No. 844,828. PATENTED FEB. 19, 1907.

F. H. OEHLKE.

GAS CONTROLLING MEANS.

APPLICATION FILED JAN. 4, 1906.

Fig. 3.

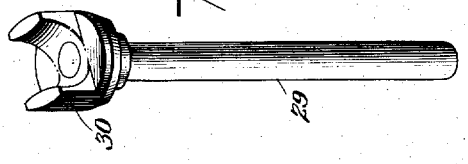


Fig. 2.

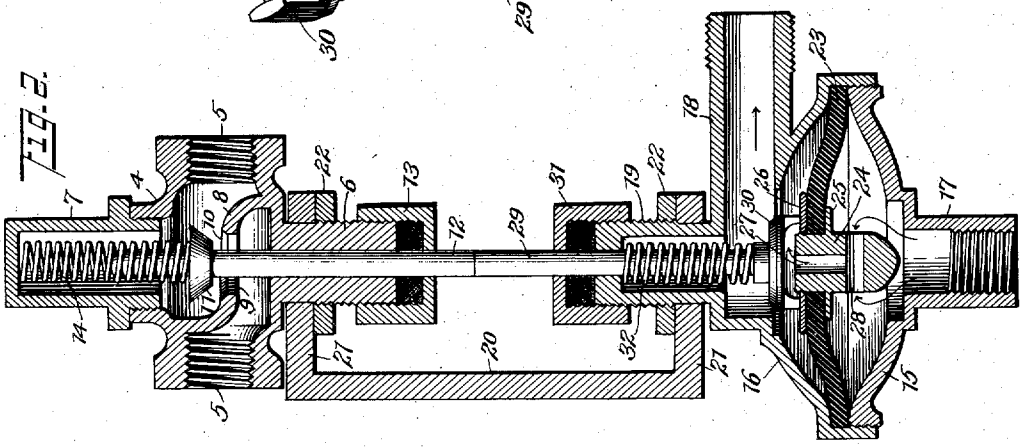
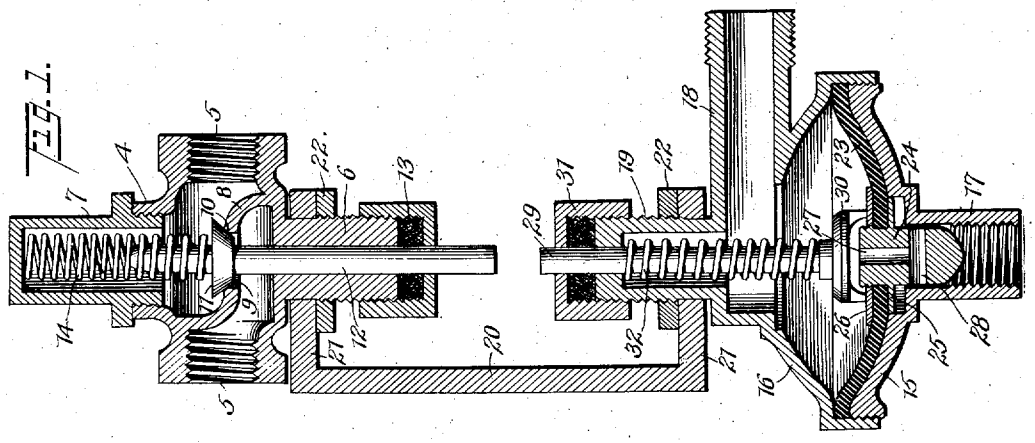


Fig. 1.



Frederick H. Oehlke, Inventor

Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK H. OEHLKE, OF LORAIN, OHIO.

GAS-CONTROLLING MEANS.

No. 844,828. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed January 4, 1906. Serial No. 294,542.

To all whom it may concern:

Be it known that FREDERICK H. OEHLKE, a citizen of the United States, residing at Lorain, in the county of Lorain and State of Ohio, has invented a new and useful Gas-Controlling Means, of which the following is a specification.

This invention relates more particularly to the valve mechanism employed in water-heating apparatus.

The principal object is to provide novel and exceedingly simple mechanism wherein the flow of gas for heating purposes is automatically controlled by the flow of water to be heated, said mechanism being made up of parts that are readily assembled and are not liable to become deranged, though easily accessible should they become worn, injured, or inoperative from any source.

An embodiment of the invention that is at present considered the preferable one is illustrated in the accompanying drawings, wherein—

Figure 1 is a sectional view through the structure, showing the gas-valve closed and the operating means therefor inoperative. Fig. 2 is a similar view, but showing the operating means maintaining the valve in opened position. Fig. 3 is a detail perspective view of the actuating-stem.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

The gas-controlling means comprises a suitable valve-casing 4, having an inlet and outlet 5 and provided with a guide projection 6 on one side and a tubular cap 7 on the other, the tubular cap being removable and preferably threaded into the casing. A web 8 extends across the interior of the casing and has a suitable opening 9 therein, said opening being surrounded by a valve-seat 10. A valve 11, located within the casing, is movable into and out of coaction with the seat 10 and is carried by a stem 12, one end of the stem being located in the cap 7, the other end extending through the guide projection 6, which projection is provided with a suitable packing-box 13. A coiled spring 14, having one end bearing against the top of the cap and its other end bearing against the valve 11, urges said valve to closed position.

The operating means for the valve is preferably constructed as follows: A casing is provided, comprising sections 15 and 16, the former being threaded into the latter and having a centrally-disposed inlet-nipple 17. The other section 16 is provided with an offset discharge-nipple 18 and also has an upstanding hollow portion 19, that is exteriorly threaded. A yoke 20 connects the valve-casing 4 and the casing just described, said yoke having offset arms 21, provided with openings that receive the projections 6 and 19, which projections are disposed in alinement and in opposition to each other. Nuts 22, threaded on said projections, serve to maintain the yoke in place, and thereby hold the casings in fixed relation.

An actuating member in the form of a diaphragm 23 extends across the chamber formed within the sectional casing, the margins of said diaphragm being clamped between the sections. This diaphragm carries a central plug 24, having a flange 25, that rests against one side of said diaphragm, and having a holding collar or nut 26 threaded upon its end and bearing against the opposite side. The plug is movable into and out of the inlet-nipple 17 and is provided with a passage-way 27, that extends through the diaphragm, said passage-way including a transverse inlet portion 28. This inlet portion is so arranged that when the diaphragm is in its lowermost position and the plug is in the inlet-nipple said inlet portion 28 will be substantially closed by the walls of the nipple, or, in other words, by portions of the walls of the casing. When the plug is out of the inlet-nipple, however, the passage-way is open, and, as shown in Fig. 2, water will flow through the inlet-nipple, through the passage-way, and through the outlet. An actuating-stem 29 is slidably mounted in the projecting portion 19 of the casing and carries at its lower end a yoke or fork 30, that rests upon the collar or nut 26, leaving an open space for the free flow of the fluid through the passage-way 27. The stem 29 projects beyond the casing in line with the valve-stem 12, which valve-stem it is arranged to strike when the diaphragm is moved upwardly. A packing-box 31 serves to prevent leakage around the actuating-stem, and a coiled spring 32, surrounding said stem, bears against the yoke and normally urges the stem downwardly and away from the valve-stem 12. When the stem 29 is in its lowermost position and when the valve 11 is closed, the said stem 29 will be spaced from the stem 12.

It is believed that the operation of the

mechanism can now be readily explained. As long as the water is shut off in the pipe connected to the outlet-nipple 18 the pressure on both sides of the diaphragm 23 will be equalized. Therefore the spring 32 will move said diaphragm downwardly, will cause the plug 24 to enter the inlet-nipple, and consequently close the passage-way 27. The valve-stem 12 being thus freed, the spring 14 will act to move said valve to closed position, and the supply of gas will be shut off. If, however, the outlet for the water is opened, the pressure upon the outlet side of the diaphragm will be reduced. Consequently said diaphragm will be raised, moving the plug out of the inlet and permitting the flow of water through said inlet, through the passage-way 27, and through the outlet 18. The upward movement of the diaphragm of course causes a corresponding movement of the actuating-stem and a compression of the spring 32. The upper end of the actuating-stem will in turn strike the valve-stem 12, thus moving said stem and the valve carried by it upwardly against the tension of the spring 14. As a result the gas will flow through the casing. As soon as the flow of water is stopped the parts will reassume their normal positions, as shown in Fig. 1.

It will be apparent from an inspection of the drawings that the structure is very simple and yet entirely effective. The parts, moreover, are so arranged and are of such a nature that they are not liable to become deranged; yet should they become injured or inoperative from any reason they are all accessible, and any one or more can be readily removed and replaced without the necessity of an entirely new apparatus. The spacing of the stems 12 and 29 is a desirable feature in order to allow for the pulsation of the water and prevent the accidental opening of the gas-valve through back pressure. The diaphragm can of course be constructed of any suitable flexible material not subject to deterioration from contact with the water.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a controller of the character described, the combination with a gas-valve, of means for operating the same, said means comprising a casing having a chamber, and an inlet and outlet in the casing-walls communicating with the chamber, an actuating member for the gas-valve movably mounted in and extending across the chamber, and a plug element projecting from and movable with the actuating member, said plug element being movable into and out of the inlet on the movement of the actuating member and closing said inlet when in the same.

2. In a controller of the character described, the combination with a gas-valve, of means for operating the same, said means comprising a casing having a chamber, and an inlet and outlet and in the casing-walls communicating with the chamber, an actuating member for the gas-valve, movably mounted in the chamber and having an opening that permits the passage of fluid from the inlet to the outlet, and a plug element of less size than and movable with the actuating member, said plug element being movable into and out of the inlet in the casing-walls and closing said inlet when in the same.

3. In a controller of the character described, the combination with a gas-valve, of means for operating the same, said means comprising a casing having a chamber, and an inlet and outlet in the casing-walls communicating with the chamber, an actuating member for the gas-valve movably mounted in the chamber, and a plug carried by the actuating member and projecting therefrom, said plug having a passage-way therethrough that also extends through the member and permits the flow of fluid through the actuating member from the inlet to the outlet, said plug being movable into and out of the inlet of the casing upon the movement of the member, and when in the same, closing said inlet and having its passage-way closed.

4. In a controller of the character described, the combination with a gas-valve, of means for operating the same, said means comprising a casing having a chamber and an inlet and outlet through the casing-walls communicating with the chamber, a diaphragm movably mounted within the casing, and a plug carried by the diaphragm and having a passage-way therethrough, said plug projecting from the diaphragm and being movable into and out of the inlet, said plug furthermore when in the inlet, closing the same and having its passage-way closed.

5. In a controller of the character described, the combination with a gas-valve, of means for operating the same, said means comprising a casing having an inlet and an outlet, an actuating member movable in the casing, a stem having a portion associated with the gas-valve, a yoke carried by the stem and having spaced portions loosely bearing against the actuating member, and a spring associated with the stem for maintaining said bearing.

6. In a controller of the character described, the combination with a casing having an inlet and an outlet, of a diaphragm movably located in the casing between the inlet and the outlet, a plug carried by the central portion of the diaphragm and having a passage-way therethrough that permits the flow of liquid from the inlet to the outlet, and an actuating-stem slidably mounted in the casing and having a yoke located over the plug, said yoke having a bearing at separate points on said plug, the intermediate portion of the yoke being spaced from the diaphragm and plug to permit the passage of fluid through the plug.

7. In a controller of the character described, the combination with a valve-casing, of a valve movably located therein and having a stem projecting from the casing, means for operating the valve, said means including a sectional casing, one of the sections thereof having an inlet in its walls, and the other having an outlet in its walls, a diaphragm clamped between the sections of the casing, a plug mounted in the diaphragm and having a passage-way, said plug projecting from one side of the diaphragm and having its projecting portion movable into and out of the inlet of the casing-section, an actuating-stem having a yoke at its inner end that bridges the passage-way in the plug and bears against the diaphragm on opposite sides of the passage-way, said actuating-stem projecting from the casing and being movable into and out of engagement with the valve-stem, a spring for normally holding the gas-valve in closed condition, and a spring for urging the actuating-stem away from the valve-stem.

8. In a controller of the character described, the combination with gas-controlling means, of operating means therefor, comprising a casing, a diaphragm mounted in the casing, an actuating-stem associated with the diaphragm and projecting from the casing on one side thereof, the other side of said casing having a water-port, and a plug carried by the diaphragm projecting from the same on the opposite side to, but in substantial alinement with the stem, said plug being movable into and out of the port, and when in the port closing the same.

9. In a controller of the character described, the combination with gas-controlling means, of operating means therefor, comprising a casing, a diaphragm mounted in the casing, said casing having an inlet-port and an outlet-port, one of which is in substantial alinement with the central portion of the diaphragm, a plug carried by the central portion of the diaphragm and having a passage-way therethrough and through the diaphragm, said plug projecting from one side of the diaphragm and being movable into and out of the port alined therewith, and an actuating-stem projecting from the opposite side of the casing, said stem having its inner end associated with the central portion of the diaphragm and being disposed in substantial alinement with the plug and port with which said plug coacts.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FREDERICK H. OEHLKE.

Witnesses:
A. BALDWIN,
E. M. SHERLOCK.

Correction in Letters Patent No. 844,828.

It is hereby certified that in Letters Patent No. 844,828, granted February 19, 1907, upon the application of Frederick H. Oehlke, of Lorain, Ohio, for an improvement in "Gas-Controlling Means," an error appears in the printed specification requiring correction, as follows: On page 2, line 79, the word "and" should be stricken out; 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 5th day of March, A. D., 1907.

[SEAL.]

F. I. ALLEN,
Commissioner of Patents.

6. In a controller of the character described, the combination with a casing having an inlet and an outlet, of a diaphragm movably located in the casing between the inlet and the outlet, a plug carried by the central portion of the diaphragm and having a passage-way therethrough that permits the flow of liquid from the inlet to the outlet, and an actuating-stem slidably mounted in the casing and having a yoke located over the plug, said yoke having a bearing at separate points on said plug, the intermediate portion of the yoke being spaced from the diaphragm and plug to permit the passage of fluid through the plug.

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