No. 671,442. Patented Apr. 9, 1901.

W. C. JENNINGS.

VARIABLE PRESSURE FLOAT TRAP.

(Application filed July 31, 1900.)

(No Model.)

Fig. 1

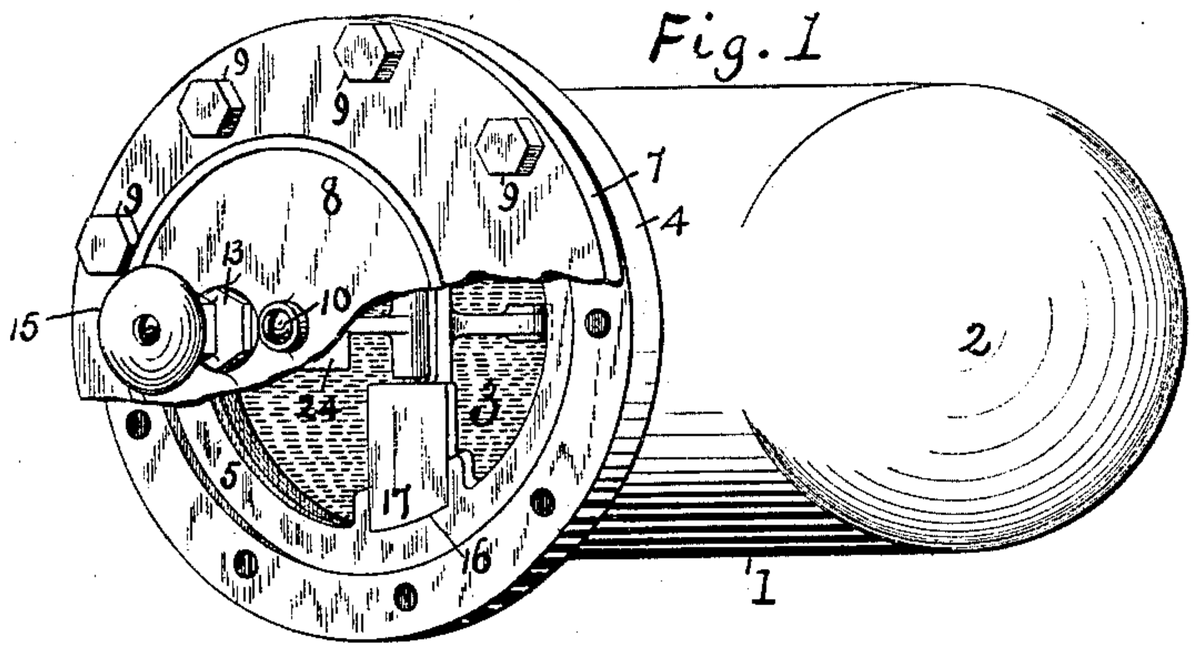


Fig. 2.

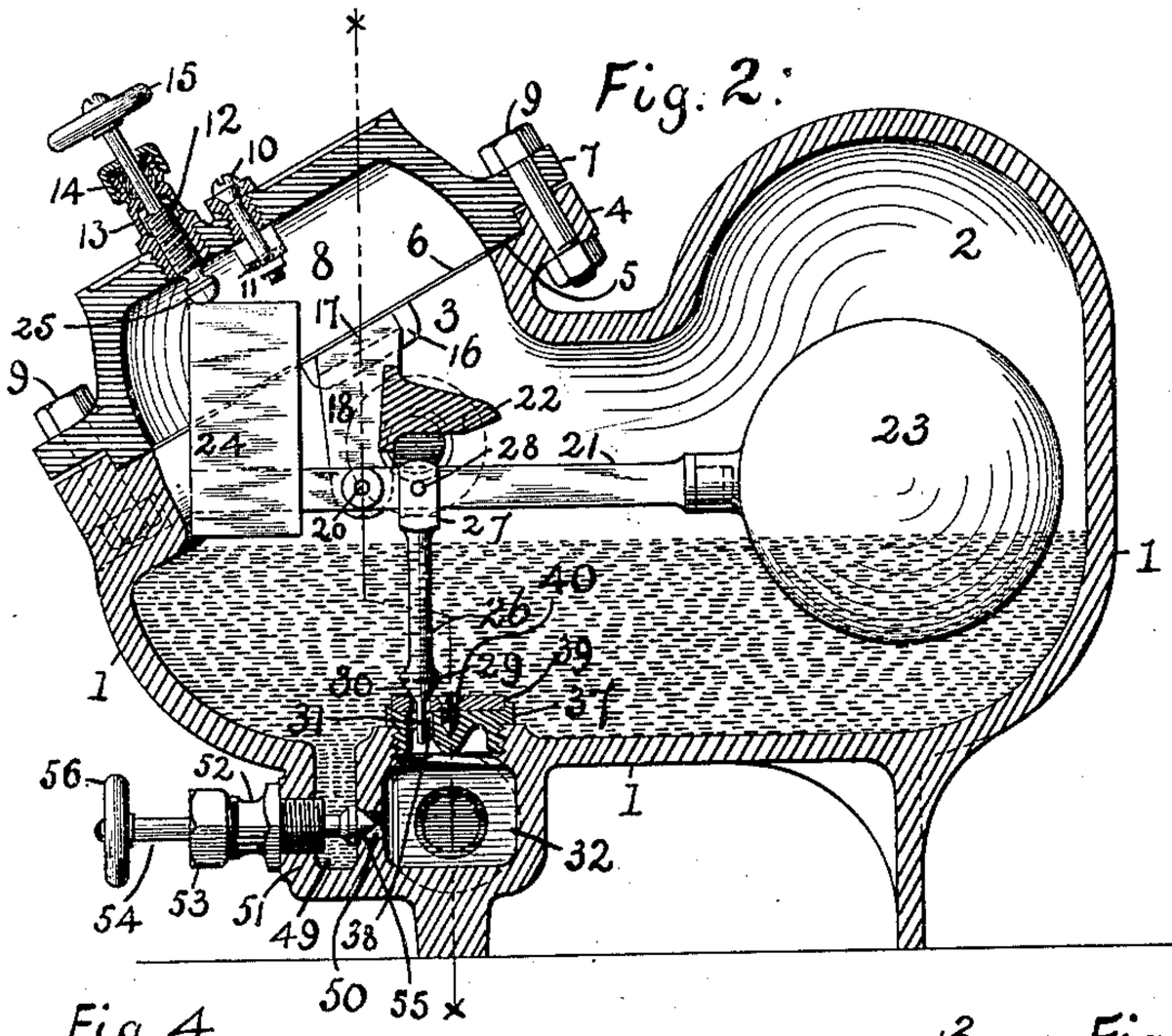
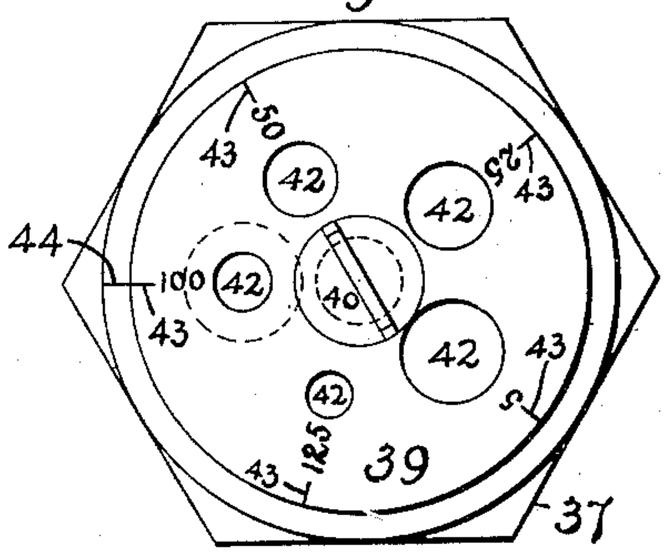
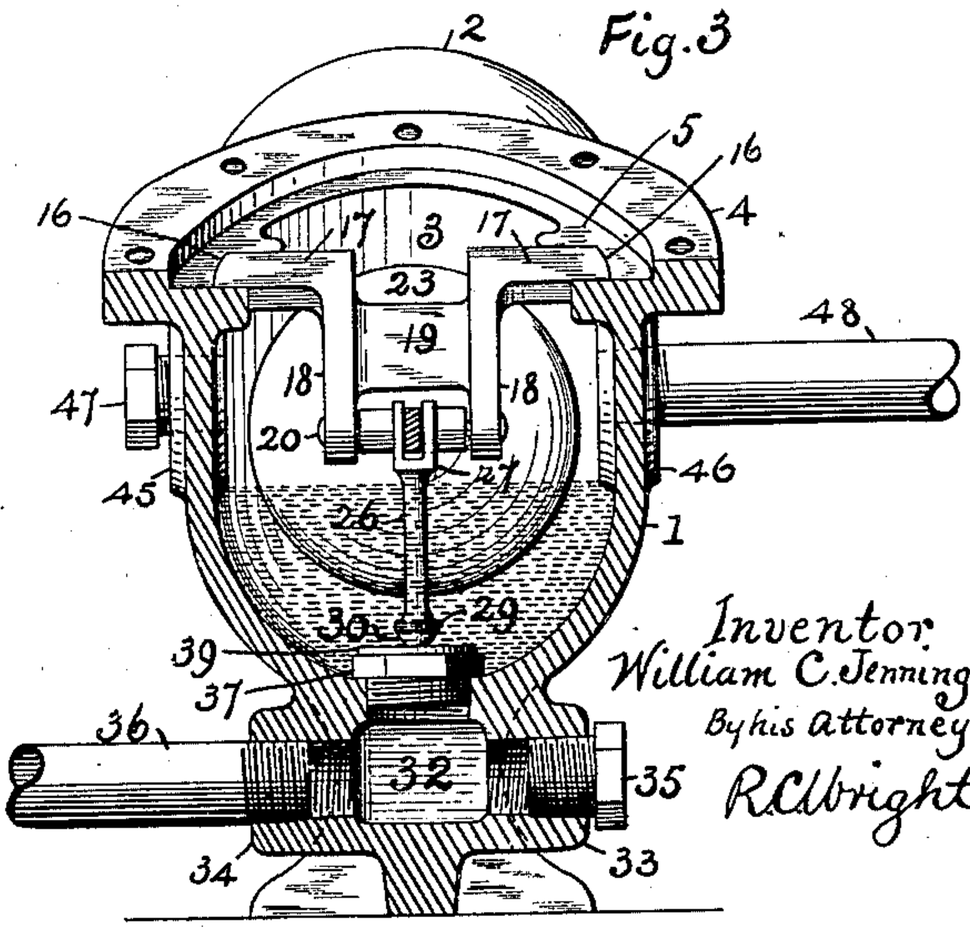


Fig. 4



Witnesses
Louis J. Pyott
C. C. Clifford

Fig. 3



Inventor
William C. Jennings
By his Attorney
R. C. Bright

UNITED STATES PATENT OFFICE.

WILLIAM C. JENNINGS, OF CAMDEN, NEW JERSEY, ASSIGNOR TO THE W. C. JENNINGS CO., OF SAME PLACE.

VARIABLE-PRESSURE FLOAT-TRAP.

SPECIFICATION forming part of Letters Patent No. 671,442, dated April 9, 1901.

Application filed July 31, 1900. Serial No. 25,409. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. JENNINGS, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Variable-Pressure Float-Traps, of which the following is a specification.

My invention relates to traps for discharging the water of condensation from steam apparatus and of the kind governed by a float, and has for its objects, first, the making of a containing-case which has a circular fitted closing cap or cover made to be easily constructed and attached and having a minimum amount of circular joining surfaces to be packed and so formed as to prevent the packing from being blown out; second, I introduce a rotatable pressure-governing disk arranged to be set so that the trap will discharge at a predetermined pressure; third, the pipe connections are so arranged as to greatly reduce the number necessary in previous constructions, and other novel features of construction which will be further explained and which are illustrated in the accompanying drawings, in which—

Figure 1 is a plan view with part of the cover broken away. Fig. 2 is a vertical central section of the casing with some of the parts not in section. Fig. 3 is a cross-section on line *x x*, Fig. 2. Fig. 4 is a plan of the pressure-controlling dial-disk.

Similar figures of reference indicate similar parts throughout the views.

The outer case 1 at the float end has a domed chamber 2, into which the float rises, and at its opposite or open end 3 there is constructed a flange 4 at an angle dipping outward and downward from the float end, having a recess 5, into which is placed the circular packing-gasket 6 above the water-line and held in place by the flange 7 of cover 8, secured by bolts 9. The construction described requires but a comparatively small gasket, and so held as to prevent its being blown out, and thereby reducing the liability of leakage to a minimum. Heretofore the whole top of the casing has been detached, which requires much bolting, much fitting, and a large gasket, which is very liable to blow out and leak.

By making the opening 3 at an angle I am enabled to readily introduce or remove the float and its attachments whenever it is necessary to do so and to almost absolutely prevent any blow-out or leakage at the cover, while greatly reducing the first cost of fitting or any renewal costs. Cover 8 is dome-shaped and has at its center an air-valve 10 with an interior spring 11 of any suitable construction, and forward of the center an adjusting-screw 12, passing through a stuffing-box 13, having a gland 14 and a hand-wheel 15. Pockets 16 are formed in opening 3 to receive the flat outer ends 17 of the fulcrum, which lie therein and which join arms 18, reaching down therefrom, connected by tie 19 and carrying pin 20, which fulcrums float-lever 21. A stop 22 is carried by tie 19. The float 23 is preferably a tight hollow copper ball or sphere joined to the lever 21, which is fulcrumed, as already described, and an extension beyond the fulcrum 20 carries a counterweight 24, which at its top comes in contact with the balled end 25 of screw 12. Between ball 23 and fulcrum 20 there is attached to lever 21, near the fulcrum, a spindle 26 by its jaw 27 and pin 28. The spindle passes downwardly and is enlarged at 29, near its lower end, and below this part it is cone-formed at 30 and terminates in a lengthened parallel diameter end port 31. Under the lower end of the spindle there is formed integral with casing 1 a drain-chamber 32, having a boss 33 on one side and a boss 34 on the other side. As illustrated, boss 33 is closed by a screw-plug 35, and into boss 34 is screwed an outlet-pipe 36, and by this construction the outlet may be led from either side at will. Above drain-chamber 32 there is secured a seat 37, having an opening 38 therethrough, which affords communication with the interior of case 1 and through which passage the condense-water enters chamber 32. Above seat 37 is a rotatable pressure-governing disk 39, pivotally secured to seat 37 by screw 40. This disk has a series of ports 42 therethrough, their centers being concentric with screw 40, and each port when set for use is above opening 38 through seat 37. The diameters of the ports or their areas, as illustrated in Fig. 4, vary to suit pressures from five to one hundred and twenty-five pounds per square inch by maintaining a desired water seal. When an excess accumu-

lation of liquid occurs, the float will be raised, the port opened, and the excess of liquid will then pass away until the established water-line is again reached. The ports may be arranged for any desired pressures, other variations of area being used with equal facility. Figures indicating the pressure the ports are calculated for are placed upon the disk opposite each port, and an indicator-line 43 is placed opposite the figures and reaching to the outer edge of the disk, so that when the disk is set to have any one of lines 43 coincide with mark 44 on seat 37 the port 42 will be above and in communication with opening 38 to chamber 32, which will then be closed by cone 30 of spindle 26, operated by float 23 to maintain a desired water seal. Ports 42 for low pressures are larger than those for higher pressures on account of an excess of condensation in low pressures and the need of larger ports to quickly carry off the excess and reëstablish the water-level and water seal. To carry any desired pressure or to change from one pressure to another is merely a matter of presenting the proper port above the opening in the seat over the drain-chamber. By my arrangement of the angular opening 3 to the case 1 the float and its attachments are easily removed, as when cover 8 is taken off the fulcrum ends 17 are ready to be lifted out of pockets 16 and all parts readily removed. When the parts are again replaced, cover 8 holds them all securely in place. Bosses 45 46 are formed on the body of case 1, and into boss 45, as shown in Fig. 3, a plug 47 is screwed, while boss 46 has an inlet-pipe 48 screwed into it; but the plug and pipe may readily be reversed to suit any situation. As seen in Fig. 2, a drain-well 49 is formed at the lower part of case 1 and opposite drain-chamber 32, with which it communicates by means of passage 50. Into the front wall 51 of the drain-well 49 is screwed a stuffing-box 52, having a gland 53, and therein is a spindle 54, on which is a coned valve 55, which seats over passage 50 to open or close communication between the drain-well 49 and the drain-chamber 32, the control being governed by hand-wheel 56 on spindle 54, so that by this construction the usual blow-out pipes and their connections are entirely done away with.

I claim—

1. In a steam-trap, a case having oppositely-disposed inlets thereto, one of which may be used and one closed, a drain-well, a drain-chamber, means of communication from the drain-well to the drain-chamber, means to open and close the communication, oppositely-disposed outlets from the drain-chamber, one of which may be used and one closed, a domed float-chamber, an angular-faced circular opening to the case, located above the water-line, a recess for circular packing within the outer diameter of the opening, circular packing within the recess, and a circular cover adapted to close the opening, and means to secure the circular packing within the recess in manner to prevent its being blown out, in manner and form substantially as set forth.

2. In a steam-trap, a case having an angular-seated circular opening above one end, a float secured to a lever, a fulcrum and a counterweight for the lever, a spindle connected to the lever and controlling the outlet, and a disk having multiple ports of varying sizes, within any one of which the spindle acts to maintain the predetermined and desired pressure for which the port is calculated, in manner and form substantially as set forth.

3. In a steam-trap, a float fulcrumed in the case, a spindle governed by the float, a drain-chamber to which the spindle governs the flow of excess condensation, a disk supported above the drain-chamber, and within the disk multiple ports of differing areas, within any one of which the spindle is operative for controlling the outflow, each port being suited for a different pressure, substantially as described.

4. In a steam-trap, a float, a spindle governed thereby, a drain-chamber, and mounted above it a rotatable disk having multiple ports of differing areas, within any one of which the spindle seats, and each port being of a different diameter and adapted to maintain a different pressure, substantially as described.

5. In a steam-trap, a float, a spindle governed by the float, a drain-chamber, a seat mounted above the drain-chamber, and a multiple-port disk, the ports varying in sizes and area, secured to the seat in manner to present any desired port in position for the entrance of the spindle aforesaid, substantially in the form and manner set forth.

6. In a steam-trap, a case, a float therein, a stem governed by the float, a drain-chamber, a seat mounted above the chamber, a disk mounted on the seat, multiple ports of different areas in the disk, means to present any desired port for the entrance of the spindle aforesaid, means to indicate the pressure each port is designed for, and means to set the disk correctly to the desired pressure, substantially as set forth.

7. In a steam-trap, a case, a float therein, a stem governed by the float, a drain-chamber, a seat mounted above the drain-chamber and having means of communication from the case to the drain-chamber, and operative thereon a plate having multiple ports of varying sizes, and means to present any one of said ports for coacting with the spindle aforesaid to form communication from the case to the drain-chamber through the plate and seat aforesaid, substantially in manner and form as fully set forth.

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

WILLIAM C. JENNINGS.

Witnesses:

R. C. WRIGHT,

W. H. ALCOCK.