W. P. ANDERSON.

VALVE.

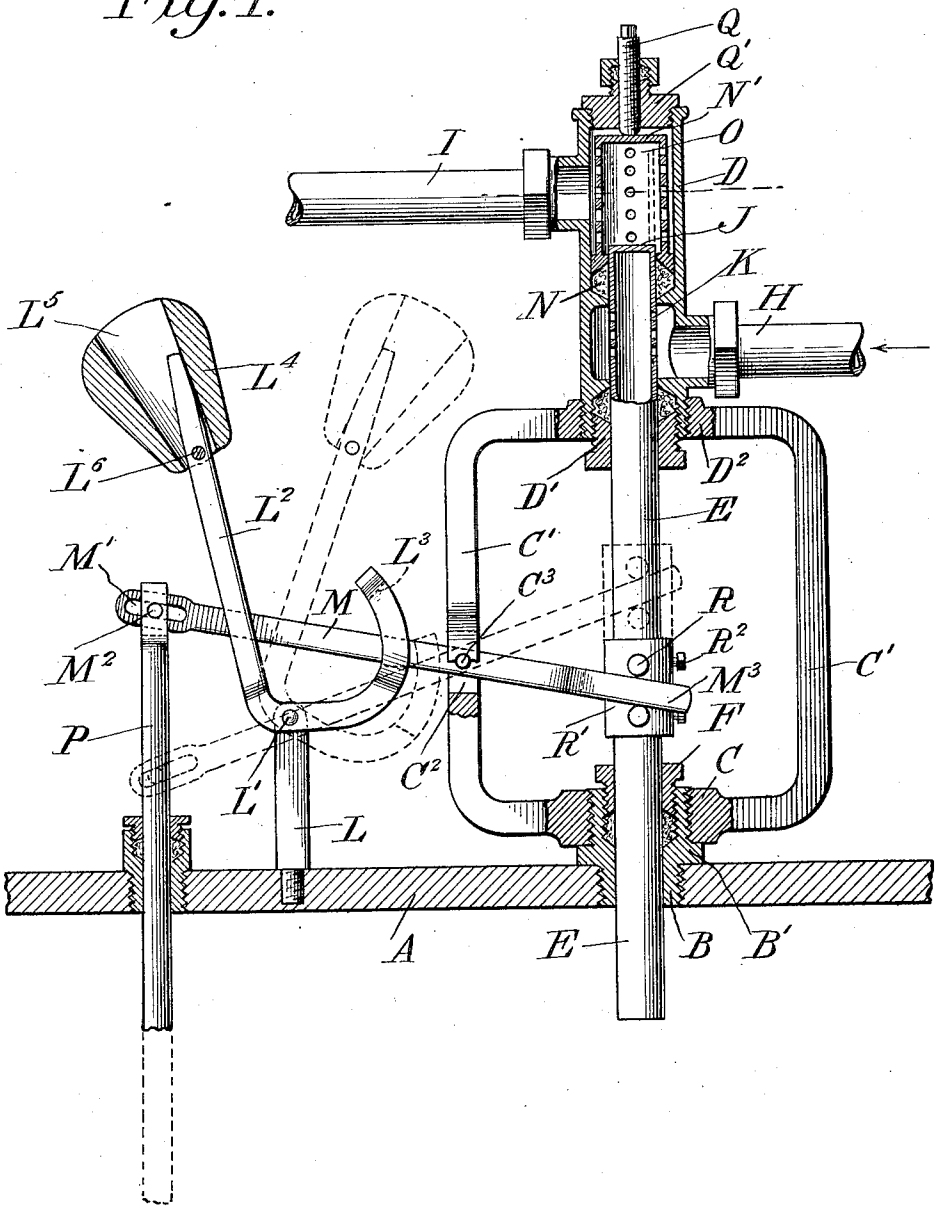
APPLICATION FILED JULY 1, 1912.

1,057,476.

Patented Apr. 1, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

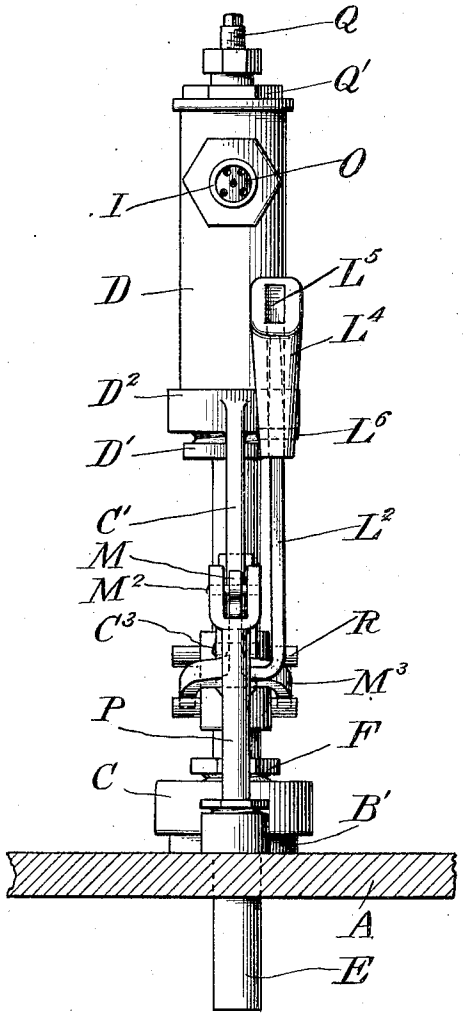


Fig. 3.

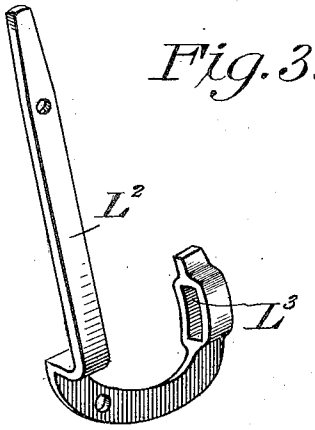


Fig. 4.

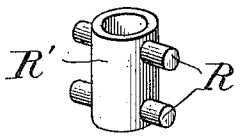
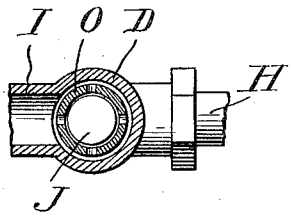


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM P. ANDERSON, OF NEW YORK, N. Y.

VALVE.

1,057,476. Specification of Letters Patent. Patented Apr. 1, 1913.

Application filed July 1, 1912. Serial No. 707,057.

To all whom it may concern:

Be it known that I, WILLIAM P. ANDERSON, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in sump operating valves, and especially to a balanced double seatless valve, actuated automatically by means of a float, to allow a flow of fluid pressure to effect a discharge from the sump, also in the provision of means for automatically venting the sump after the discharge has taken place.

The invention consists further in various details of construction, combinations and arrangements of parts as will be hereinafter more fully described and then specifically defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings which, with the letters of reference marked thereon, form a part of this application and in which:—

Figure 1 is a central vertical sectional view through the valve apparatus. Fig. 2 is a side elevation, and Figs. 3, 4 and 5 are detail views of parts of the apparatus.

Reference now being had to the details of the drawings by letter, A designates the sump cover which is apertured for the reception of the lower threaded end of the coupling member B, which latter has an angular outlined portion B′, affording means whereby the same may be readily turned to engage or disengage the threads formed in the opening of the sump cover. The circumference of the upper portion of said member is circumferentially threaded and is adapted to receive the interior threads formed in the shell C which latter has laterally projecting bowed portions C′, the former of which is slotted as at C^2 and carries a pivotal pin C^3 in apertures formed opposite each other in the walls thereof. A valved casing or shell, designated by letter D, has threaded connection with an interiorly threaded shell D^2 which is integral with said bowed portions C′. Said shell or casing D is connected near its lower end to said bowed portions C′ and its lower end is circumferentially threaded for the reception of the packing box D′. A pipe E is mounted to have a reciprocating movement through the coupling member B and said valve casing or shell D and the packing box D′, a second packing box F being fitted over the upper threaded end of the shell B and through which the pipe E is adapted to reciprocate, a tight joint being formed between the said pipe and the packing in said boxes. Said shell or valve casing is provided with an inlet port H and a vent pipe I, the former of which is adapted to communicate with a pipe through which fluid under pressure may be conveyed to said pipe for flushing the sump. The upper end of said pipe is closed as at J and is provided with circumferential perforations K through which the fluid pressure is allowed to pass when the pipe is in communication with that portion of the valve casing B or shell with which the inlet port communicates or, in other words, when the parts are in discharging positions. It will be noted upon reference to the drawings that the upper part of the pipe is adapted to have a reciprocating movement through a suitably packed gland N and that, when the perforations in the pipe are above the lower portion of said gland N, communication will be cut off between the fluid pressure inlet port and the interior of the pipe. Positioned within the upper part of the valve casing or shell D is a circumferentially perforated gland O, open at its lower end and in which the upper end of the pipe E is adapted to telescope, while the upper end N′ of said gland is closed. A threaded plug Q′ is fitted in the upper end of said shell D and carries a suitably packed threaded adjusting screw Q, the inner end of which is adapted to bear against the closed end N′ of said gland O. A projection L upon said sump cover carries a pivotal pin L′ upon which the curved shank of a weighted quick release lever L^2 is pivotally mounted, said shank portion having a slot L^3 formed near its short arm for the reception of the oscillating lever M, which latter passes through a slot formed in the bowed arm C′ and is pivotally mounted upon the pin C^3. It will be noted that the

long arm of said lever is provided with an offset in order not to interfere with the oscillating lever M. The outer end of the lever M is longitudinally slotted as at M′ for the reception of the pin M^2 carried at the upper forked end of the float rod P which passes through a suitably packed gland in the sump cover and to which the usual float, not shown, is adapted to be attached. The inner end of the lever M is forked as at M^3, shown in the detail view of the drawings, and the arms of said forked end engage between the laterally projecting pins R upon the collar R′, which latter is adapted to be held in adjusted positions by means of set screws R^2 upon the pipe E.

The weighted member L^2 is provided with a conical-shaped recess L^5 extending its entire length and flaring at its outer end, as shown in the drawings, said weight being pivotally mounted upon a pin L^6 which passes through an aperture formed in the long arm of the lever L^2. The particular reason for making the weighted lever with the tapering or conical-shaped recess therein is to cause the weight to tilt independent of the lever and contact with the end of the long arm thereof to effect a quick closing of the valve to shut off the supply of fluid pressure after a discharge.

The operation of the apparatus is as follows:—It will be noted upon reference to Fig. 1 of the drawings that the parts are shown in discharge position, the float stem being at its highest throw, which float stem is raised by the float within the sump, causing the lever M to tilt and, through the medium of the latter, the pipe E is moved downward by the forked end of the lever M engaging the pins R upon the collar R′ which is fixed to said pipe. When the perforations K in the wall of the pipe pass below the gland N, communication will be had between the fluid pressure inlet duct and the space below the gland N in the shell D and through the perforations K into the pipe E, thus allowing the fluid under pressure to discharge the sump. As the lever M tilts, the weighted quick closing lever L^2 will be tilted in one direction and be in readiness to be operated for a quick closing of the fluid pressure valve at the proper moment. As the discharge is taking place and the float lowers, the pipe E will be moved upward, cutting off communication between the pressure inlet and the interior of the pipe E through the perforations K as the lowermost of the latter passes into the gland N. When said perforations K rise above the gland N, communication will be afforded through the vent I, the gland O and the interior of the pipe E to the sump beneath through said pipe E, allowing the sump to vent to the atmosphere.

In order to cause the valve to quickly shut off the supply of fluid under pressure, the quick acting weighted lever L^2 is provided which, at a predetermined moment, will tilt by gravity, the marginal edge of the slot L^5 therein coming in contact with the edge of the lever M giving the pipe a slight longitudinal thrust and, in order to make the closing of the valve even more positive, the weight L^4 will be allowed to tilt independent of the lever L^2 by reason of the long arm of the lever L^2 projecting into the conical recess of the weight and, when the conical surface of the recess comes in contact with the long arm of said lever, a still further thrust will be given to the lever M, thus insuring the absolute cutting off of the pressure.

By the provision of a sump valve embodying the features of my invention, it will be noted that a perfectly balanced valve, automatic in its action, is provided and which will be quickly closed by the quick action weighted lever after the discharge has taken place, thus automatically venting the sump.

By the provision of the perforated gland made as shown and described, the same may be adjusted and removed, if desired, affording access to the interior of the shell or valve casing. By reason of the simplicity of the construction of the apparatus, it may be applied to various forms of float-operated sumps as will be readily understood.

What I claim to be new is:—

1. A sump valve comprising a valve casing with fluid pressure and vent ports communicating therewith, a gland within the casing intermediate said ports, a circumferentially perforated pipe closed at one end and designed to communicate with a sump, a circumferentially perforated gland, the interior of which communicates with the vent duct and in which perforated gland the closed end of said pipe is adapted to telescope, and float-operated means for moving the pipe longitudinally to allow only one or the other of said ducts to communicate at the same time with the interior of the pipe, as set forth.

2. A sump valve comprising a valve casing with fluid pressure and vent ports communicating therewith, a gland within the casing intermediate said ports, a circumferentially perforated pipe closed at one end and designed to communicate with a sump, a circumferentially perforated gland, the interior of which communicates with the vent duct and in which perforated gland the closed end of said pipe is adapted to telescope, means for adjusting said perforated gland, and float-actuated mechanism for moving the pipe longitudinally to allow only one or the other of said ducts to communicate at the same time with the interior of said pipe, as set forth.

3. A sump valve comprising a valve casing with fluid pressure and vent ports communicating therewith, a circumferentially perforated pipe closed at one end and designed to communicate with a sump, a circumferentially perforated gland within the casing intermediate said ports, the interior of which communicates with the vent duct and in which perforated gland the closed end of said pipe is adapted to telescope, a plug fitted in one end of said casing, an adjusting screw having threaded connection with said plug and adapted to bear against the closed end of said perforated gland, and float-actuated means for moving the pipe longitudinally to allow only one or the other of said ducts to communicate at the same time with said pipe, as set forth.

4. A sump valve comprising a valve casing with fluid pressure and vent ports communicating therewith, a gland within the casing intermediate said ports, a circumferentially perforated pipe closed at one end and designed to communicate with the sump, an oscillating, float-actuated lever for moving said pipe longitudinally to allow only one or the other of said ducts, at the same time, to communicate with the interior of said pipe, a pivotal trip lever which is slotted for the reception of said oscillating lever, and a weight having a tapering recess therein and in which one end of the slotted lever is pivoted, as set forth.

5. A sump valve comprising a valve casing with fluid pressure and vent ports communicating therewith, a gland within the casing and intermediate said ports, a circumferentially perforated pipe closed at one end and designed to communicate with a sump, suitably packed coupling members, bowed portions connecting the same, one of said coupling members adapted for attachment to an opening in a sump cover and the other to said valve casing, a collar fixed to said pipe, having lateral projections, an oscillating lever pivoted to one of the bowed portions and having a forked end intermediate said projections upon the collar, and a float stem pivoted to said lever, as set forth.

6. A sump valve comprising a valve casing with fluid pressure and vent ports communicating therewith, a gland within the casing and intermediate said ports, a circumferentially perforated pipe closed at one end and designed to communicate with a sump, suitable packing coupling members, bowed portions connecting the same, one of said coupling members adapted for attachment to an opening in a sump cover and the other to said valve casing, a collar fixed to said pipe having lateral projections, an oscillating lever pivoted to one of the bowed portions and having a forked end intermediate said projections upon the collar, a float stem pivoted to said lever, and a tilting lever actuated by said oscillating lever, as set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM P. ANDERSON.

Witnesses:
JOHN W. MADDOX,
WALTER NOKES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."