

(No Model.)

W. J. MORGAN.
PRESSURE REGULATOR.

No. 539,532.

Patented May 21, 1895.

Fig. 1.

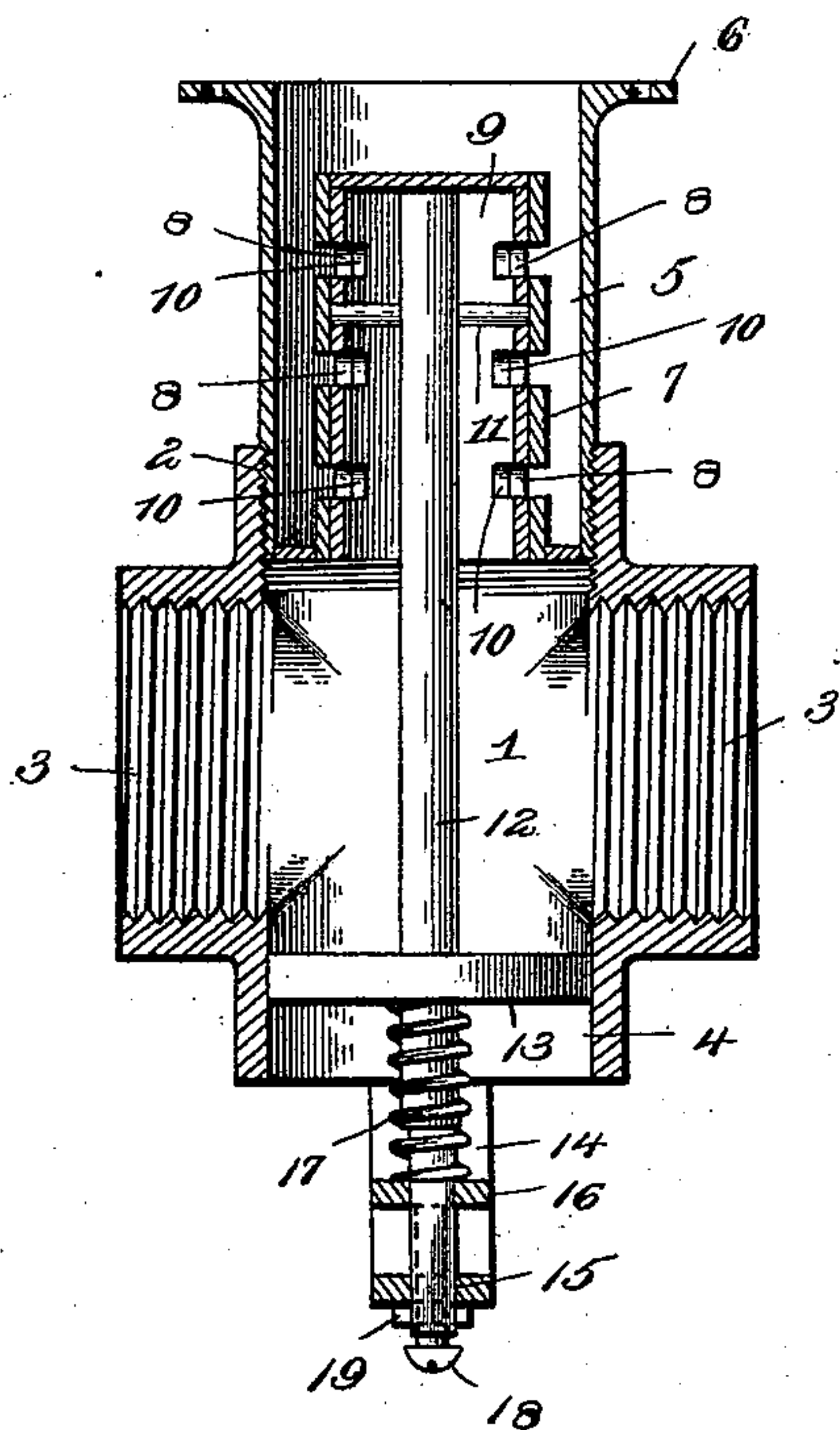
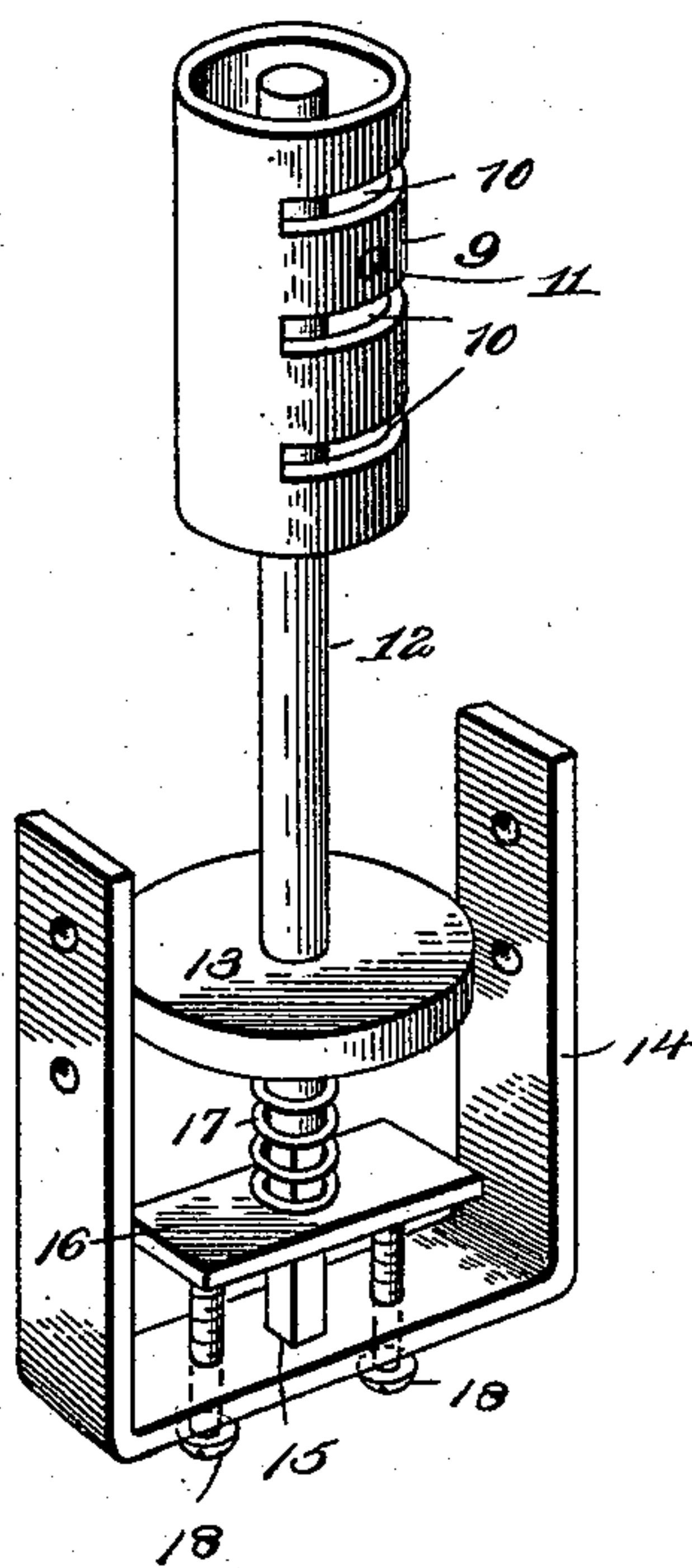


Fig. 2.



Inventor,

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Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM J. MORGAN, OF KANSAS CITY, MISSOURI.

PRESSURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 539,532, dated May 21, 1895.

Application filed October 13, 1894. Serial No. 525,834. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. MORGAN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Steam-Pressure Regulator, of which the following is a specification.

My invention relates to a steam pressure regulator adapted for use in connection with steam radiators and capable of use also as a back pressure valve, and the objects in view are to provide a simple, direct and efficient device whereby when the pressure exceeds a predetermined degree the inlet is reduced in size and may be entirely closed; and, furthermore, to provide means whereby the parts may be adjusted to cause an operation of the cut-off at any desired pressure.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a central section of a regulator embodying my invention. Fig. 2 is a view of the valve, piston, and connected parts detached from the casing.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a casing having an inlet opening 2, lateral supply openings 3 and a guide 4, and 5 represents a cylindrical inlet tube threaded into the inlet opening of the casing and provided with a perforated flange 6 for attachment to a supply pipe. Not shown. Within this inlet pipe and of smaller diameter than the bore thereof, whereby its surface is out of contact with the walls of the pipe, is a tubular seat 7 provided with lateral ports 8, and slidably fitted in this seat is a tubular slide valve 9 having ports 10 which are adapted to register with the ports of the seat. The upper or outer end of the seat is closed, and in the normal position of the valve its ports register with those of the seat, whereby steam or other fluid is allowed to enter the casing therethrough. Attached to the valve by means of a transverse pin 11 is a stem 12 which carries a piston 13 which operates in the guide 4, and is exposed to the pressure of steam or other fluid within the casing.

Attached exteriorly to the casing and span-

ning the outer end of the guide 4 is a bracket or yoke 14, provided with a central angular opening 15, in which fits slidably the angular outer extremity of the valve stem which projects beyond the piston and outside of the guide in which said piston operates. Slidably fitted upon said angular portion of the stem is a tension plate 16, and between said tension plate and the piston is arranged a coiled resistance-spring 17, said plate being adjustable and being held in the desired position to cause the desired tension of the spring by means of the set-screws 18, provided with lock-nuts 19.

The operation of the device is as follows: Steam is admitted through the inlet pipe, and after passing through the registering ports of the tubular seat a tubular slide valve is admitted to the casing, and from thence passes to the radiator or radiators. When the pressure of steam exceeds the resistance of the resistance-spring the piston is moved outward and the motion thereof is communicated to the tubular valve to partially or wholly close the ports by moving those of the valve out of registration with those of the seat. When the pressure in the casing falls below the strength of the resistance-spring the parts are returned to their normal positions and steam is admitted as before.

I do not deem it necessary to illustrate particularly the arrangement of parts when the device is used as a back pressure valve, as it will suffice to say that the portion of the device denominated as an inlet port communicates directly with the atmosphere, and the parts are arranged in such relative positions that the ports of the valve are normally out of registration with those of the seat, whereby an excessive back pressure in the casing is communicated to the piston to open the exhaust by causing the registration of the ports of the valve with those of the seat to permit the escape of the steam or other fluid.

It will be understood that various changes in the form, proportion and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. The combination with a four-way casing,

of an inlet pipe 5 secured in one way of the casing, a smooth-bored tubular seat 7 arranged concentrically in the inlet pipe with its walls out of contact therewith and provided with lateral openings communicating with the inlet pipe, said seat being closed at its outer and open at its inner end to communicate with the interior of the casing, a tubular valve fitted to slide in said seat and provided with lateral openings adapted to register with the openings in the seat, said valve being open at both ends to prevent unbalanced longitudinal pressure in either direction, a piston rod arranged axially in and secured to the valve by means of a transverse pin and also extending through and beyond the opposite arm of the casing, a piston 13 carried by said rod and fitted to slide in the arm of the casing opposite to said inlet pipe and exposed to the pressure of the fluid contained in the casing, and a tension spring connected to the piston rod to maintain the valve normally in its open position, substantially as specified.

2. As an improved article of manufacture, a pressure governor for steam supply pipes, the same comprising a casing having opposite cylindrical arms, an inlet pipe communicating with one of said arms, a seat arranged concentrically in the inlet pipe with its walls out of contact therewith and provided with lateral

openings and a closed outer end, a tubular valve open at both ends and mounted in said seat, the valve being provided with lateral openings to register with the openings in the seat, a piston rod connected at one end to the valve and extending at the other end to and through the opposite arm of the casing, a piston secured to said rod and fitted to slide in the arm of the casing through which the rod extends, a yoke 14 secured at its extremities to the sides of the arm of the casing and provided with a central angular guide opening to receive an angular portion at the extremity of the piston rod, a tension plate mounted to slide upon said angular portion of the piston rod, a tension spring coiled upon the piston rod and bearing at its extremities, respectively, against the piston and said tension plate, and screws threaded in perforations in the yoke and impinging at their inner ends against said tension plate, whereby the tension of the spring may be regulated, substantially as specified.

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

WILLIAM J. MORGAN.

Witnesses:

A. W. FARRAR,
R. U. GOLDSLEY.