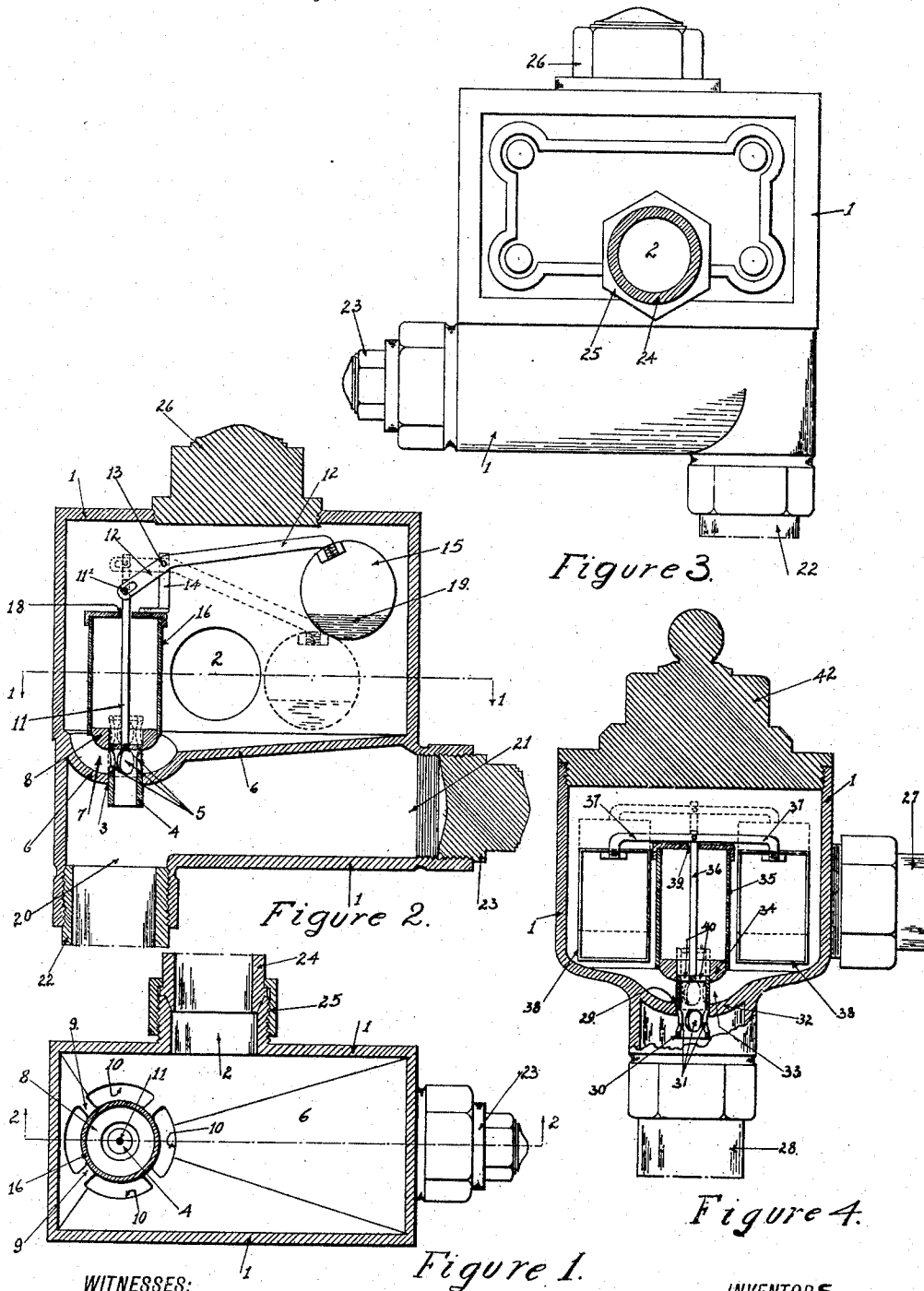


E. A. PLOEGER & J. PENROSE.
 AUTOMATIC RELIEF VALVE.
 APPLICATION FILED MAY 21, 1908

947,187.

Patented Jan. 18, 1910.



WITNESSES:
 Camille M. Leella
 Charles I. Cobb

INVENTORS:
 E. A. Ploeger,
 John Penrose
 BY
 Hill & Hill
 ATTORNEYS.

UNITED STATES PATENT OFFICE.

ERNST A. PLOEGER AND JOHN PENROSE, OF CHICAGO, ILLINOIS.

AUTOMATIC RELIEF-VALVE.

947,187.

Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed May 21, 1908. Serial No. 434,106.

To all whom it may concern:

Be it known that we, ERNST A. PLOEGER and JOHN PENROSE, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in an Automatic Relief-Valve, of which the following is a description.

Our invention relates to that class of devices or valves commonly known as traps or water relief valves, employed upon various parts of a steam or other system to discharge the water of condensation or other fluid from the system without unnecessary waste of steam.

Our invention has for its objects the construction of a simple, efficient and reliable device of the kind described and one which may not be liable to become inoperative owing to the accumulations of dirt or other foreign material within the valve casing.

To this end our invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the drawings wherein like reference characters indicate like or corresponding parts, Figure 1 is a cross sectional view of our device taken substantially on line 1—1 of Fig. 2, Fig. 2 is a vertical sectional view of the same taken substantially on line 2—2 of Fig. 1, Fig. 3 is a view in elevation of the inlet side of our device, and Fig. 4 is a vertical sectional view of a slightly modified form of device.

Referring to the drawings, as shown in Figs. 1, 2 and 3, 1 is the casing provided with an inlet or intake 2 and an outlet 3, the discharge of fluid through the outlet being controlled by a movable valve member 4. The floor or bottom 6 of the casing proper is preferably inclined and formed with a pocket 7 therein at the outlet.

As is most clearly shown in Figs. 1 and 2 the bottom of the casing is preferably extended above the pocket as at 8, the portion 8 being supported by the extended portions 9 leaving a plurality of substantially large openings 10 for the fluid to pass through. The movable valve member 4 which is preferably guided by the bottom 6 and part 8, is preferably made tubular and provided with a plurality of comparatively large openings 5 so that when the valve is in the position shown in the full lines in Fig. 2,

the fluid will pass through the openings 5 and thence through the valve member and outlet 3 of the casing. Any suitable means may be employed to operate the valve as required. As shown the valve member 4 is provided with the rod 11 which is suitably connected to a float 15 or its equivalent through a suitable connecting arm 12 pivotally supported as at 13, the arm 12 being pivotally secured to the rod 11 as 11^a. The valve member being thus connected to the float is controlled by the fluid in the casing.

On the part 8 of the bottom of the casing, is preferably arranged a shell 16 forming what may be termed a condensation chamber. The shell is provided with an inlet 18 preferably at the upper end thereof and is open to the outlet 3 when the valve member is in the position indicated in the dotted lines in Fig. 2. As shown the valve rod 11 preferably passes through the chamber and through the opening 18, the opening being of a size to give a somewhat loose or easy sliding fit, or of such size as may be found desirable. By having the rod 11 pass through the opening or inlet 18 the same is always kept open and prevented from being clogged up.

The arm 12 of the float may be supported on a bracket 14 on the shell 16 or in any other preferred way. As shown in the drawings a quantity of shot 19 or its equivalent is preferably placed within the float 15 or secured thereto so that the weight of the float may be increased or decreased as desired and the operation of the device be thereby controlled to that extent. An opening normally closed by a plug 26 or its equivalent is preferably arranged at any desired point in the casing to permit access to the interior of the same. In the construction shown in Fig. 2 the casing is arranged for a vertical discharge of fluid through the auxiliary outlet 20 or for a horizontal discharge of fluid through the opening or auxiliary outlet 21. The auxiliary outlet not in use is preferably temporarily closed by means of a removable plug 23.

Normally the valve is in the position indicated in the dotted lines in Fig. 2 there being a small amount of fluid in the depression so that the valve is water sealed. A percentage of the steam that enters the casing will pass or leak through the opening or inlet 18 between the shell and the rod 11 and be condensed in the condensing chamber

thence passing through the openings 5 and through the outlet 3 of the casing. As water or fluid enters the casing 1 from the inlet 2 it will raise the float 15 so that the valve member 4 will move substantially into the position shown in the full lines in Fig. 2, permitting the fluid to escape through the openings 5 and outlet 3 to the drain pipe 22. As the fluid leaves the casing the float 15 returns substantially to the position indicated by the dotted lines thereby closing the valve. As before stated it is desirable to have the valve closed before all the fluid leaves the casing so that there is a fluid seal formed around the valve at the pocket 7.

In the construction shown in Fig. 4, the casing is made in a slightly different form. Referring to this figure 27 is the inlet pipe and 28 the outlet pipe. The bottom of the casing is provided with a part 34 similar to part 8 in the other device, and formed with a depression 32 to give a fluid pocket 33. The outlet 29 at the bottom of the casing is provided with a valve member 30 substantially similar to the valve member 4 in the other form. The shell 35 is arranged on the part 34 forming the condensing chamber through which passes the valve operating rod 36 which is connected by means of arms 37 or their equivalents to one or more floats 38. There may be a plurality of floats 38 or as is obvious they may be combined in one annular float member (not shown). As shown in this figure the valve member 30 is in a position closing the outlet 29, the position of the valve members and floats when the outlet is open being indicated by the dotted lines. As shown the casing is preferably provided with a removable top 42 or its equivalent. As in the other form there is preferably a water seal around the valve member when the same is closed. Fluid entering the casing through the inlet pipe 27 raises the float 38 and escapes through the openings 31 and outlet 29. The steam or the like which enters the condensing chamber through the opening 39 is condensed within the chamber and passes through the openings 40 and through the valve member into the drain pipe.

In either construction shown when the valve is closed it is sealed by a fluid seal and owing to the pocket and fluid contained therein any sediment or accumulation that may enter the casing is kept soft and thereby readily removed by the fluid when the valve is opened. Also by the construction shown we are enabled to have a larger outlet from the casing so that the water is readily discharged and sediment easily carried through the outlet preventing any clogging up of the device. The valve operating rod passing through the condensation chamber inlet also keeps that open.

It is obvious that various immaterial modi-

fications may be made in the form, construction or combination of parts shown and described without departing from the spirit of our invention, hence we do not wish to be understood as limiting ourselves to the exact construction or combination of parts shown and described.

What we claim and desire to secure by Letters Patent is:

1. In a device of the kind described and in combination, a casing provided with an inlet and an outlet and with a fluid pocket at said outlet, a chamber within said casing provided with a normally open leakage port, a movable valve member arranged to control said outlet, and means for operating said valve member including a float operatively connected therewith and means for preventing the accidental clogging of said leakage port.

2. In a device of the kind described and in combination a casing forming a chamber and provided with an inlet and an outlet with a fluid pocket at said outlet, said chamber being provided with a substantially normally open leakage port, a movable valve member arranged to control said outlet, a float controlled by the fluid in said casing, and connecting means between said float and movable members, said connecting means being arranged to prevent the accidental stopping up of said leakage port.

3. In a device of the kind described and in combination, a casing provided with an inlet and an outlet and with a casing arranged therein forming a condensing chamber, said condensing chamber being provided with an inlet and leakage port, a movable valve member arranged to control said casing outlet and means for controlling said valve member.

4. In a device of the kind described and in combination, a casing provided with an inlet, an outlet, and a shell arranged therein forming a condensation chamber, said condensation chamber being provided with an inlet port which is normally open, said casing being formed with a fluid pocket at said outlet a movable valve member arranged to control said outlet, a float operatively connected with said valve member and means for preventing the accidental clogging of said condensation chamber inlet.

5. In a device of the kind described and in combination, a casing provided with an inlet and an outlet, a shell arranged within said casing forming a condensation chamber, said chamber being provided with an inlet and a normally open outlet, means for preventing the accidental closing of said inlet, a movable valve member arranged to control said casing outlet, and means controlled by the fluid in said casing for operating said valve member.

6. In a device of the kind described and

in combination, a casing provided with an inlet and an outlet with a fluid pocket arranged at said outlet, said casing being provided with an inner shell arranged therein
 5 forming a condensation chamber, said chamber being provided with an inlet and outlet, a movable valve member arranged to control said casing and condensation chamber outlets, and means controlled by the fluid in said
 10 casing for operating said valve member.

7. In a device of the kind described and in combination, a casing provided with an inlet and an outlet with a fluid pocket arranged at said outlet, said casing being provided with a
 15 shell arranged therein forming a condensation chamber, said chamber being provided with an inlet and an outlet, a movable tubular valve member provided with a plurality of openings therein arranged to control the
 20 fluid discharged from said casing outlet and said condensing chamber outlet, and means controlled by the fluid in said casing for operating said valve members.

8. In a device of the kind described, a casing provided with an inlet and outlet and with a condensation chamber, said condensation chamber being provided with an inlet and normally open outlet, said condensation chamber outlet opening into the casing outlet discharging pipe, in combination with a
 30 movable tubular valve member arranged to control said casing outlet, and means controlled by the fluid in said casing for operating said valve.

35 9. In a device of the kind described, a casing provided with an inlet and outlet and a

normally open leakage port, said leakage port being provided with means for preventing the accidental closing thereof in combination with a movable valve member arranged to control said outlet and controlling
 40 means for said valve member.

10. In a device of the kind described, a casing provided with a sloping bottom terminating in a fluid pocket, and with an inlet and outlet, in combination with a movable tubular valve member for said outlet, an auxiliary casing arranged within said casing provided with a normally open inlet therefrom and with a normally open outlet
 45 to the interior of said valve member, and means for controlling said valve member.

11. In a device of the kind described, a casing provided with a sloping bottom terminating in a fluid pocket, and with an inlet and outlet, in combination with a movable tubular valve member for said outlet, an auxiliary shell arranged in said casing and provided with an inlet therefrom and with a normally open outlet to the interior of said
 50 tubular valve, and controlling means for said valve member including a connecting rod extending through said shell inlet.

In testimony whereof, we have hereunto signed our names in the presence of two
 55 subscribing witnesses.

ERNST A. PLOEGER.
 JOHN PENROSE.

Witnesses:

ROY W. HILL,
 CHARLES I. COBB.