Sept. 6, 1927. 1,641,587

C. J. HILTY

HUMIDIFIER FOR HOT AIR HEATING SYSTEMS

Filed Feb. 25, 1926

Fig. 1.

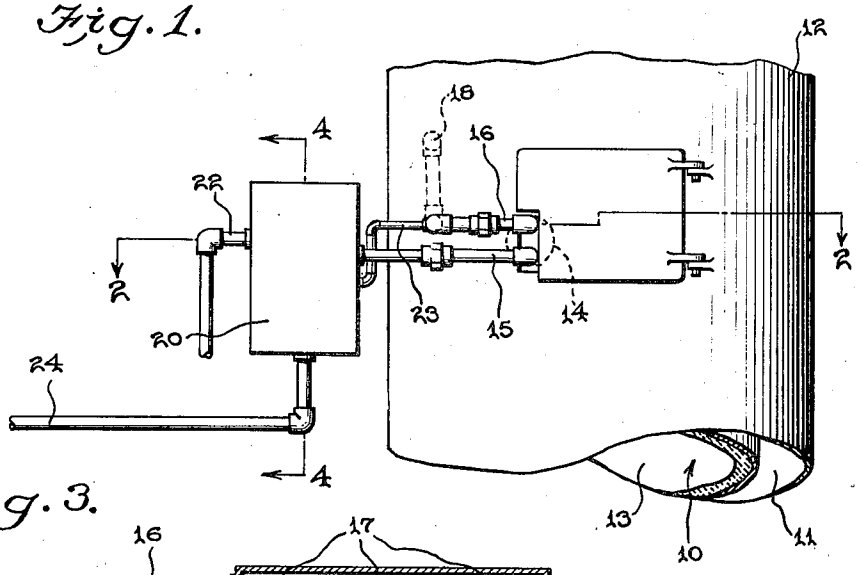


Fig. 3.

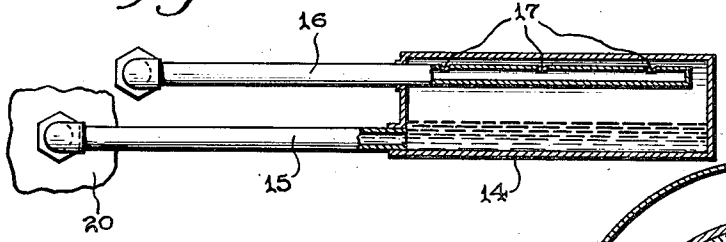


Fig. 2.

Fig. 4.

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Patented Sept. 6, 1927. 1,641,587

UNITED STATES PATENT OFFICE.

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HUMIDIFIER FOR HOT-AIR HEATING SYSTEMS.

Application filed February 25, 1926. Serial No. 90,572.

This invention relates to humidifiers for hot air heating systems and more particularly to a device of this character which is self-regulating.

More specifically, the object of the invention is to provide means within the fire tank for generating steam and means for conducting the steam to the air heating space of the furnace so that it may mingle with the air which passes from the furnace to the rooms of the house.

A further object of the invention is to produce a device of this character which may be readily and cheaply produced, which will be durable and efficient in service and a general improvement in the art.

These and other objects I attain by the construction shown in the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is a fragmentary side elevation of a hot air furnace having a humidifying apparatus constructed in accordance with my invention;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a section on the line 4—4 of Figure 1.

Referring now more particularly to the drawings, the numeral 10 generally indicates the fire-pot of a furnace and 11 the air heating chamber formed between the outer casing 12 of the furnace and the fire-pot wall 13 thereof. The numeral 14 generally designates a horizontally disposed casing adapted to be disposed within the firepot above the normal level of the fire therein, this casing having communicating therewith adjacent the bottom thereof an inlet 15 and adjacent the top thereof an outlet 16 which are in the form of conduits let through the wall of the furnace in any suitable manner. The conduit forming the outlet 16 is continued within the casing 14 adjacent the top thereof and is provided in that portion thereof which projects into the casing with a plurality of openings 17. This outlet communicates at its outer end with a conduit 18, the extremity of which is projected into the air heating chamber and is there provided with a plurality of openings 19.

Communicating with the conduit 15 is a float tank 20, the float valve 21 of which maintains a fluid level within the casing 20 such that the level of the fluid within the casing 14 is always below the level of the inwardly projecting portion of the exhaust pipe 16. Between the normal level of liquid within the float tank 20 and the level to which water must rise in order to pass through the openings 17 of the exhaust pipe 16, the float tank is provided with an overflow pipe 22. The bight of the connection, represented by the exhaust pipe 16 and the perforated pipe 18, is provided with a drain 23, discharging into the float tank so that any condensation water caused by cooling of the steam passing from the casing 14 to the openings 19 may drain back into this float tank. The float tank may be supplied from any suitable source, such as the city main, generally designated at 24.

In the operation of the device, the water admitted to the casing 14 is converted into steam by the heat of the fire and in this form passes through the conduits 16 and 18 to the openings 19 where it mingles with the air passing through the heating chamber 11 of the furnace to be transmitted with this air to the rooms. As water is converted into steam, it is replaced by fresh water from the float tank 20 and in event the float valve of the float tank sticks, water is prevented from rising in the casing 14 to an extent where it will pass through the openings 17 and thus through the conduits 16 and 18 to the openings 19 by the overflow pipe 22. Since all condensation water is returned to the float tank, it follows that no water can enter the hot air chamber 11 except in the form of steam and accordingly the walls of this hot air chamber will not be dampened to an extent where corrosion and obstruction thereof will result.

Since the construction hereinbefore set forth is capable of a certain range of change and modification without materially departing from the spirit of the invention, I do not limit myself to such specific structure except as hereinafter claimed.

I claim:—

1. In a humidifier for hot air furnaces, a casing adapted for insertion in the fire box of a furnace, intake and exhaust pipes communicating with the casing, means connected with the intake to maintain a constant level within the casing below the level of the exhaust pipe, a perforated pipe arranged within the hot air chamber of the furnace, a con-

nection between the exhaust pipe and said perforated pipe, said means for constantly maintaining a fluid level within the casing including a float tank and a drain connecting the connection between the exhaust and perforated pipe and said float tank.

2. In a humidifier for hot air furnaces, a casing adapted for insertion in the fire box of a furnace, intake and exhaust pipes communicating with the casing, means connected with the intake to maintain a constant level within the casing below the level of the exhaust pipe, a perforated pipe arranged within the hot-air chamber of the furnace, a connection between the exhaust pipe and said perforated pipe, said means for constantly maintaining a fluid level within the casing including a float tank and a drain connecting the connection between the exhaust and perforated pipe and said float tank, said float tank having an overflow arranged between the normal level of water therein and the level to which water must rise to pass into the exhaust pipe of said casing.

In testimony whereof I hereunto affix my signature.

CHRISTIAN J. HILTY.