W. S. RALSTON.

VALVE.

APPLICATION FILED JULY 16, 1920.

1,398,151.

Patented Nov. 22, 1921.

Fig. 1.

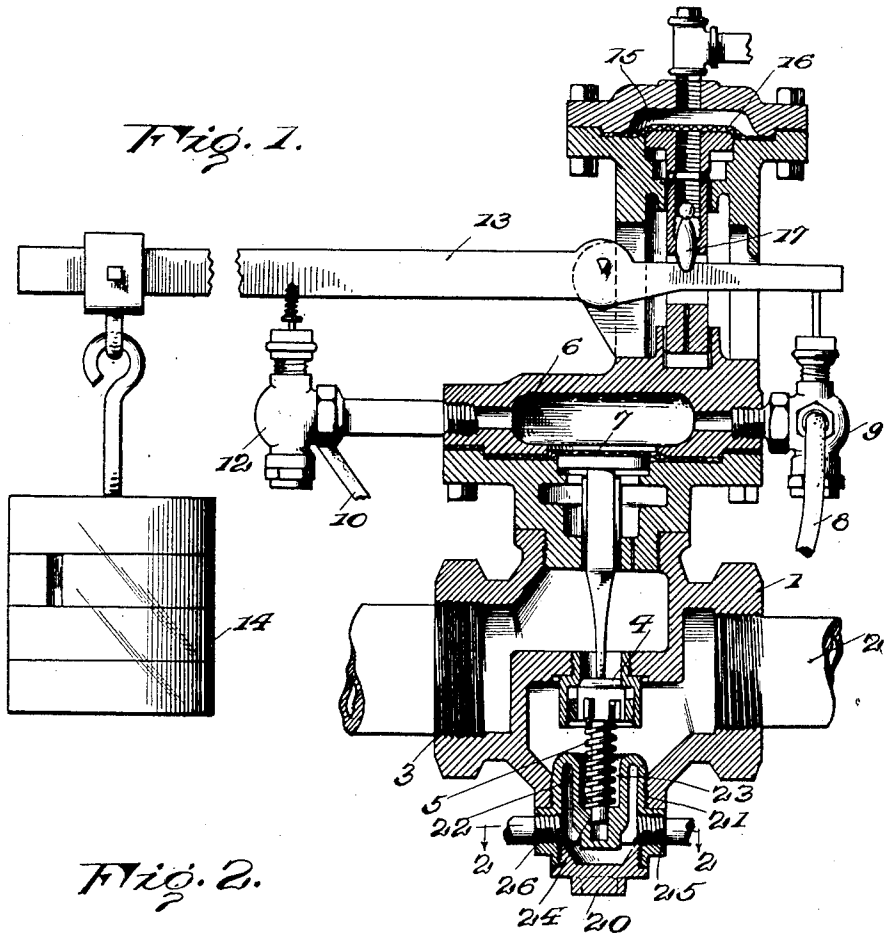


Fig. 2.

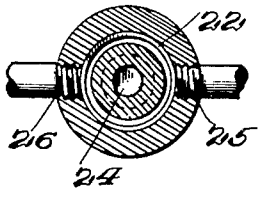
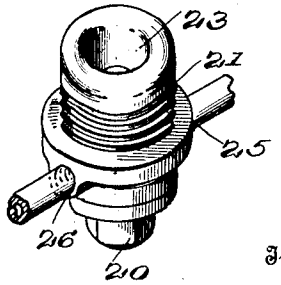


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM S. RALSTON, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO THE CHAPLIN-FULTON MANUFACTURING COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

VALVE.

1,398,151. Specification of Letters Patent. Patented Nov. 22, 1921.

Application filed July 16, 1920. Serial No. 396,731.

To all whom it may concern:

Be it known that I, WILLIAM S. RALSTON, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, 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.

In the use of the Fulton gas relief valve in natural gas gasolene plants for allowing the treated gas to escape after the compression has reached the stage where all the gasolene has been removed from the gas under treatment and permitting inflow of a fresh supply of under-treated gas, difficulty has sometimes been experienced by generation of frost which freezes the valve causing it to stick and lock. It is the object of my invention to provide a simple and highly efficient means for preventing this freezing of the valve, and this without the necessity of adding numerous parts to the valve as a whole. While my improvement is particularly applicable to relief valves of the type described, it is also useful in connection with other forms of valves where there is liability of the valve sticking to its seat because of freezing of the fluid which the valve is designed to control.

In the drawing Figure 1 is a view in side elevation, parts being shown in section. Fig. 2 is a sectional view on line 2—2, Fig. 1. Fig. 3 is a detailed perspective of the plug of the valve.

The relief valve shown herein is, in the main, of the type described in Letters Patent granted on the application of Louis B. Fulton, September 15, 1914, and numbered 1,110,320, and includes a casing 1; inlet 2 and outlet 3. The main valve 4 is normally held to its seat by the pressure at the inlet aided by the action of a spring 5. At 6 I have shown a gas chamber with a diaphragm 7 adapted for unseating the main valve against the inlet pressure and the tension of the spring 5, and 8 indicates a connection between the gas chamber and the inlet side of the main valve, a pilot valve 9 being seated within such connection. Similarly there is a connection 10 between the gas chamber and the outlet side of the main valve with an outlet pilot valve 12 in such connection. Upwardly extending stems of the valves 9 and 12 are the means through which power of a lever 13 is applied to actuate these valves. The means for moving the lever to overcome its weight 14 is a superposed chamber 15 with a diaphragm 16 which effects the downward movement of a slidable member 17, and a tilting of the lever when the pressure for which the valve is adjusted attains a maximum.

The plug 20 is formed with an upwardly extending portion 21 which is threaded for screw fitting with the casing 1. This upwardly extending portion is then turned back upon itself and extends downwardly in spaced parallelism with its upwardly extending portion to form a chamber 22 for the circulation of steam, the cup 23 formed by this construction providing a seat for the spring 5 of the valve. Near the lower extremity of the cup a guide 24 is provided for the spindle of the valve. Ports 25, 26 are designed for connection with a steam line. Steam circulating within the chamber 22 will radiate sufficient heat adjacent the valve to prevent sticking and locking of the valve due to freezing.

It will be appreciated that I have produced a simple and inexpensive means for preventing freezing of the valve and that the bottom plug is so formed as to function for the purpose of radiating heat and as a seat for the spring of the main valve.

I claim as my invention:

1. In combination with a valve and its casing, a plug for said casing having an inclosed chamber for a heat radiating fluid in juxtaposition to said valve and separated therefrom by the walls of said chamber, said plug having inlet and outlet ports communicating with said chamber.

2. In combination with a valve and its casing, and a spring for controlling said valve, a plug for said casing forming a seat for said spring, the walls of said plug being spaced to form a chamber for a heat radiating fluid such chamber encircling said spring seat, said plug having inlet and outlet ports communicating with said chamber.

3. In combination with a valve and its casing, and a spring for controlling said valve, a bottom plug for said casing com-

prising an upwardly extending portion adapted for screw threaded engagement with said casing, a downwardly extending portion in spaced relation to said upwardly extending portion, the space between said portions forming a chamber for a heat radiating fluid, and a seat for said spring encircled by said upwardly and downwardly extending portions of the plug, said plug having inlet and outlet ports communicating with said chamber.

In testimony whereof I have signed this specification.

WILLIAM S. RALSTON.