

Aug. 4, 1931.

J. B. FISHER

1,817,357

HUMIDIFIER

Filed April 25, 1928

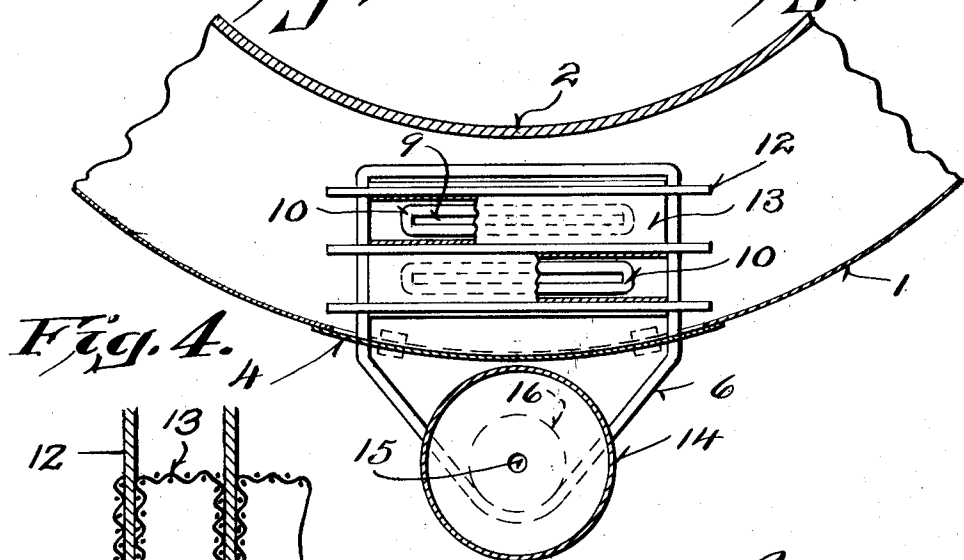
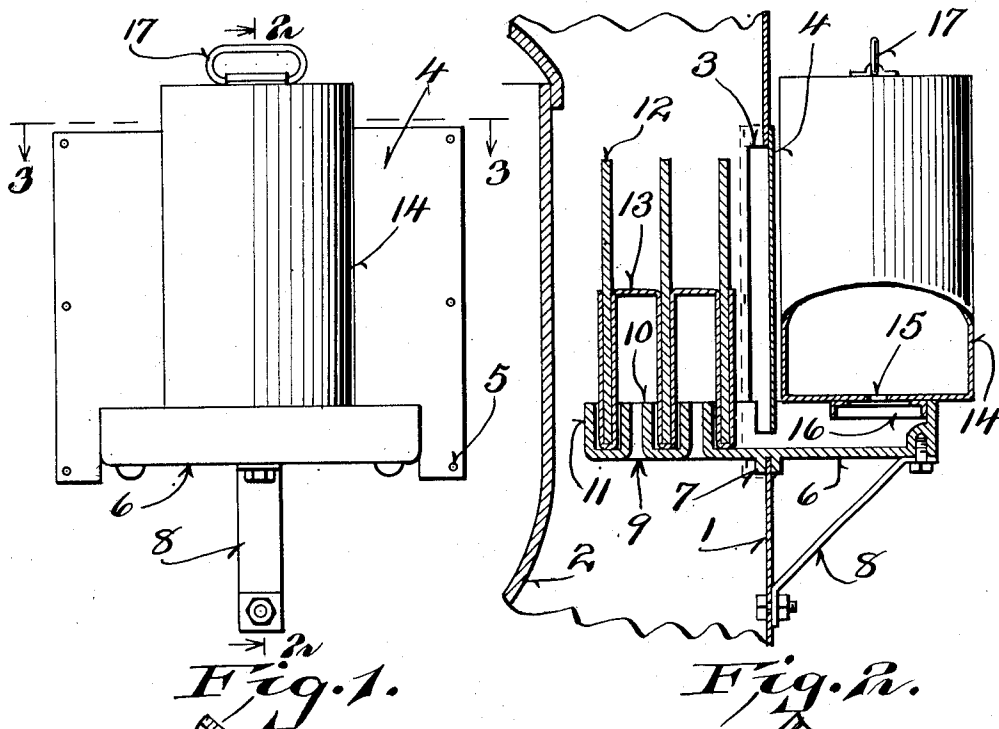


Fig. 3.
Inventor
J. B. Fisher
By
[Signature]
Attorney

UNITED STATES PATENT OFFICE

JAMES B. FISHER, OF WAUKESHA, WISCONSIN

HUMIDIFIER

Application filed April 25, 1928. Serial No. 272,653.

This invention relates to humidifiers.

Objects of this invention are to provide a novel type of humidifier which although capable of other uses, is particularly adapted for use in connection with a furnace to replace the ordinary water pan.

It has been found that the surface tension of the water in ordinary water pans for furnaces, materially hinders the free evaporation of the water. In addition to this, it is a well known fact that the evaporation from the usual water pan is very slow, particularly at low furnace temperatures and in fact even when the furnace is working at full capacity, they are almost invariably of insufficient capacity to furnish the requisite amount of moisture for the heated air.

This invention is designed to overcome the defects noted above, and objects of this invention are to provide a humidifier for hot air furnaces which is so constructed that the surface tension of the water does not hinder the evaporation, as the water is led up by capillary action along the faces of a plurality of plates immersed therein, such plates being of metal, asbestos, or other material, and in which a greatly increased area of evaporating surface is provided.

Further objects are to provide a humidifier which is so made that it will purify the air by collecting and retaining a large portion of the floating dust therein, the humidifier being readily cleaned as required from season to season.

Further objects are to provide a novel form of humidifier for hot air furnaces which is carried by the furnace casing and is not supported from the firebox or combustion chamber, so that even if it should become cracked or warped, flooding would not result in cracking the fire-box as has frequently heretofore occurred.

Further objects are to provide a novel form of humidifier particularly adapted for hot air furnaces, which is so constructed that although the increased surface is provided to hasten evaporation even at low temperatures, that nevertheless means are provided for automatically maintaining the water level

without the use of valves or other devices having moving parts.

An embodiment of the invention is shown in the accompanying drawings in which:

Figure 1 is a front view of the device removed from the furnace;

Figure 2 is a sectional view on the line 2—2 of Figure 1;

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is a detailed enlarged sectional view of a portion of the humidifier pan and cooperating element arranged therein.

Referring to the drawings, it will be seen that the device has been illustrated as positioned upon the housing or shell 1 of the furnace, the fire-pot or combustion chamber being indicated by the reference character 2. This portion of the casing is cut away, as indicated by the reference character 3 and the attaching plate 4 of the device is secured thereto in any suitable manner, as by means of bolts or screws passing through the apertures 5 (see Figure 1). The pan for the humidifier consists of a cast iron trough-like member 6 which is provided with pairs of spaced lugs 7 which rest upon the edge of the furnace shell or housing 1, as shown in Figure 2. Preferably, a brace 8 is removably secured to the outer lower side of the pan.

This pan is provided with elongated openings 9 through which hot air may pass and these openings are surrounded by upturned flanges 10. A marginal flange 11 completely surrounds the edges of the pan. The flanges 10 and 11 form a series of communicating troughs between which air may pass, and in which water is adapted to be carried. These troughs each are provided with a metallic plate 12 and these plates are held in spaced relation by means of the reversely folded strip 13 (see Figures 2 and 3). The strip 13 is so formed as to provide a plurality of channels which fit within the troughs in the water pan, and the intervening upper portion between these channel-like portions form deflectors for deflecting the air outwardly as it passes upwardly from the slots 9.

It is to be distinctly understood that these plates may be formed of other material, for

instance, asbestos may be used, if desired, or any material capable of withstanding moisture and heat.

The evaporation of the water is greatly increased due to the fact that it creeps up the sides of the plates through capillary action of the strip 13, and a very great area for evaporating purposes is exposed. This evaporation is material even when the furnace is not working briskly, that is to say, when the air is at relatively low temperatures for the hot air furnace. Even under these conditions, the evaporation is sufficient to maintain a healthy condition within the home or other place where the furnace is used.

A reservoir 14 is employed for maintaining the water level and for furnishing a relatively great volume of water for use by the humidifier. This reservoir consists of a tank closed except for a small opening 15 in its bottom. This opening is surrounded by a downwardly extending annular flange 16 which dips down into the water in the pan. Obviously, when the water level drops below the bottom edge of the flange 16 air will enter the container 14 and will allow the displacement of water to occur, thus renewing the supply of water within the pan. If desired, a manipulating handle or ring 17 may be secured to the upper end of the reservoir.

It is to be noted that the water pan converges towards its outer end, as shown in Figure 3 and thus forms an adequate support for the bottom of the reservoir.

It will be seen that a novel type of humidifier has been provided which although eminently suited to hot air furnaces, may nevertheless be used in other capacities.

It is to be noted further that the humidifier is carried by the furnace shell and in the event of flooding, dislodgment or cracking, no damage will occur to the fire-pot or combustion chamber, as the water will merely drop to the bottom of the furnace without encountering such fire-pot.

Further, it is to be noted that a greatly increased evaporating surface is provided and that the humidifier will maintain the water supply level within the pan for a great length of time, thus accommodating this increased evaporating capacity.

Further it is to be noted that the humidifier is of extremely simple, practical, and sturdy construction and may be easily produced and applied.

Further, it is obvious that the humidifier may be positioned within the incoming pipes leading to the furnace instead of the position shown, if it is desired.

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 humidifier comprising an evaporating pan having a plurality of openings, upturned flanges surrounding said openings, a marginal flange surrounding the edges of the pan, said flanges forming a plurality of communicating troughs for receiving water, a reversely folded absorbent strip providing a plurality of channels fitting within the troughs, with their intervening upper portions disposed between the channels to form air deflectors, a plurality of upstanding plates fitting within the folded channel portions of the strip and a reservoir closed except for its lowest portion and provided with an opening leading into said pan for supplying the troughs with water.

2. A humidifier comprising an evaporating pan having a plurality of openings, upturned flanges surrounding said openings, a marginal flange surrounding the edges of the pan, a plurality of communicating troughs formed by said flanges for receiving water, a reversely folded absorbent strip providing a plurality of channels fitting within the troughs, with their intervening upper portions disposed between the channels to form air deflectors, and a plurality of upstanding plates fitting within the folded channel portions of the strip.

In testimony that I claim the foregoing I have hereunto set my hand at Waukesha, in the county of Waukesha and State of Wisconsin.

JAMES B. FISHER.