W. JOHNSON.

DEVICE FOR MOISTENING HOT AIR FROM FURNACES.

APPLICATION FILED APR. 19, 1917.

1,265,207.

Patented May 7, 1918.

2 SHEETS—SHEET 1.

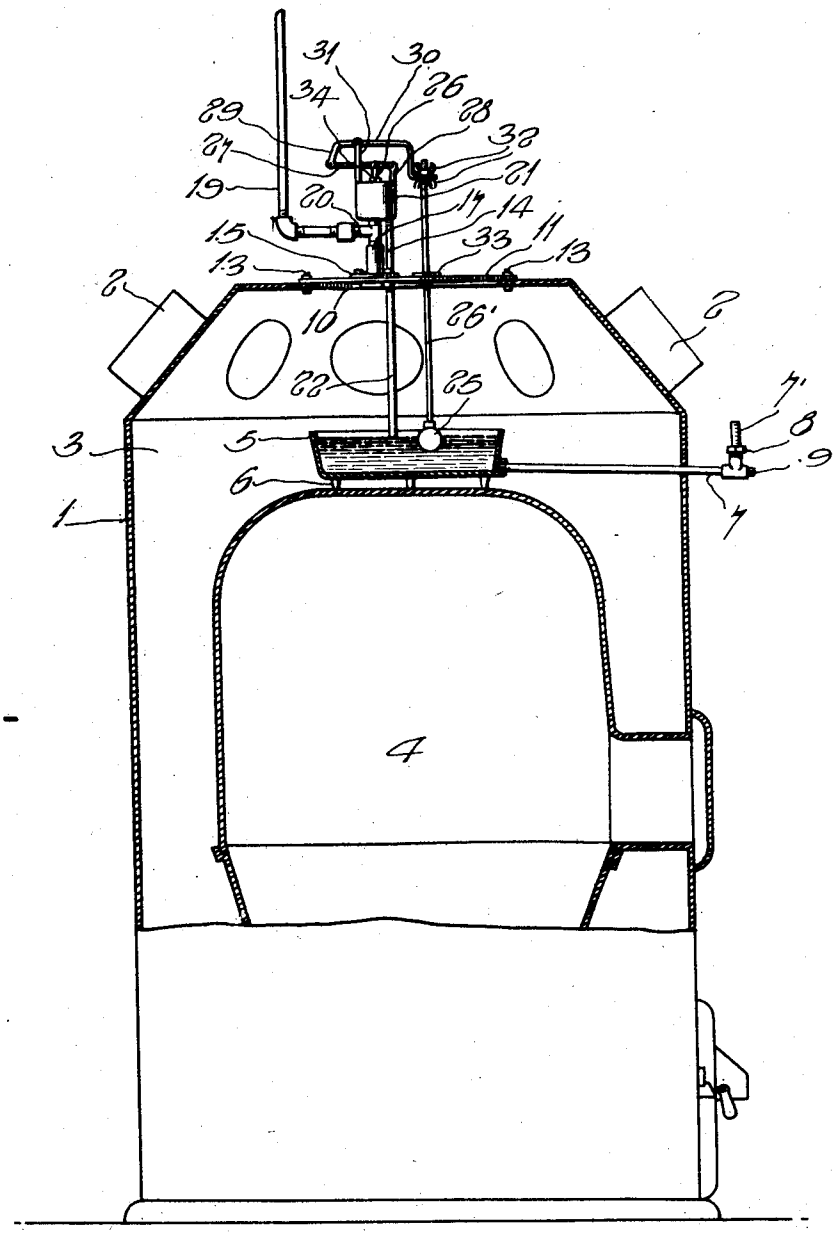


FIG. 1.

Inventor

W. Johnson

Witness

H. Woodard

By H. B. Williamson & Co

Attorneys

W. JOHNSON.

DEVICE FOR MOISTENING HOT AIR FROM FURNACES.

APPLICATION FILED APR. 19, 1917.

1,265,207.

Patented May 7, 1918.

2 SHEETS—SHEET 2.

FIG. 2.

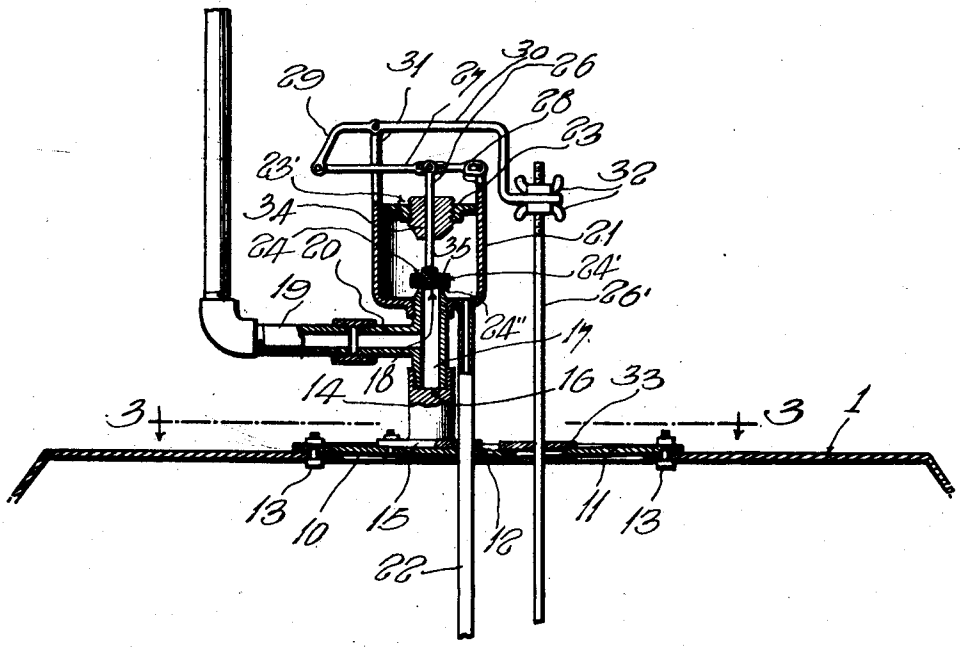
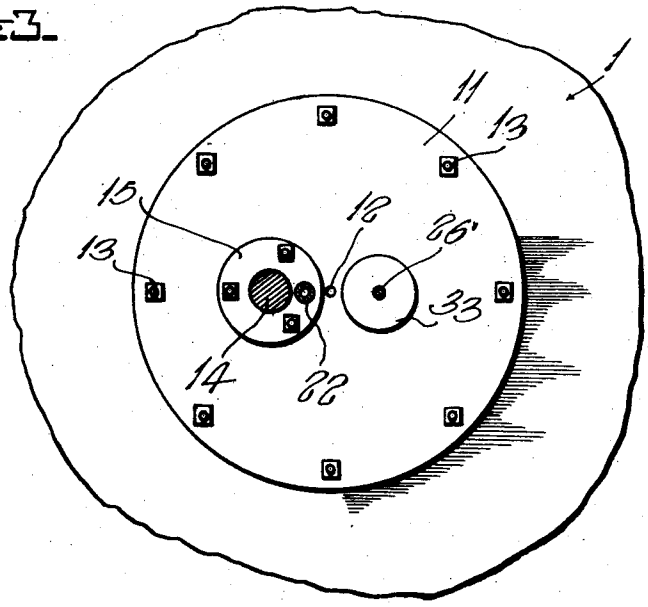


FIG. 3.



Inventor

W. Johnson

By H. B. Williamson & Co

Attorneys

Witness

H. Woodard

UNITED STATES PATENT OFFICE.

WILLIAM JOHNSON, OF SIOUX CITY, IOWA.

DEVICE FOR MOISTENING HOT AIR FROM FURNACES.

1,265,207. Specification of Letters Patent. Patented May 7, 1918.

Application filed April 19, 1917. Serial No. 163,229.

To all whom it may concern:

Be it known that I, WILLIAM JOHNSON, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented certain new and useful Improvements in Devices for Moistening Hot Air from Furnaces; and I do 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.

This invention relates to improvements in devices for moistening the air in hot air furnaces prior to its passing from the heating chamber outwardly through the air conducting pipes.

One object of this invention is to provide an air moistener in which the supply of water is automatically controlled, thereby obviating the necessity of care or attention on the part of the housekeeper or other person, and insuring moisture laden air being circulated through the rooms of the building from a hot air furnace or the like.

Another object of the invention is to provide a device embodying means whereby the water receptacle will be replenished continuously as the water of said receptacle is evaporated, thereby maintaining a steady temperature of water.

A still further object is to provide a device of this character in which is embodied means for maintaining a predetermined level of water in the receptacle, means whereby the housekeeper or other person may readily determine whether the moistener is working properly, and means for easily cleaning the receptacle and replacing worn parts.

With these and numerous other objects in view, my invention resides in the novel features of construction, and in the combination and arrangement of the several parts as shown in the accompanying drawings and more particularly pointed out in the specification and claims.

In the accompanying drawings:—

Figure 1 is a sectional view of a furnace with my improved moistener applied thereto; Fig. 2 is a detail sectional view of the valve operating mechanism; and

Fig. 3 is a horizontal section on the plane of the line 3—3 of Fig. 2.

Similar numerals of reference are employed to indicate like parts throughout the several views. Reference is now had to the drawings in which I have shown a furnace 1 having the usual air conducting pipes 2 through which the heated air passes to the rooms of the building in which the furnace is located, said furnace having the ordinary fire-box 4 and hot air chamber 3 above said fire-box.

For the purpose of moistening the heated air prior to its passing through the conducting pipes 2, a pan or any suitable receptacle 5 having short legs 6 is supported on the upper face of the fire-box 4 and is adapted to contain the water used in moistening the heated air.

For the purpose of indicating the level of the water in the receptacle 5 as well as providing an overflow outlet, a pipe 7 leading from the lower end of the side wall of the receptacle 5 and inclined downwardly through the vertical wall of the air chamber 3 and having a water gage 7′ on its outer end, is provided. This water gage 7′ comprises a glass tube having one end connected to the vertical extension of the pipe 6 by means of a slip joint nut or the like 8, and having its upper end open whereby should the water in the receptacle attain too great a height it will overflow through said open end. At the juncture of the vertical and substantially horizontal portions of the pipe 7 an opening is provided so that when it is desired to drain the receptacle 5 it may be readily done by removing the plug 9.

The upper face of the air chamber 3 is provided with an opening 10 of such a size as to permit the passage therethrough of a pan 5 when this device is being assembled. A plate or cover 11 is provided for the opening 10, said plate having a substantially centrally disposed aperture 12 therein to permit any water which might tend to accumulate on said plate to flow therethrough into the receptacle 5 which is disposed in vertical alinement with the opening 10, said plate being dished or inclined toward the aperture 12. This plate is secured in position over the opening 10 by means of bolts or the like 13.

A support is mounted on the upper face of the plate 11 and comprises a vertically disposed cylindrical body or pedestal 14 having a laterally directed apertured attaching foot 15 on its lower end and a threaded socket 16 in its upper end. A T-pipe joint is mounted on this support, having one end 17 threaded into the socket in the upper end of said support and having its opposite end converging

upwardly to form a valve seat 18 and having a water supply pipe 19 connected to the lateral extension 20 of said joint.

On the upper end of the T-joint and inclosing the valve seat 18 is a casing 21 from the bottom of which a water outlet pipe 22 extends downwardly through openings in the plate 11 and foot 15 to a point above the receptacle 5. By passing pipe 22 through the opening in the foot 15, any possibility of relative turning of the casing 21 and the pedestal 14, is prevented. It is well known that expansion and contraction often exert such a turning movement on parts which are subjected to heat and cold and if this were allowed in the present case, the valve operating means would be caused to bind. Also, the connection between the T-coupling and the casing 21 would be caused to leak. It is therefore highly important to prevent any relative turning between the casing and the pedestal, and it will be observed that I have attained this end by a novel arrangement of parts otherwise necessary. The upper wall 23 of the casing 21 is provided with a centrally disposed threaded aperture 23′ in which is threaded a suitable plug 34 having a central vertical aperture adapted for the reception of a valve stem 26 on the lower end of which is secured a valve, said valve comprising a metal disk 24 having a depending annular flange 24′, the lower end thereof being extended inwardly to form a flange 24″ for retaining the washer 35 which is adapted to be seated upon the valve seat 18. The upper end of the plug 34 is preferably square so that when it is desired to move the same, a wrench or other suitable tool may readily be used to turn said plug.

This valve is automatically operated by means of a float 25 which is disposed in the receptacle 5 and has an upwardly extending stem 26′ projecting through an opening in the plate 11 and adjustably connected to a compound lever mechanism, said opening being of such a size as to permit passage therethrough of the float 25 when the device is being assembled, and being provided with an apertured plate 33 to close said opening.

The compound lever mechanism comprises a horizontal lever 27 having one end pivotally connected to a short upstanding bracket 28 which has its upper end bifurcated as shown in the drawing to form parallel spaced ears between which said end of the lever is disposed, and having its other end pivotally connected to a downwardly inclined extension 29 of a lever 30 which is fulcrumed near one end of an upstanding bracket 31 which is disposed diametrically opposite the other bracket. The last named bracket 31 is also bifurcated and has extending between its parallel spaced ears the lever 27 as well as having the lever 30 fulcrumed therebetween. The opposite end of the lever 30 is bent downwardly and then laterally, said lower portion being apertured to receive therethrough the upper threaded end of the stem 26′ which is secured to the float 25, and having on each side of said extension wing nuts 32 which may be turned to adjust the height of the float in the receptacle, thereby pre-determining the level of the water therein.

The upper end of the valve stem is pivotally connected to the lever 27 at a point substantially midway its length, whereby when the float in the receptacle is raised or lowered the valve will be operated to control the flow of water through the pipe 22.

In operation, the float 25 being below its normal position, will pull downwardly on one end of the lever 30 which in turn will raise the second lever 27 and unseat the valve 24, whereupon water will flow into the casing and out through the pipe 22 and into the receptacle 5. It is readily seen that as the receptacle fills with water the float will rise and close the valve, thereby shutting off the flow of water to the receptacle.

I claim:—

1. Automatic water supply means including a receptacle, said means comprising a fixed pedestal having in its upper end a socket whose bottom is closed, a T-coupling having one end of its head threaded in said socket, whereby said coupling is rigidly supported, a casing having in its bottom an opening through which the other end of said head of the T-coupling is threaded, said end rising a slight distance into said casing and being chamfered to form a valve seat, the shank of said T-coupling having means for connecting a water supply pipe thereto, an outlet from said casing into said receptacle, a valve coacting with the aforesaid seat, and closing means for said valve including a float positioned in said receptacle.

2. A structure as specified in claim 1, said pedestal having a laterally extending portion formed with an opening, and said outlet being in the form of a pipe passing through said opening and threaded into said casing, whereby relative turning of the pedestal and casing is prevented.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM JOHNSON.

Witnesses:
FRED J. ANDERSON,
WALTER A. JOHNSON.

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