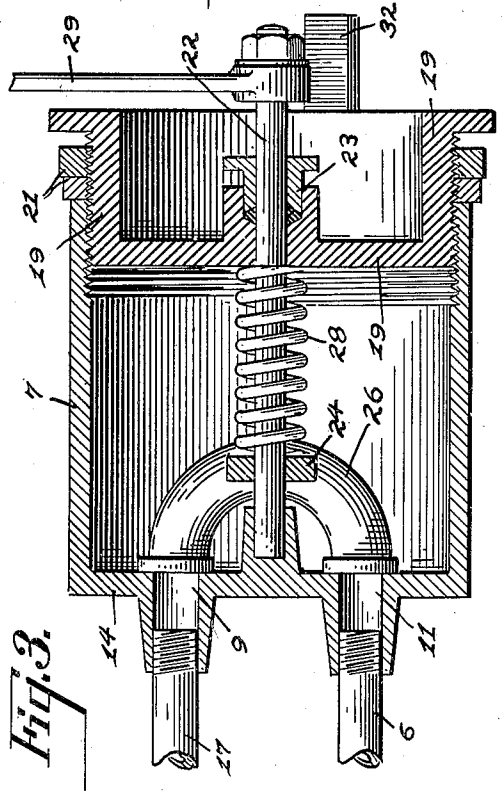


Fig. 3.

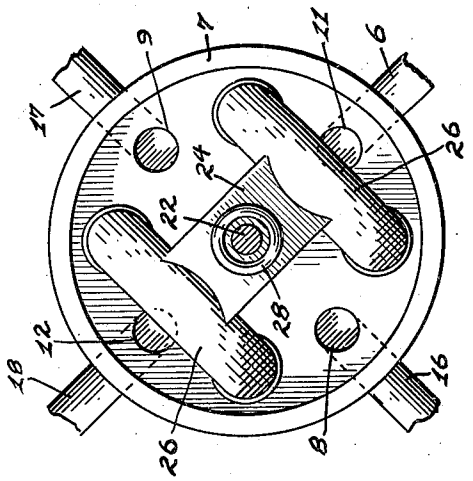


Fig. 6.

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Patented June 9, 1931 1,809,432

UNITED STATES PATENT OFFICE

SCOTT E. WEBB, OF SANTA ROSA, CALIFORNIA

DELIVERY VALVE FOR LIQUID DELIVERY TRUCKS

Application filed February 25, 1930. Serial No. 431,105.

My invention relates to improvements in delivery valves for tank trucks for delivering oil or other liquid products wherein a hollow valve body having ports connected to the suction and pressure sides of a pump and also having ports connected to a delivery nozzle and to the supply tank, is provided with a movable member movable to connect either pump port to either the delivery or tank port whereby the liquid may be pumped into or out of the tank, said member also being movable to uncover both the tank and delivery ports to permit the flow of liquid through the valve body independently of the pump and said movable member.

The primary object of my invention is to provide an improved delivery valve for delivery trucks for delivering oil or other liquid products.

Another object is to provide an improved liquid delivering mechanism wherein liquid may be pumped either from or into a delivery tank and arranged to permit the flow of liquid by gravity from or into the tank independently of the pump when desired.

Another object is to provide an improved mechanism wherein the shifting of a single valve is operative to connect a pump for pumping liquid either from or into a tank without altering or shifting the supply and delivery connections from the tank.

Another object is to provide an improved delivery valve mechanism of the character described wherein delivery may be made through the valve by gravity independently of the pump when desired.

Another object is to provide an improved device whereby the contents of a delivery connection can be returned to the truck tank without spilling the same when the delivery nozzle is removed from a container into which a delivery has been made.

A further object is to provide an improved mechanism wherein delivery of liquid may be made through a movable valve member movable to reverse the direction of flow, or delivery may be made through the body of the valve independently of the movable member.

A still further object is to provide an improved valve mechanism of simple and rugged construction which is efficient in operation and which may be easily adjusted to meet varying conditions.

I accomplish these and other objects by means of the improved device disclosed in the drawings forming a part of the present application wherein like characters of reference are used to designate similar parts throughout the specification, and drawings, and in which—

Fig. 1 is a broken side elevation of my invention as applied upon a delivery truck, the outer cover of the pump and valve mechanism being removed;

Fig. 2 is a side elevation of the pump and valve mechanism, the cover of the valve being removed;

Fig. 3 is a longitudinal section of the valve taken upon the line 3—3 of Fig. 5 in the direction indicated;

Fig. 4 is an elevation of the outer end of the valve mechanism;

Fig. 5 is a view of the valve with the cover removed;

Fig. 6 is a view similar to Fig. 5 with the movable valve member positioned to permit a free flow of liquid through the valve; and

Fig. 7 is a broken sectional detail showing the manner in which ports are connected in pairs by the movable member.

Referring to the drawings, the numeral 1 is used to designate in general a delivery truck provided with a tank 2 to receive oil or other liquid products for delivery. The truck is also provided with a suitable pump 3 and with a delivery nozzle 4 carried by a suitable flexible delivery connection 6.

The pump 3 is arranged to be connected to the tank 2 and to the delivery connection 6 through a delivery valve designated in general by the numeral 7. The valve 7 consists of a hollow body preferably of cylindrical form having a suction port 8, a pressure port 9, a delivery port 11 and a tank port 12, said ports preferably being formed in an end wall 14 of the body and being arranged symmetrically with respect to the axis of the cylindrical body. The suction port 8 is connected to the suction side of the pump 3 through a

suitable connecting conduit 16, and the pressure port 9, which is preferably arranged diametrically opposite the port 8, is connected to the pressure side of the pump 3 through a suitable connecting conduit 17. The delivery connection 6 is connected to the delivery port 11, and the tank port 12 is connected to the tank 2 through a suitable connecting conduit 18.

A cover 19 is detachably mounted upon the valve body 7 upon the end opposite the wall 14, said cover preferably being threaded into the cylindrical body and provided with a suitable packing ring 21 to effect a tight closure of the body. A stem 22 is rotatably mounted upon the cover 19 and arranged to extend axially into the hollow body 7, a suitable packing gland 23 being provided upon the cover to prevent leakage past the stem 22.

A movable valve member 24 is secured upon the inner end of the stem 22. The member 24 is provided with a pair of U-shaped portions 26 arranged in spaced parallel relation and having passages 27 formed therethrough. The ends of the U shaped portions 26 are arranged to seat upon the wall 14, the ends of said portions 26 and the wall 14 being machined to insure accurate seating of said ends. The ends of the U portions 26 are spaced to conform to the spacing of adjacent ports of the body 7 whereby each U portion, with its passage 27, may be moved to register with and form a connection between a pair of the ports formed in the wall 14. The member 24 is held seated against the wall 14 by means of a spring 28 mounted upon the stem 22 between said member 24 and the inner side of the cover 19.

An actuating lever 29 is secured upon the outer end of the stem 22, said lever being movable through an angle of substantially 90° between limits defined by stops 31 and 32 carried by the cover 19. The cover 19 is adjusted to obtain a desired tension upon the spring 28 and to position the stops 31 and 32 in proper relation to the ports.

In operation, my improved delivery valve is normally set with the U shaped portions 26 registering with the ports of the body 7 and connecting the suction port 8 with the tank port 12 and the pressure port 9 with the delivery port 11, as shown in full lines in Figs. 2, 3, and 5 of the drawings. When in this position, the operation of the pump 3 causes oil or other liquid carried in the tank 2 to be drawn from the tank through one passage 27, the valve member 24 to the pump, and from there back through the opposite passage 27 to the delivery connection 6 and nozzle 4 to the desired point of delivery. This permits the liquid to be delivered rapidly to elevated storage containers.

If for any reason, as because of leakage of a storage container, it is desired to remove the contents from a storage container to the delivery truck, the delivery nozzle is submerged in the contents of said storage container and the valve member 24 turned to the position indicated in dotted lines in Fig. 5, and in full lines in Fig. 1 of the drawings. When now the pump 3 is operated, the delivery port 11 is connected to the suction side of the pump and liquid is drawn from the delivery connection through the valve and pump and forced back through the valve to the tank 2. This same operation may also be used for filling the tank 2 from a source of supply where desired.

After filling elevated storage containers, as above described, a considerable quantity of the oil, or other liquid delivered, remains in the delivery connection extending from the valve 7 to the nozzle 4. When the nozzle is removed from the receiving container, this liquid must overflow as the nozzle is lowered. By reversing the valve member 24 from its normal position, the operation of the pump causes this liquid to be returned to the tank, thereby avoiding waste and preventing the muss resulting from allowing the liquid from the connection 6 to be spilled as the connection is lowered.

In many cases, the receiving storage container is positioned below the level of the delivery tank 2. In this case, the operation of the pump 3 to make delivery is an unnecessary waste of energy. In this case, the valve member 24 is turned to an intermediate position as indicated in Fig. 6 of the drawings, thereby uncovering all the ports of the valve 7. The liquid may now flow through the port 12 into the hollow body of the valve 7 and from said body through the delivery port 11 to the delivery connection 6 and nozzle 4 by gravity. The pump ports 8 and 9, while open to the body 7 of the valve, are closed to the passage of liquid therethrough by the structure of the pump.

The valve member 24 is also positioned in the above described intermediate position to permit the flow of liquid by gravity from an elevated storage container. Thus in siphoning liquid from an elevated storage container to the tank 2, the valve is initially turned to connect the delivery connection 6 to the suction port 8 and the pump is operated to start a flow of liquid. The valve is then turned to intermediate position and the liquid thereafter will be siphoned into the tank 2 independently of the pump.

The hollow body 7 is normally filled with the liquid delivered at all times, and the member 24 is movable to permit a flow of liquid through the valve in a desired direction relative to the operation of the pump, or independently of the pump as desired. Thus the varying conditions under which delivery must be made can be quickly and easily met by simply shifting the valve member 24

to a desired position by means of the lever 29 without altering any of the several connections to the pump and valve.

When the pump 3 is not in operation and the valve member 24 is set in its normal position, the pump effectually closes the connection through the valve 7 from the tank 2 to the delivery connection 6.

The specific details of construction illustrated and described are subject to modification in various ways without departing from the spirit of my invention. I therefore desire to avail myself of all modifications which may fall within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. The combination with a delivery truck for liquid products provided with a tank, a pump, and a delivery nozzle, of a delivery valve comprising a hollow body having a suction port connected to the suction side of the pump, a pressure port connected to the pressure side of the pump, a delivery port connected to the delivery nozzle, and a tank port connected to the tank, said valve being provided with a movable member mounted within the hollow body provided with a pair of noncommunicating passages having ports movable to registering relation with the valve ports, to connect the nozzle port with either pump port and to connect the tank port with the other pump port as desired whereby liquid may be pumped to or from the tank as desired, the hollow body normally being filled with the liquid product to be delivered.

2. The combination with a delivery truck for liquid products provided with a tank, a pump, and a delivery nozzle, of a delivery valve having a suction port connected to the suction side of the pump, a pressure port connected to the pressure side of the pump, a delivery port connected to the delivery nozzle, and a tank port connected to the tank, said valve being provided with a movable member consisting of a pair of spaced U-shaped portions each having a passage therethrough movable to connect either pump port with either the delivery port or the tank port as desired, and at the same time to connect the other pump port with the other delivery or tank port.

3. The combination with a delivery truck for liquid products provided with a tank, a pump, and a delivery nozzle, of a delivery valve having a suction port connected to the suction side of the pump, a pressure port connected to the pressure side of the pump, a delivery port connected to the delivery nozzle, and a tank port connected to the tank, said valve being provided with a movable member consisting of a pair of spaced parallel U-shaped portions each having a passage therethrough movable to connect either pump port with either the delivery port or the tank port as desired, and at the same time to connect the other pump port with the other delivery or tank port, said U-shaped portions being spaced from the surrounding walls of the valve and being movable out of registering relation with all the ports of the valve to permit the flow of liquid through the valve independently of the movable member and of the pump.

4. The combination with a delivery truck for liquid products provided with a tank, a pump, and a delivery nozzle, of a delivery valve comprising a hollow cylindrical body provided with an end wall having a suction port connected to the suction side of the pump, a pressure port connected to the pressure side of the pump, a delivery port connected to the delivery nozzle, and a tank port connected to the tank; a movable member mounted within the hollow body and comprising a pair of U-shaped portions having their ends seating upon the end of the wall of the body and having passages therethrough to connect either pump port with either the delivery port or the tank port as desired, and at the same time to connect the other pump port with the other delivery or tank port, said U-shaped members being spaced from each other and from the side walls of the cylindrical body; a cover closing the opposite end of the hollow body; and an actuating member mounted upon the cover and connected to the movable member for moving said member to connect the ports in desired pairs and for moving the movable member to an intermediate position out of registering relation with all of said ports whereby liquid may flow through the hollow body independently of the movable member and of the pump.

5. A delivery valve for delivery trucks for liquid products comprising a hollow cylindrical body having a suction port connected to the suction side of a pump, a pressure port connected to the pressure side of a pump, a delivery port connected to a delivery nozzle, and a tank port connected to a supply tank; a movable valve member mounted within the body and provided with a pair of passages having inlets and outlets movable to register with the ports of the body and each arranged to connect each pump port with a delivery or tank port; and means for moving the movable valve member to connect either pump port with either tank or delivery port and the opposite pump port with the opposite delivery or tank port, the valve member also being movable to an intermediate position out of registering relation with all of the ports to permit a flow of liquid through the valve body independently of the pump, and said valve body being normally filled with

the liquid product regardless of the position of the movable member.

6. A delivery valve for delivery trucks for liquid products comprising a hollow cylindrical body having one end thereof provided with a suction port connected to the suction side of a pump, a pressure port connected to the pressure side of the pump, a delivery port connected to a delivery nozzle, and a tank port connected to a supply tank; a movable member mounted within the hollow body and provided with a pair of U-shaped portions having their ends seating against the end of the body and movable into registering relation with the ports thereof, said portions having passages to connect each pump port with a delivery or tank port, and the U-shaped portions being spaced from the side walls of the cylindrical body; a cover mounted upon the opposite end of the cylindrical body; and means mounted upon the cover and connected to the movable member for moving said member to connect either pump port with either delivery or tank port and the opposite pump port with the other delivery or tank port, and also for moving the member out of registering relation with all of the ports whereby liquid may flow through the hollow body independently of the valve member and the pump.

7. A delivery valve for delivery trucks for liquid products comprising a hollow cylintrical body having one end thereof provided with a suction port connected to the suction side of a pump, a pressure port connected to the pressure side of the pump, a delivery port connected to a delivery nozzle, and a tank port connected to a supply tank, said ports being positioned symmetrically around the axis of the cylindrical body and the pump ports being arranged in diametrically opposite relation; a movable member mounted within the hollow body, said member comprising a pair of hollow parallel U-shaped portions having their ends seating against the end of the cylinder and spaced to register with the ports whereby the member may be turned to connect the ports in pairs; a cover closing the opposite end of the hollow body; and means mounted upon the cover and connected to the movable member for moving said member to connect desired ports.

8. A delivery valve for delivery trucks for liquid products comprising a hollow cylindrical body having one end thereof provided with a suction port connected to the suction side of a pump, a pressure port connected to the pressure side of the pump, a delivery port connected to a delivery nozzle, and a tank port connected to a supply tank, said ports being positioned symmetrically around the axis of the cylindrical body and the pump ports being arranged in diametrically opposite relation; a movable member mounted within the hollow body, said member comprising a pair of hollow parallel U-shaped portions having their ends seating against the end of the cylinder and spaced to register with the ports whereby the member may be turned to connect the ports in pairs; a cover closing the opposite end of the hollow body; and means mounted upon the cover and connected to the movable member for moving said member to connect desired ports, and for moving said member out of registering relation with all of the ports to permit a flow of liquid through the hollow body independently of the movable valve member and of the pump.

9. A delivery valve for delivery trucks for liquid products comprising a hollow cylindrical body having a suction port connected to the suction side of a pump, a pressure port connected to the pressure side of the pump, a delivery port connected to a delivery nozzle, and a tank port connected to a supply tank; a movable member mounted within the hollow body and comprising a pair of U-shaped portions having passages formed therethrough and having their ends movable into registering relation with the ports of the body to connect said ports in pairs; a cover detachably secured upon the body; means mounted upon the cover and connected to the movable valve member for moving said member to desired positions; and means normally holding the movable member seated adjacent the ports.

10. A delivery valve for delivery trucks for liquid products comprising a hollow cylindrical body having a suction port connected to the suction side of a pump, a pressure port connected to the pressure side of the pump, a delivery port connected to a delivery nozzle, and a tank port connected to a supply tank; a movable member mounted within the hollow body and comprising a pair of U-shaped portions having passages formed therethrough and having their ends movable into registering relation with the ports of the body to connect said ports in pairs, said portions also being movable out of engagement with the ports to permit the flow of liquid through the body independently of the movable valve member; a cover detachably mounted upon the cylinder; means mounted upon the cover and connected to the movable valve member for moving said member to register with desired ports or to uncover all of said ports; and means normally holding the movable member seated within the body.

11. A delivery valve for delivery trucks for liquid products comprising a hollow cylindrical body provided with an end wall having a suction port, a pressure port, a delivery port, and a tank port; a cover detachably mounted within the opposite end of the body; a stem rotatably mounted within the cover and extending into the cylinder; and a movable valve member secured upon the in-

ner end of the stem and provided with a pair of U-shaped portions having passages therethrough and having their ends arranged to seat against the end wall of the cylinder, each U-shaped member being movable to connect either pump port with either the delivery port or the tank port, and also being movable to uncover all of said ports whereby liquid may flow through the body independently of the movable valve member and the pump.

In witness whereof, I hereunto set my signature.

SCOTT E. WEBB.