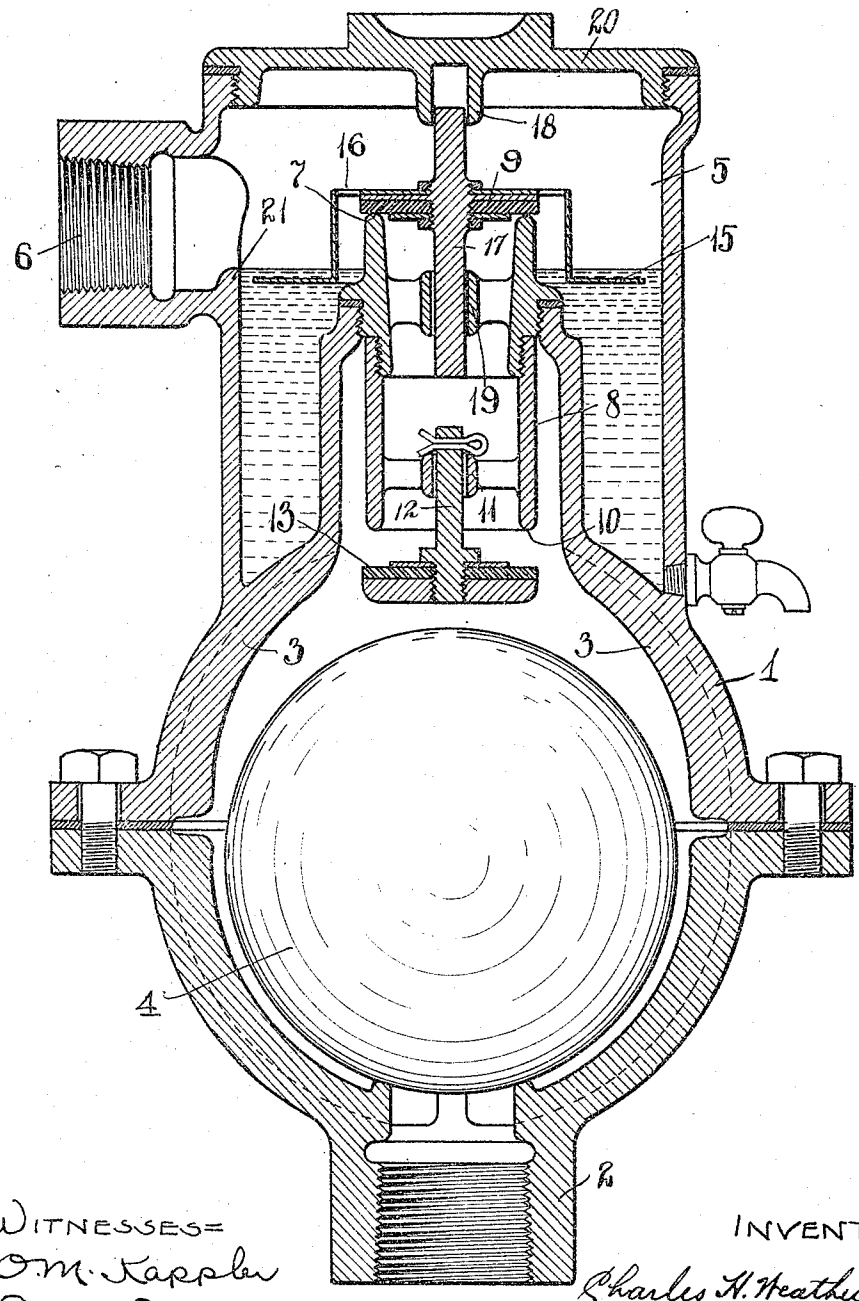
C. H. WEATHERHEAD.

VALVE.

APPLICATION FILED MAR. 10, 1916.

1,294,002. Patented Feb. 11, 1919.



WITNESSES=
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UNITED STATES PATENT OFFICE.

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VALVE.

1,294,002. Specification of Letters Patent. Patented Feb. 11, 1919.

Application filed March 10, 1916. Serial No. 83,291.

To all whom it may concern:

Be it known that I, CHARLES H. WEATHERHEAD, a citizen of the United States, and a resident of Cleveland Heights, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Valves, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present improvements relate to an air-vent valve for a steam system, the valve being placed at some suitable point in the return line to the boiler for the purpose of venting the air which enters the line, and is adapted to prevent the escape of condensation water. An ordinary gravity valve has been commonly used for this purpose but such a valve is often very noisy by reason of its relatively quick opening and closing. The air escapes in puffs and the valve is only opened momentarily and as there is nothing to cushion its descent it is noisy. In addition to the noise from this source, the sudden puffs of air make a considerable noise which is very annoying and the present invention is intended to eliminate these objections. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

The single figure there appearing is a central vertical section through the device.

My device comprises a casing 1, adapted to be connected at its lower end 2, to the steam line, and being provided with a plurality of vertical ribs 3. Upon these ribs 3, there rests a ball 4, of suitable material, preferably a composition which will float in water, this ball normally resting, as indicated in the figure, upon the lower ends of the ribs 3, and thus permitting entrance of air or steam between the ribs, the steam then passing up around the ball into an extension 5 of such casing. The extension 5 of the casing discharges laterally through the opening 6 to the atmosphere, and upon a suitable seat 7, to which is adjustably attached a collar 8, formed in the extension 5, there is mounted a valve 9 provided with a bottom face of composition material which contacts the seat 7, and closes the passage through the casing.

Attached to the lower end of the seat 7 is a second valve seat 10, extending downward, and having therein a guide 11, reciprocably holding a valve stem 12, provided with a valve 13, adapted to close the passage through such seat. The valve 21 is normally open, being in the position shown in the figure, but when water enters the casing 1, it will float the ball 4, which will contact the valve 13, and cause it to seat, thus closing the casing and preventing the discharge of the condensation water in the steam line.

The valve 9 is also maintained normally closed by reason of its own weight, but is made light enough to be lifted by a slight increase in the pressure in the casing, thus permitting the air to escape therefrom through the opening 6. The valve 9 is provided with a stem 17 which is held in guides 18 and 19 as shown, thus insuring movement of the valve in alinement with the conduit through the casing 1. It will be seen that the guide 18 is formed in the cover 20 while the guide 19 is a part of the valve seat 7 which can be readily removed if desired as it has a threaded engagement in the extension 5 of the casing.

In order to prevent fluttering of the valve 9, with its attendant noise, I have provided means for stabilizing the action of this valve, which means prevent too rapid closing or opening action. In the casing about the seat 7, I place a quantity of water into which there extends a disk 15, attached to the valve 9, this disk being very slightly under the surface of the water, as shown in the figure. The disk 9 is provided in its upper portion with apertures 16, through which the air can escape, and thus the only resistance which is offered to the opening of the valve 9, by this disk, is the resistance of the water to movement of the disk through it. This causes a slow movement of the valve in either direction, and prevents the popping which is usually a source of considerable annoyance in vent valves for steam lines. The slight amount of steam which escapes

through the casing usually condenses against the vent thereof, and in this case condenses against the disk 16, and thus drains down into the water and maintains the same at practically a constant level, which is also maintained by means of the height of the flange 18 on the side of the casing adjacent to the opening 6.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a vent valve for a steam line, the combination of a discharge conduit, a liquid receiving chamber formed adjacent thereto, a light disk constituting a valve and mounted to normally close said discharge conduit, and a light plate attached to said disk valve and positioned in the liquid in said chamber, said plate being adapted to exert a stabilizing action on the movement of said valve.

2. In a vent valve for a steam line, the combination of a hollow spherical chamber having an outlet opening in its bottom and a discharge opening at its top, a valve adapted, when raised, to close such discharge opening, a ball float mounted in such chamber and adapted to close said valve, ribs formed on the inner wall of such chamber and extending vertically from such inlet opening, said ribs being adapted to guide said ball and to form passages between each other and a second gravity actuated, stabilized valve mounted at the top of said discharge opening.

Signed by me, this 9th day of March, 1916.

CHARLES H. WEATHERHEAD.

Attested by—
THOMAS H. FAY,
MARIE RICKTENWALT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."