

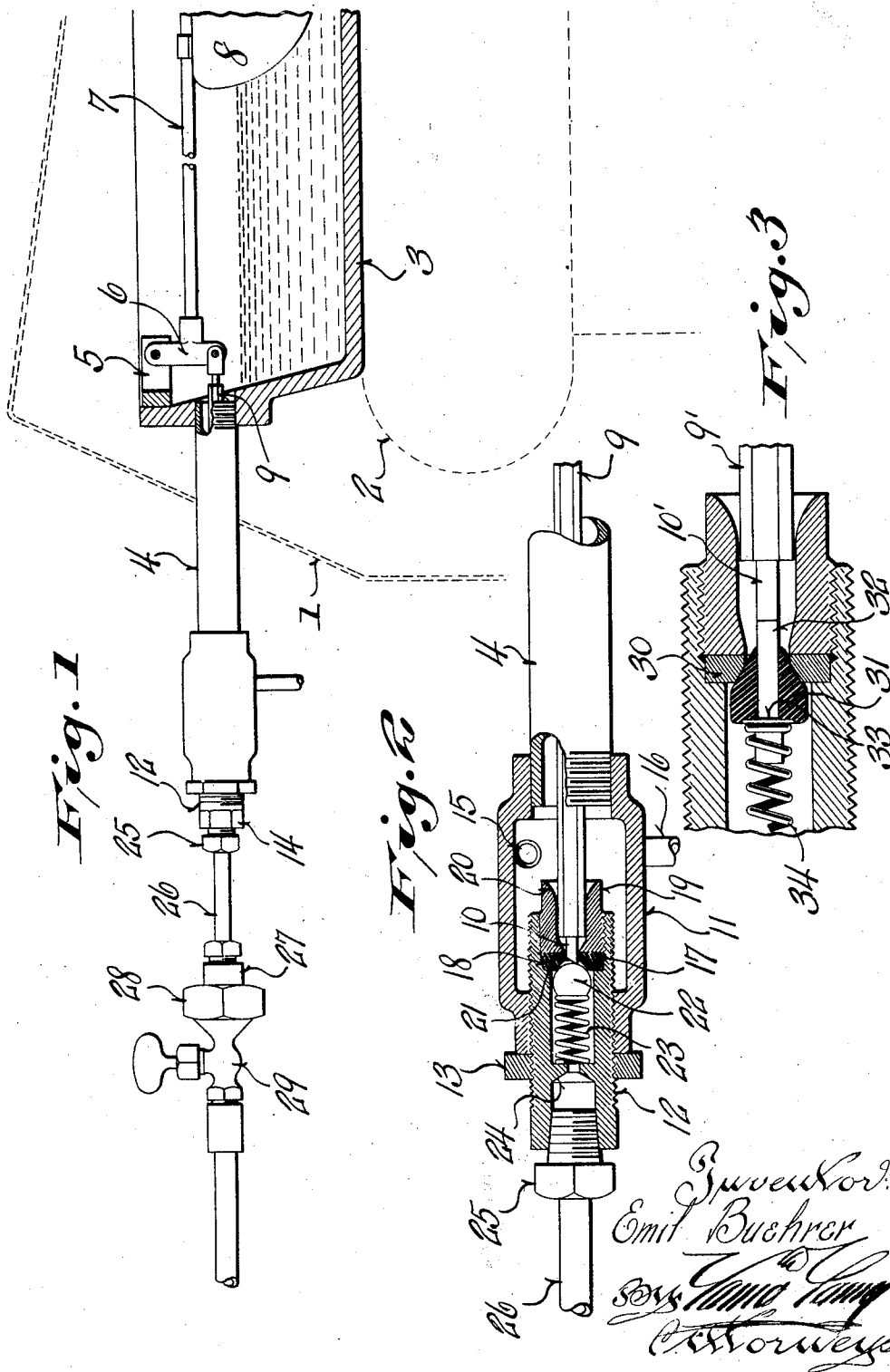
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CONTROL VALVE FOR HUMIDIFYING UNITS

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CONTROL VALVE FOR HUMIDIFYING UNITS

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This invention relates to a control valve for humidifying units.

Objects of this invention are to provide a control valve construction for humidifying units such as that disclosed in my U. S. Patent #1,648,537 of November 8, 1927, for Humidifier for heating unit.

Further objects are to provide a control valve in which the heat adjacent the water pan with which the valve is associated does not deteriorate the parts of the valve, to which the valve parts are readily accessible outside of the furnace or device with which the unit is associated, and in which an overflow is provided for the valve so that the liquid level cannot rise beyond a predetermined point, so that there is no chance of overflow from the water pan.

Further objects are to provide a valve construction in which a valve is carried by an adjustable sleeve on one side of a valve seat, and in which a control rod extends through an elongated pipe and is located on the other side of the valve seat and is adapted to unseat the valve, such valve being wholly distinct and independent of the control rod and thus having the ability to seat itself independently of any motion of the control rod so that the most accurate seating under all conditions is obtained.

Further objects are to provide a construction in which the sleeve, or the member which contains the valve, may be bodily adjustable with reference to casing or with reference to the control rod, so that the point at which the valve opens or cuts off may be adjusted with the utmost ease, to thereby adjust the water level in the water pan.

Further objects are to provide a construction of valve for a water pan or other humidifying unit so associated with the water pan and arranged that it is positioned above the water level, and is free from the harmful effects of heat and accumulation of sediment.

Embodiments of this invention are shown in the accompanying drawings in which:—

Figure 1 is a side elevation showing one form of the device.

Figure 2 is a sectional view of the valve.

Figure 3 is a view corresponding to Figure 2 showing a modified form of construction.

Referring to the drawings, particularly Figures 1 and 2, it will be seen that a furnace shell is indicated in dotted lines by reference character 1, the furnace by reference character 2 and water pan by reference character 3. This water pan rests directly upon the furnace head as described in my above noted patent and is provided with a threaded aperture below the upper edge of the pan and into which a discharge pipe 4 is screwed. This pipe projects outwardly through the shell of the furnace and carries the control valve. The water pan is provided with a bracket 5 upon which is hingedly carried a short lever 6, rigidly attached to a rod 7, which carries the float 8. The lever 6 has its lower end pivotally attached to one end of the control rod 9, which projects through the pipe 4. The control rod 9 is preferably of hexagonal shape as indicated in the drawing and its outer end is provided with a reduced extension 10, which is preferably equipped with a beveled outer face as shown particularly in Figure 2.

The outer end of the pipe 4 has screwed thereon a casing 11 which is provided with a threaded projecting end through which a screw threaded sleeve 12 passes. The screw threaded sleeve is provided with a lock nut 13 and the outer end of the sleeve 12 is provided with a hexagon face 14 adapted to receive a wrench. The casing 11 is provided with an overflow opening 15 located above its central axis into which an overflow pipe 16 opens.

The sleeve 12 is provided with a shoulder 17 against which a rubber gasket 18 is held by means of a fitting or bushing 19. This bushing 19 is provided with a cylindrical aperture which slidably receives the hexagon portion of the outer end of the rod 9 as shown in Figure 2, and thus provides spaces between the flat face of the rod and the cylindrical wall of the aperture through which water may pass when the valve is open. The outer end of the cylindrical aperture in the bushing 19 is flared as indicated at 20, to facilitate assembling of the rod. The inner end of

this bushing is constructed so as to provide a bearing face 21 which bears against the outer side of the rubber gasket or valve seat 18. This rubber gasket is provided with a conical opening on the outer side to provide a valve seat for the ball valve 22. This valve is a metal ball, preferably formed of Monel metal to prevent corrosion and to keep the surface free from scale or pitting. The ball is urged towards closing position by means of a spring 23, the spring bearing against an apertured web 24 formed in the sleeve 12.

The sleeve 12 receives at its outer end a threaded plug 25 by means of which a small supply pipe 26 is attached to the sleeve. The other end of the pipe 26 is secured to one member 27 of a union 28. Preferably this union is connected to a valve 29. The valve 29 is ordinarily left open, but during the summer months it may be closed.

The apparatus operates as follows:—

Assuming that the valve is closed it will be seen that the valve is held closed, not only by the spring, but also by the water pressure behind the valve. When the water level within the pan 3 becomes lowered to a predetermined point, the extension 10 of the control rod unseats the valve. This extension as will be noted from Figure 2 projects loosely through the valve seat and contacts with the ball or valve although it is separate and distinct from such valve. Water is, therefore, allowed to flow past the valve, through the space between the hexagon face of the control rod 9 and the bushing 19 and through the pipe 4 into the water pan thus raising the level of the water. When the control rod 9 is withdrawn by the mechanism, the valve seats itself independently of the rod and may, therefore, adjust itself with the utmost freedom and form a perfect seat.

This valve does not chatter, nor does it leak, as has been found from actual practice. Further, the rubber gasket is so far removed from the furnace that it is not affected or injured by the heat from the furnace. The beveled end of the extension 10 of the control rod aids in preventing chattering. In addition to this it is to be noted that an exact adjustment of the water level may be obtained by merely screwing the sleeve 12 into or out of the casing thereafter locking it in place by the lock nut 13. The construction is such that this adjustment is readily permitted. When it is desired to make the adjustment all that is necessary is to loosen the lock nut 13 and the union 28 and thereafter rotate the sleeve the desired extent, subsequently locking the washer in place. This adjustment of the sleeve axially of the casing enables aligning of the valve seat and valve as a unit with reference to the control rod and with reference to the other portions of the mechanism, thus adjusting the point at which the valve will open, consequently

adjusting the water level maintained in water pan.

The valve may take other forms. For example, as shown in Figure 3, a Monel metal gasket 30 may be substituted for the rubber gasket 18 and a rubber cone shaped valve 31 may be vulcanized, upon a metal pin 32 and a metal washer 33. The pin 32 is free from contact with the extension 10' of the control rod 9'. These parts correspond to those previously described.

It will be seen that a novel form of valve for humidifying units has been provided by this invention, which is extremely simple, which is highly practical, which affords access to its parts without disturbing the humidifier unit and which is easily adjusted to the exact requirements.

Although the invention has been described in considerable detail, such description is intended as illustrative rather than limiting as the invention may be variously embodied and as the scope of such invention is to be determined as claimed.

I claim:

1. A float controlled valve comprising a discharge pipe, a float controlled rod positioned within said pipe, a bushing arranged adjacent one end of said pipe and having a cylindrical guiding aperture for said rod, a valve seat at the inner end of said aperture, a valve cooperating with said valve seat, a sleeve mounted in the end of said discharge pipe and carrying said bushing, said sleeve having a chamber for liquid under pressure, said pressure chamber housing said valve, and an extension carried by said rod, separate and distinct from said valve and adapted to unseat said valve when said rod is moved inwardly.

2. A float controlled valve comprising a discharge pipe, a float controlled rod positioned within said pipe, a bushing arranged adjacent one end of said pipe and having a cylindrical guiding aperture for said rod, a valve seat at the inner end of said aperture, a valve cooperating with said valve seat, a sleeve mounted in the end of said discharge pipe and carrying said bushing, said sleeve having a chamber for liquid under pressure, said pressure chamber housing said valve, a spring located within said chamber and bearing against said valve, and an extension carried by said rod, separate and distinct from said valve and adapted to unseat said valve when said rod is moved inwardly.

3. A float controlled valve comprising a discharge pipe, a float controlled rod positioned within said pipe, a bushing arranged adjacent one end of said pipe and having a cylindrical guiding aperture for said rod, a valve seat at the inner end of said aperture, a valve cooperating with said valve seat, a sleeve mounted in the end of said discharge pipe and carrying said bushing, said sleeve

having a chamber for liquid under pressure,
said pressure chamber housing said valve, and
an extension carried by said rod, separate
and distinct from said valve and adapted
5 to unseat said valve when said rod is moved
inwardly, said sleeve being axially adjustable
with reference to said valve.

In testimony that I claim the foregoing
I have hereunto set my hand at Green Bay,
10 in the county of Brown and State of Wis-
consin.

EMIL BUEHRER.

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