

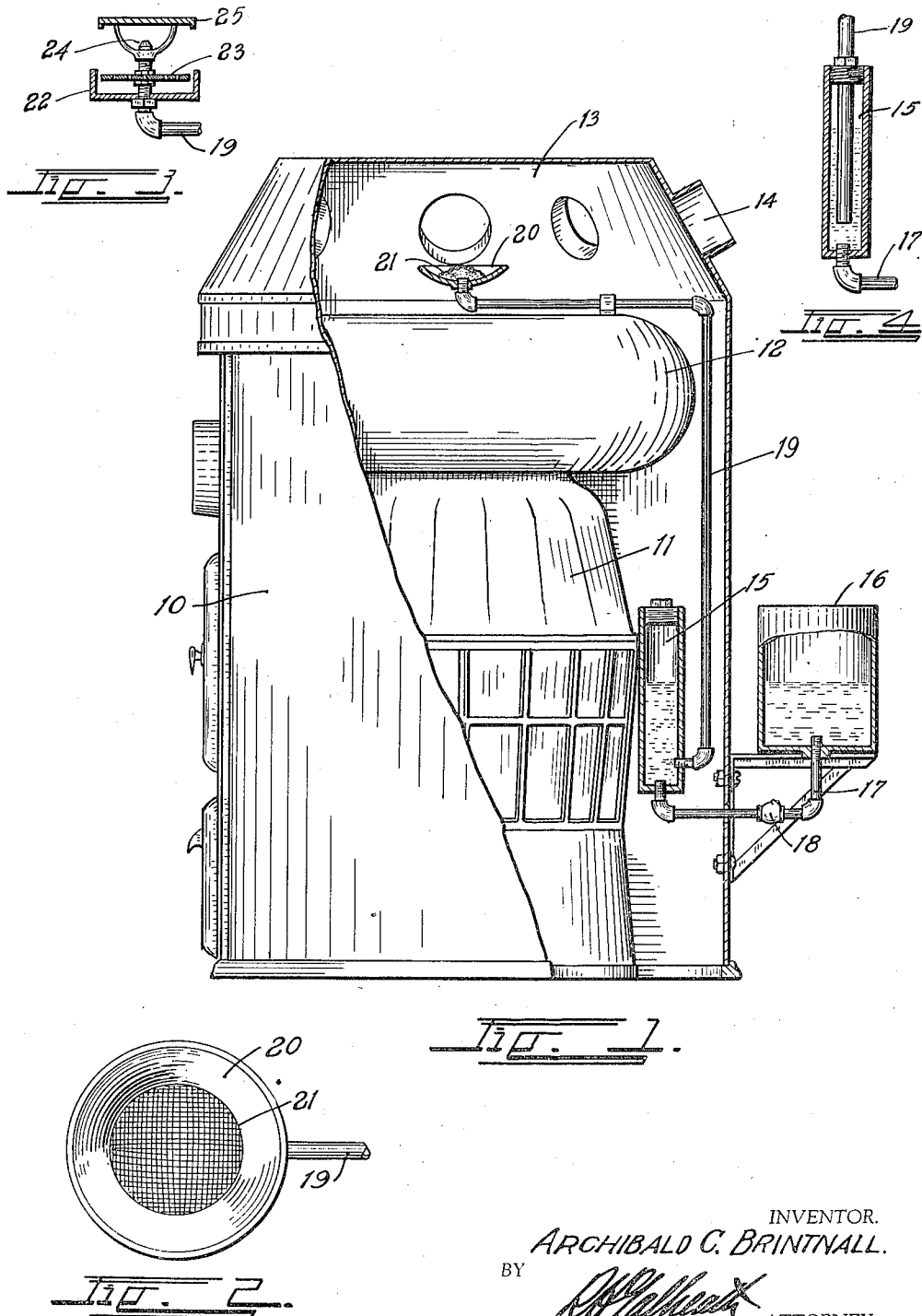
March 15, 1938.

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2,111,165

HUMIDIFIER FOR WARM AIR FURNACES

Filed April 12, 1937



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## UNITED STATES PATENT OFFICE

2,111,165

## HUMIDIFIER FOR WARM AIR FURNACES

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Application April 12, 1937, Serial No. 136,375

3 Claims. (Cl. 126-113)

This invention relates to a humidifier for warm air furnaces.

Most warm air furnaces are provided with a water pan which is supposed to be kept filled with water so that the latter may be vaporized into the warm air being furnished to the rooms. These water pans are not satisfactory since they develop no vapor until the entire volume has been brought substantially to the boiling point and then the entire contents of the pan is rapidly vaporized and will probably be left dry for a considerable period before the operator notices the absence of water.

The principal object of this invention is to provide a humidifier which will employ vapor pressure to continuously feed a supply of water to a humidifying pan so that a continuous supply of vapor is furnished depending upon the amount of heat being developed by the furnace.

Another object of the invention is to provide a humidifier in which only a small amount of water will be heated at any one time and then a still smaller quantity will be vaporized so that humidifying will be started quickly after the furnace is heated.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:—

Fig. 1 is a side view of a typical hot air heating furnace with the jacket partially broken away to show the interior construction.

Fig. 2 is an enlarged plan view of the vaporizing pan.

Fig. 3 is a detail sectional view illustrating an alternate form of the vaporizing pan.

Fig. 4 is a similar detail sectional view illustrating an alternate form of pressure chamber.

In the drawing a typical hot air furnace is indicated at 10 with its fire pot at 11, heating dome at 12, distributing cap at 13, and hot air outlet nipples at 14.

The invention is applied to the furnace by placing a closed expansion chamber 15 adjacent the fire pot 11 and feeding water to the expansion chamber 15 from a suitable reservoir 16 upon the exterior of the furnace through a feed pipe or

tube 17 in which the return flow is controlled by means of a check valve 18.

The expansion chamber 15 is entirely closed so that when the water therein is brought to the vaporizing point the vapor will create a pressure in the chamber.

An outlet pipe 19 leads from a point adjacent the bottom of the chamber 15 upwardly and over the dome 12 of the furnace terminating in a vaporizing pan 20 in which a dispersion screen 21 is placed. The reservoir 16 should be at a point sufficiently high to supply water to the chamber 15 by gravity.

When in use the vapor pressure in the chamber 15 presses downwardly upon the water therein forcing this water up the pipe 19 into the pan 20. The check valve 18 prevents return flow to the reservoir. When the water level in the chamber reaches the outlet of pipe 19, and relieves the pressure in the reservoir 16, the weight of the water in the reservoir 16 opens the valve 18 and allows additional water to flow from the reservoir 16 to again partially fill the chamber 15.

When the fire pot is relatively cool the contracting vapor in the chamber 15 will create a partial vacuum therein which will act to draw water from the reservoir into the chamber. When the temperature of the fire again rises this water will be expelled to the vaporizing pan 20 so that a continuous cycle of operation is obtained as long as the reservoir 16 is kept supplied. The reservoir can be made to hold a much greater supply of water than the usual water pan of a furnace so that it need not be filled frequently.

The water spurts intermittently from the pipe 19. These spurts are broken and dispersed by means of the screen 21 to spread the water over the screen and pan so that it will vaporize quickly.

The position of the pan over the hot dome 12 causes exceedingly efficient and rapid vaporization. This is assisted by the fact that the water reaching the pan 20 has been pre-heated almost to the boiling point in the chamber 15 so that it will vaporize almost instantly when reaching the pan 20.

An alternate form of vaporizing pan is shown in Fig. 3 in which the pipe 19 is conducted through a receiving pan 22 and through a perforated disc 23 therein terminating in a jet nozzle 24 which is directed against a dispersion plate 25. In this form, the jet of water strikes the hot plate 25 and is spread thereover to provide a large vaporization surface. The excess water

will fall back onto the disc 23 where it will be vaporized and any further excess will reach the pan 22.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

10 Having thus described the invention, what is claimed and desired secured by Letters Patent is:—

1. A humidifier for warm air furnaces of the type having a fire box and heating dome comprising: a vertically positioned closed pressure chamber; means for supporting said pressure chamber adjacent the fire box of a furnace; a reservoir; means for supporting said reservoir on the exterior of said furnace on substantially the same level as said pressure chamber; an inlet tube communicating through the wall of said furnace between the bottom of said reservoir and the bottom of said pressure chamber to maintain the water level in said pressure chamber at the same height as the water level in said reservoir; a check valve in said inlet tube preventing return of water to said reservoir; an outlet tube extending from a point below the normal water level in said pressure chamber upwardly alongside of and over said heating dome; and a humidifying pan supported on the upper extremity of said outlet tube to receive the water discharged from said pressure chamber by the vapor pressure therein.

35 2. A humidifier for warm air furnaces of the type having a fire box and heating dome comprising: a vertically positioned closed pressure chamber; means for supporting said pressure chamber adjacent the fire box of a furnace; a reservoir; means for supporting said reservoir on the exterior of said furnace on substantially the

same level as said pressure chamber; an inlet tube communicating through the wall of said furnace between the bottom of said reservoir and the bottom of said pressure chamber to maintain the water level in said pressure chamber at the same height as the water level in said reservoir; a check valve in said inlet tube preventing return of water to said reservoir; an outlet tube extending from a point below the normal water level in said pressure chamber upwardly alongside of and over said heating dome, the upper extremity of said outlet being vertically positioned; a vaporizing pan surrounding and supported by the vertically positioned upper extremity of said outlet tube, the open extremity of said tube projecting through the bottom of said pan; and a dispersion means positioned above the open extremity of said tube to disperse the water discharging from said tube.

3. A humidifier for warm air furnaces of the type having a fire box and heating dome comprising: a vertically positioned closed pressure chamber; means for supporting said pressure chamber adjacent the fire box of a furnace; a reservoir; means for supporting said reservoir on the exterior of said furnace on substantially the same level as said pressure chamber; an inlet tube communicating through the wall of said furnace between the bottom of said reservoir and the bottom of said pressure chamber to maintain the water level in said pressure chamber at the same height as the water level in said reservoir; a check valve in said inlet tube preventing return of water to said reservoir; an outlet tube extending from a point below the normal water level in said pressure chamber upwardly alongside of and over said heating dome; and means to receive the water discharged from said pressure chamber by the vapor pressure therein.

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