Jan. 13, 1925.

1,522,752

P. S. SHIELD

PUMPING APPARATUS FOR TANKS

Filed Jan. 19, 1923

2 Sheets-Sheet 1

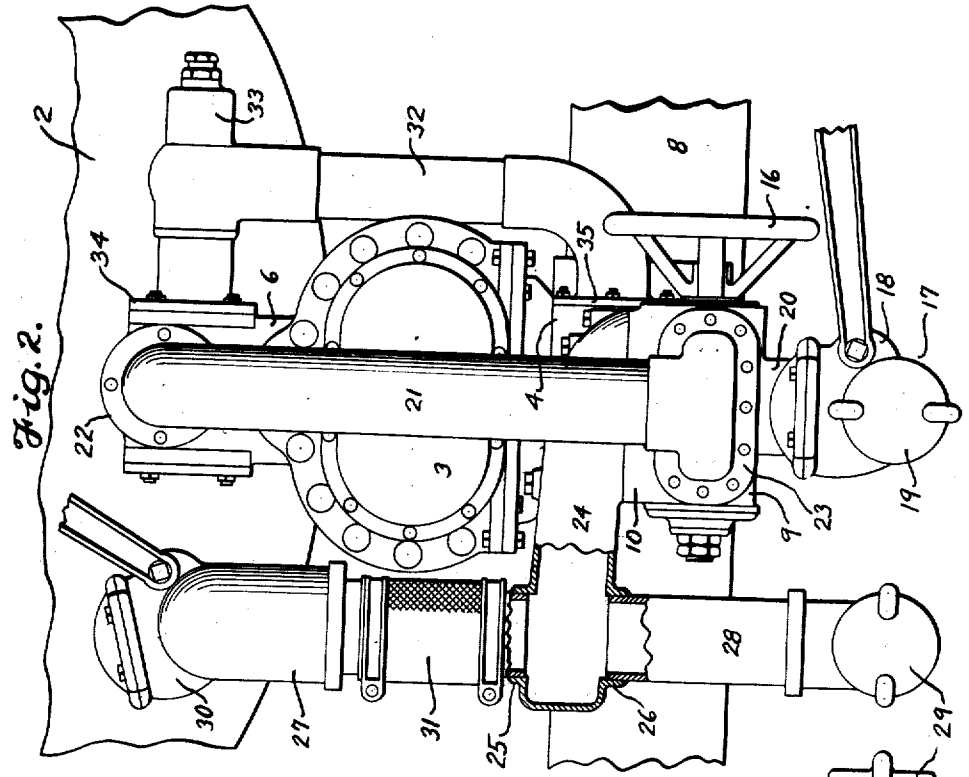


Fig. 2.

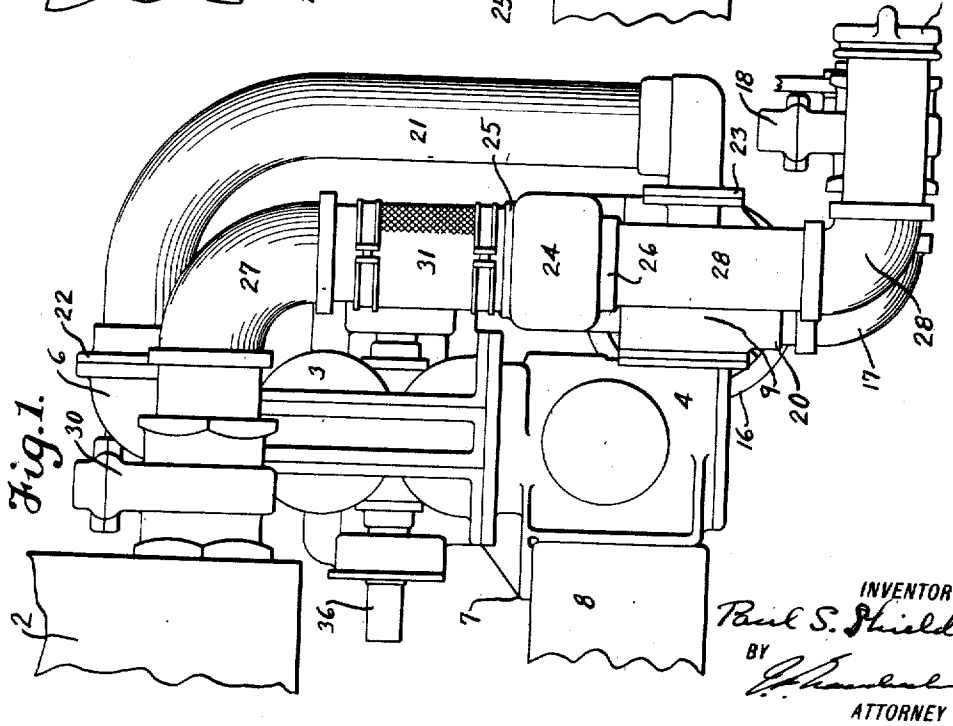


Fig. 1.

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2 Sheets-Sheet 2

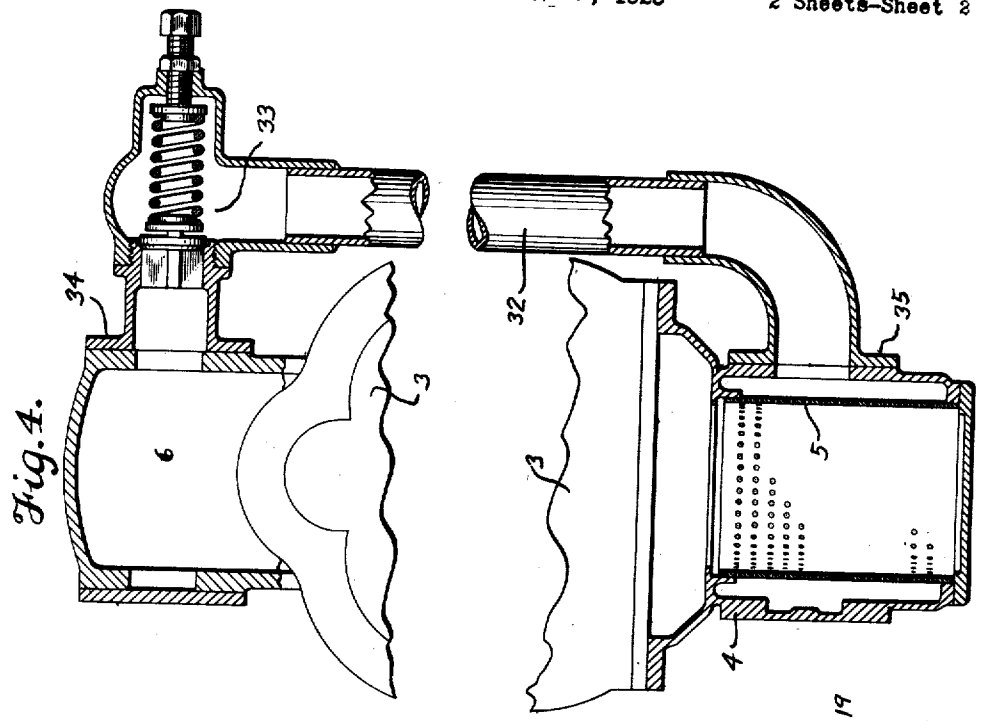


Fig. 4.

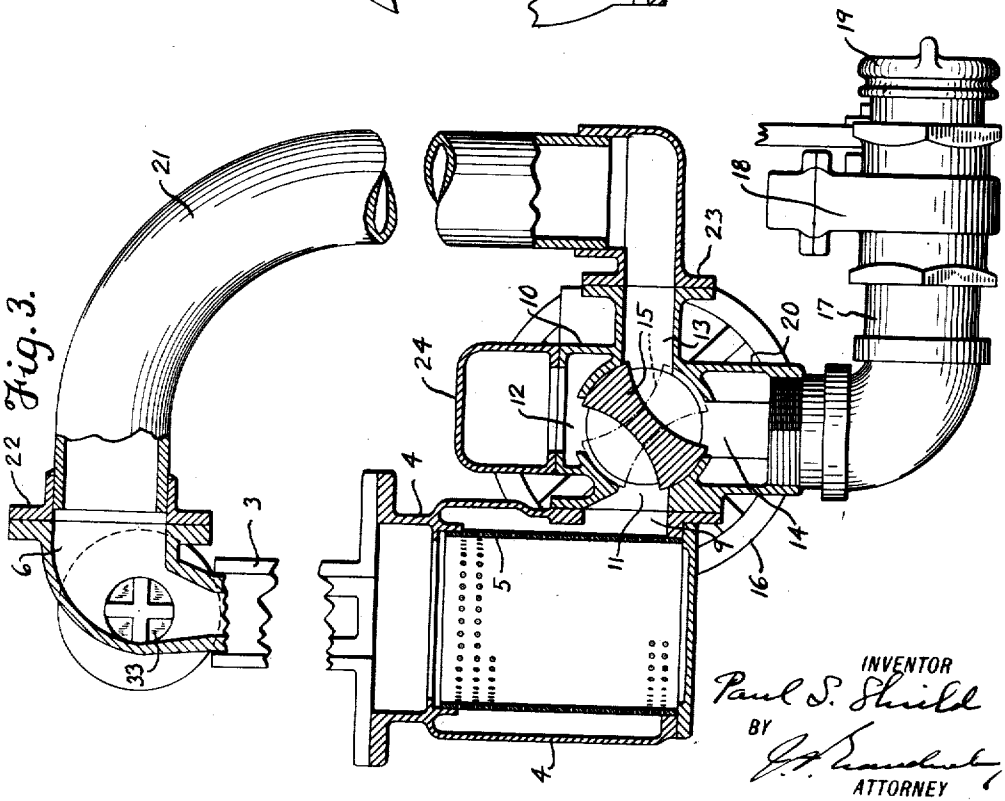


Fig. 3.

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UNITED STATES PATENT OFFICE.

PAUL S. SHIELD, OF CINCINNATI, OHIO, ASSIGNOR TO AUGUSTINE DAVIS, SR., OF COVINGTON, KENTUCKY.

PUMPING APPARATUS FOR TANKS.

Application filed January 19, 1923. Serial No. 613,580.

To all whom it may concern:

Be it known that I, PAUL S. SHIELD, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and the State of Ohio, have invented certain new and useful Improvements in Pumping Apparatus for Tanks, of which the following is a specification.

The invention relates to pumping apparatus designed particularly for vehicle tanks; and the object is to provide an apparatus of simple, compact, durable and accessible construction, with which various operations, including emptying, filling and gravity draining of the tank, and emergency pumping independent of the tank, can be performed with maximum convenience, and whereby also the delivery of liquid in either direction can be shut off quickly without the necessity of stopping the pump. These and other objects and features will be apparent from the following specification and the drawings forming a part thereof.

In the said drawings: Figures 1 is an end elevation looking from one side of the vehicle; Fig. 2 is a front elevation looking at the rear end of the tank, with a portion of the conduits broken out and in section; Fig. 3 is a view on a larger scale, partly in vertical section and partly in end elevation; and Fig. 4 is a view partly in vertical section and partly in front elevation.

The drawings illustrate a portion of a truck tank 2. At a suitable spot on the vehicle, usually, though not necessarily at the rear end, there is mounted a pump 3 of the rotary gear type. The pump is provided with a suction base 4, containing a screen 5 and a discharge head 6, the suction base constituting an intake chamber and being bracketed at 7 to serve as the means of attachment to the truck frame member 8.

The rear or outer side of the suction base is ported at 9, and to this ported wall is applied a horizontal reversing valve casing 10, having a port 11 to register with the port 9. The said casing has other ports 12, 13, and 14 at the top, outer side and bottom, respectively; and fitting a conical seat interrupted by said ports is a quarter-turn, four-way valve member 15, having a hand-wheel 16 at one end.

A main hose connection 17, containing a quick-acting shut-off valve 18 and provided with a cap 19 is screwed into a bottom boss 20 communicating with the port 14. A bent pipe or connection 21, extending rearward and downward, places the discharge head 6 in communication with the port 13. Vertically flanged terminals 22, 23 on this member enable it to be applied and removed as a unit to and from the outer vertical faces of the pressure head. A special conduit member 24 is applied at one end to the ported top of the valve casing, between the suction base 4 and the conduit 21, thence extending substantially horizontally away from the hand-wheel 16. The outer end of this conduit member has flanged openings 25 and 26, in the top and bottom respectively; and with the top opening is connected a tank connection line 27, while to the lower opening is applied an auxiliary hose connection 28, provided with a cap 29. The tank connection 27 contains a quick-acting shut-off valve 30, and also inclues a flexible section 31, so as to prevent strain from any shifting of the tank on its mounting. The conduit member 24 constitutes an extension of both the tank connection and the auxiliary hose connection, placing them in communication with the top port 12 of the reversing valve casing, and also in gravity-flow communication with each other.

A by-pass pipe connection 32 connecting the discharge-head and the suction base contains a spring-pressed relief valve 33 adapted to open at a predetermined excessive pressure in the discharge head. This connection has vertically flanged end fittings 34, 35 for application to ported vertical end faces of the discharge head and suction base.

With the reversing valve in the full line position of Fig. 3, the apparatus is in condition for pumping out of the tank, the stream being delivered through the hose connection 17. When the reversing valve is in the broken line position, liquid will be drawn in through the same hose connection and pumped into the tank. In either operation the delivery can be quickly cut off by closing the valve 18 or the valve 30, as the case may be, without stopping the pump. This is desirable if, for example, a delivery hose should burst during pumping out, or the tank should overflow in filling. Dangerous pressure built up in the discharge head will then be automatically relieved by the opening of the spring-seated valve 33, the liquid then passing around to

the suction base, so that the pump is short-circuited upon itself. With the reversing valve in either of these positions, and with the tank connection valve 30 closed and the main hose connection valve 18 open, the apparatus can be used for emergency pumping, the liquid being drawn through one hose connection and delivered through the other. The auxiliary hose connection 28 and its relation to the conduit member 24 and the tank connection line 27 also permit of gravity draining of the tank. In this operation the reversing valve can be placed with its bit vertical so as to cut off the tank line from the pump. With the reversing valve in the pump-in position the pump and suction base can be drained through the main hose connection 17.

A driving connection for the pump, to receive power from the engine through a suitable transmission (not shown), is shown at 36.

While the foregoing is the preferred form of the invention it is to be understood that I do not limit myself to the precise embodiment and that various changes may be made without departing from essentials.

What I claim as new is:

1. In combination with a tank, a pump having an intake and a discharge, a tank connection, a main hose connection, a reversing valve having passages communicating, respectively, with the tank connection, the main hose connection, the intake and discharge of the pump, an auxiliary hose connection in gravity draining communication with the tank connection and tank, shut-off valves in said connections, a by-pass conduit passing directly from the discharge to the intake of the pump, and a relief valve in said by-pass connection.

2. Pumping apparatus for tanks, comprising a pump, having a suction base and a discharge head, a reversing valve casing applied to a vertical side of said suction base and communicating therewith, a tank connection conduit communicating with the top of the reversing valve casing, a main hose connection communicating with the bottom thereof, a conduit connection from the discharge head communicating with the outer side of said casing the tank connection conduit lying between the last-named conduit connection and the suction base, and a quarter-turn reversing valve in the casing.

3. Pumping apparatus for tanks, comprising a pump, having a suction base and a discharge head, a reversing valve casing applied to a vertical side of said suction base and communicting therewith, a tank connection conduit communicating with the top of the reversing valve casing, a main hose connection communicating with the bottom thereof, a conduit connection from the discharge head communicating with the outer side of said casing the tank connection conduit lying between the last-named conduit connection and the suction base, a quarter-turn reversing valve in the casing, and a by-pass conduit connection between the discharge head and one end of the suction base and containing a relief valve.

4. Pumping apparatus for tanks, comprising a pump, having a suction base and discharge head, a reversing valve casing applied to one side of said suction base and communicating therewith, a quarter-turn reversing valve in said casing, a main hose connection communicating with the bottom of the casing, a connection from the discharge head communicating with the outer side of the casing, a conduit member applied to the top of the casing and projecting beyond one end thereof, and a tank connection and an auxiliary hose connection both connected with said conduit member.

5. Pumping apparatus for tanks, comprising a pump having a suction base and discharge head, a reversing valve casing applied to one side of said suction base and communicating therewith, a quarter-turn reversing valve in said casing, a main hose connection communicating with the bottom of the casing, a connection from the discharge head communicating with the outer side of the casing, a conduit member applied to the top of the casing and projecting beyond one end thereof, a tank connection opening through the top of the projecting portion of said conduit member, and an auxiliary hose connection opening through the bottom of said projecting portion.

6. Pumping apparatus for tanks, comprising a pump, having a suction base and a discharge head, a reversing valve casing applied to a vertical side of said suction base and communicating therewith, a quarter-turn reversing valve in said casing, a tank connection communicating with the top of the reversing valve casing, a main hose connection communicating with the bottom thereof, and a connection between the discharge head and the outer side of the reversing valve casing comprising a bent unit having its two ends applied to vertical faces of said discharge head and casing.

7. Pumping apparatus for tanks, comprising a pump, having a suction base and a discharge head, a reversing valve casing applied to a vertical side of said suction base and communicating therewith, a tank connection communicating with the top of the reversing valve casing, a main hose connection communicating with the bottom thereof, a connection from the discharge head communicating with the outer side of said casing, a quarter-turn reversing valve in the casing, and a by-pass connection containing a relief valve, said by-pass connec-

tion having vertically flanged ends applied to vertical faces of the discharge head and of the suction base, respectively.

8. In combination with a tank, a pump having an intake and a discharge, a tank connection, a main hose connection, a reversing valve having passages communicating, respectively, with the tank connection, main hose connection, the intake and discharge of the pump, an auxiliary hose connection in gravity draining communication with the tank connection and tank, a shut-off valve in said tank connection, and a by-pass conduit passing directly from the discharge to the intake of the pump and containing an automatic valve.

PAUL S. SHIELD.

tion having vertically flanged ends applied to vertical faces of the discharge head and of the suction base, respectively.

8. In combination with a tank, a pump having an intake and a discharge, a tank connection, a main hose connection, a reversing valve having passages communicating, respectively, with the tank connection, main hose connection, the intake and discharge of the pump, an auxiliary hose connection in gravity draining communication with the tank connection and tank, a shut-off valve in said tank connection, and a by-pass conduit passing directly from the discharge to the intake of the pump and containing an automatic valve.

PAUL S. SHIELD.

Certificate of Correction.

It is hereby certified that the name of the assignee in Letters Patent No. 1,522,752, granted January 13, 1925, upon the application of Paul S. Shield, of Cincinnati, Ohio, for an improvement in "Pumping Apparatus for Tanks," was erroneously written and printed as "Augustine Davis Sr.," whereas said name should have been written and printed as *Augustine Davis, Jr.*, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of February, A. D. 1925.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.

Certificate of Correction.

It is hereby certified that the name of the assignee in Letters Patent No. 1,522,752, granted January 13, 1925, upon the application of Paul S. Shield, of Cincinnati, Ohio, for an improvement in "Pumping Apparatus for Tanks," was erroneously written and printed as "Augustine Davis Sr.," whereas said name should have been written and printed as *Augustine Davis, Jr.*, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of February, A. D. 1925.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.