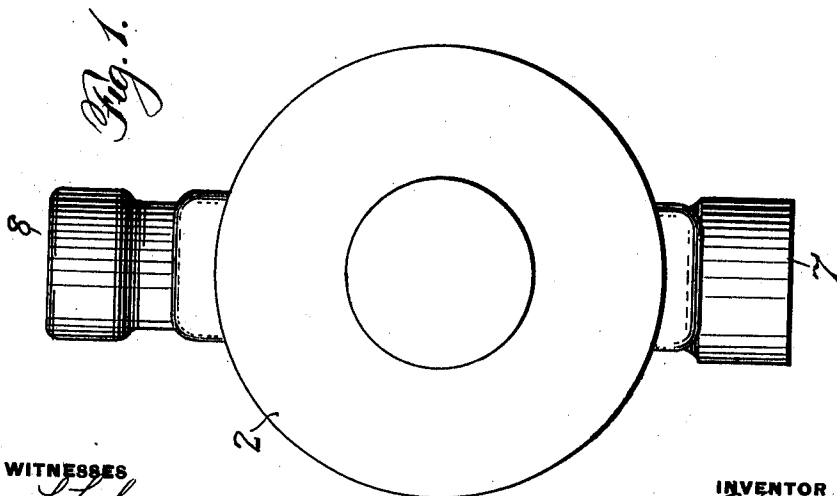
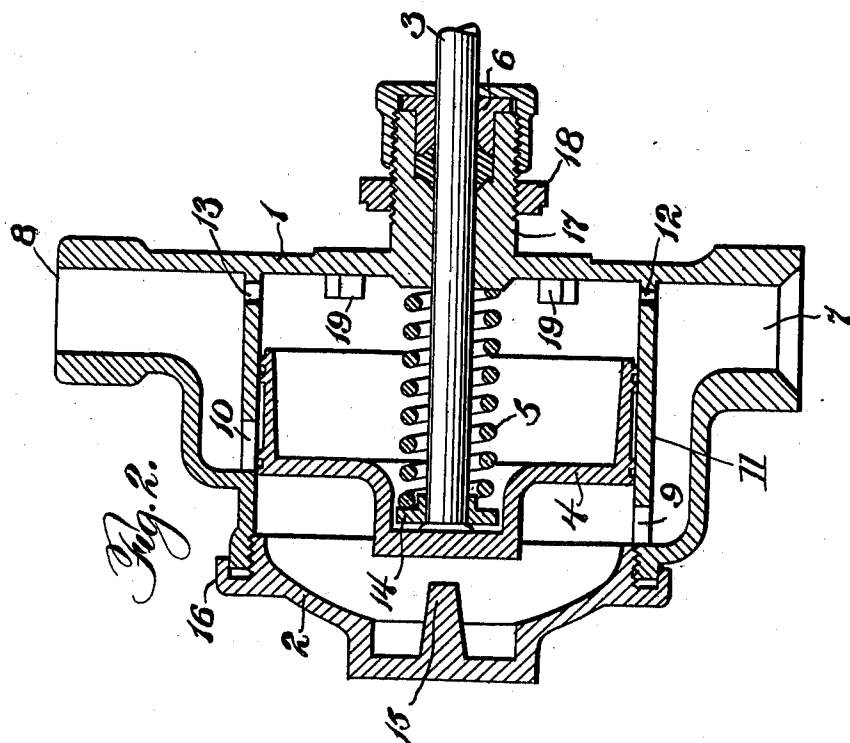


J. P. REINECKE.
WATER VALVE.
APPLICATION FILED NOV. 29, 1907.

993,106.

Patented May 23, 1911.



WITNESSES

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WATER-VALVE.

993,106.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed November 29, 1907. Serial No. 404,231.

To all whom it may concern:

Be it known that I, JOHN P. REINECKE, a citizen of the United States, residing at Crafton, in the county of Allegheny and State of Pennsylvania, (his post-office address being 1342 River avenue, Allegheny, Pennsylvania,) have invented certain new and useful Improvements in Water-Valves, of which the following is a specification.

The invention relates to water valves for governing the gas valves as used in what are known as instantaneous heaters. The invention has for its objects; the provision of a valve of this type which has an improved arrangement of parts and one wherein an effective drainage may be secured; the provision of securing means for the cap wherein deformation of the cylinder casing is avoided when the cap is screwed on tightly; and the provision of an improved arrangement to avoid deformation and consequent sticking of the operating parts when the device is coupled up. One embodiment of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is an end view of the valve, and

Figure 2 is a longitudinal section through the valve.

The valve is designed for use in connection with what are known as instantaneous water heaters, wherein the opening of the faucet in the outlet pipe disturbs the equilibrium of certain operating parts in the water valve causing such parts to open the valve controlling the flow of gas to the burners of the heater, which general operation is well known in the art. Referring to the general arrangement of parts shown in the drawings, 1 is the main valve casing, 2 is the cap therefor, 3 is the operating rod extending to the gas valve, 4 is the operating piston, 5 is the spring for moving the operating rod 3 and the piston 4 to the left, and 6 is the stuffing-box for the rod 3. The main valve casing 1 is provided with the inlet passage 7 and the outlet passage 8, and the casing when in use is designed to occupy the position shown in Figure 2 with the inlet or admission pipe 7 down. In order to permit of a flow of water from the admission passage 7 to the outlet passage 8 the ports 9 and 10 are provided, the port 9 being so located so as to be always open, while the port 10 is open or closed depending upon the position of the piston 4. The valve casing 1 is

provided with the horizontal cylinder 11 in which the piston 4 reciprocates, and such cylinder is provided with the pair of small ports 12 and 13, the port 12 being somewhat smaller than the port 13. The rod 3 carries at its end the disk 14 which constitutes a seat for the end of the spring 5, such spring being designed to hold the piston in position to close the port 10 when the flow through the outlet 8 is stopped. The valve cap 2 is provided with the projecting stop 15 to limit the movement of the piston to the left, and the cap is screw threaded to the main casing 1 in the manner shown in Figure 2. The edge of the cap is also provided with the overhanging edge 16 for engaging the outside surface of the edge of the casing 1. Without this overhanging edge 16 it has been found that the main casing is somewhat deformed when the cap 2 is screwed down tightly, which deformation is undesirable in an apparatus of this type as it necessarily causes the distortion of the cylinder 11, and prevents the piston from fitting properly therein. It will be seen that the overhanging edge 16 prevents the edge of the casing from spreading when the cap is screwed down tightly and constitutes an additional means for holding the outer end of the cylinder 11 in absolutely fixed position. In mounting the device the neck 17 is ordinarily engaged by a projecting bracket and this bracket is engaged by means of the clamping nut 18. This provides a very desirable support for the valve, as the support is adjacent the base of the valve casing, which is the stiffest portion thereof, and such support is in substantial alinement with the right hand edges of the portions of the valve to which the admission and outlet pipes are coupled. This is important as in installing the device considerable force is often applied to one side of the valve or the other in coupling the admission and outlet pipes thereto which force tends to distort the casing and consequently the cylinder 11 and as a result the piston does not work freely in such cylinder. As the sticking of the piston in the cylinder at an inopportune time may cause the destruction of the heater, it will be seen that the provision of an arrangement whereby the danger of deformation of the cylinder is reduced to a minimum constitutes a very decided advantage.

When the parts are in the position shown

in Figure 2, the outlet is closed, and the rod 3 is in such position as to close the gas valve. If now any faucet connected to the outlet 8 is opened, the pressure on the right hand side of the piston 4 is reduced by virtue of the escape of the water on such side through the port 13 more rapidly than water can enter through the smaller port 12, and as a result the pressure on the left-hand end of the piston which is substantially constant, pushes the piston to the right permitting of a flow of water through the port 10, and causing the operating rod 3 to open the gas valve. The parts will remain in this relation until the outlet is closed, at which time pressure will gradually accumulate on the right hand side of the piston because of the small port 12, and the spring 5 will return the piston to closed position as shown in Figure 2, which movement causes the operating rod 3 to cut off the gas supply. One of the principal advantages in placing the small port 12 at the lower portion of the cylinder 11, is that it permits of the thorough draining of the cylinder. The pipes connected to the admission passage 7 are provided with a drain cock, and when the water supply is cut off and this cock is opened, all of the water in the outlet passage 8 and the pipes connected thereto flows down through the ports 12 and 13, which flow of water is sufficient to carry away all the dirt or grit which may have collected inside of the cylinder and which if left there would eventually cause the piston to cut out the cylinder so that it would leak. It will be noted that the positioning of the port 12 at the lower portion of the cylinder 11 gives an opportunity for the entire contents of the cylinder to be removed. The members 19 constitute stops for engaging the edge of the piston 4 and preventing its movement too great a distance to the right.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:—

1. A water valve comprising a casing provided with admission and outlet passages, a port connecting the passages, and a cylinder having a pair of ports of different size and of less capacity than the said port, the smaller of which connects the interior of the cylinder with the admission passage and

the larger of which connects the interior of the cylinder with the outlet passage, a piston in the cylinder for governing the first mentioned port, and so positioned with respect to the said port that when the piston is in forward position the water flows across the rear face thereof, yielding means for normally holding the piston in position to close said port and a governing rod for a gas valve mounted to move with the said piston, the said ports of different size lying to the front of the piston and the flow of water therebetween being independent of the main flow of water between the admission and outlet passages.

2. A water valve comprising a casing provided with admission and outlet passages, a port connecting the passages, and a horizontal cylinder having a pair of ports of less capacity than the first port, one of which is in the lower part of the cylinder wall and connects the interior thereof with one of the passages and constituting a drainage passage and the other of which connects the interior of the cylinder with the other passage, a piston in the cylinder for governing the first mentioned port, yielding means for normally holding the piston in position to close said port, and a governing rod for a gas valve mounted to move with the said piston.

3. A water valve comprising a casing provided with admission and outlet passages, a port connecting the passages, and a horizontal cylinder having a pair of ports of different size of less capacity than the first port, the smaller of which is in the lower part of the cylinder wall and connects the interior thereof with the admission passage, and the larger of which connects the interior of the cylinder with the outlet passage, a piston in the cylinder for governing the first mentioned port, yielding means for normally holding the piston in position to close said port, and a governing rod for a gas valve mounted to move with the said piston.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

JNO. P. REINECKE.

Witnesses:

J. C. BRADLEY,
ARCHWORTH MARTIN.