June 12, 1923.

1,458,549

C. E. SALLADA

AIR MOISTENER

Filed Aug. 10, 1922

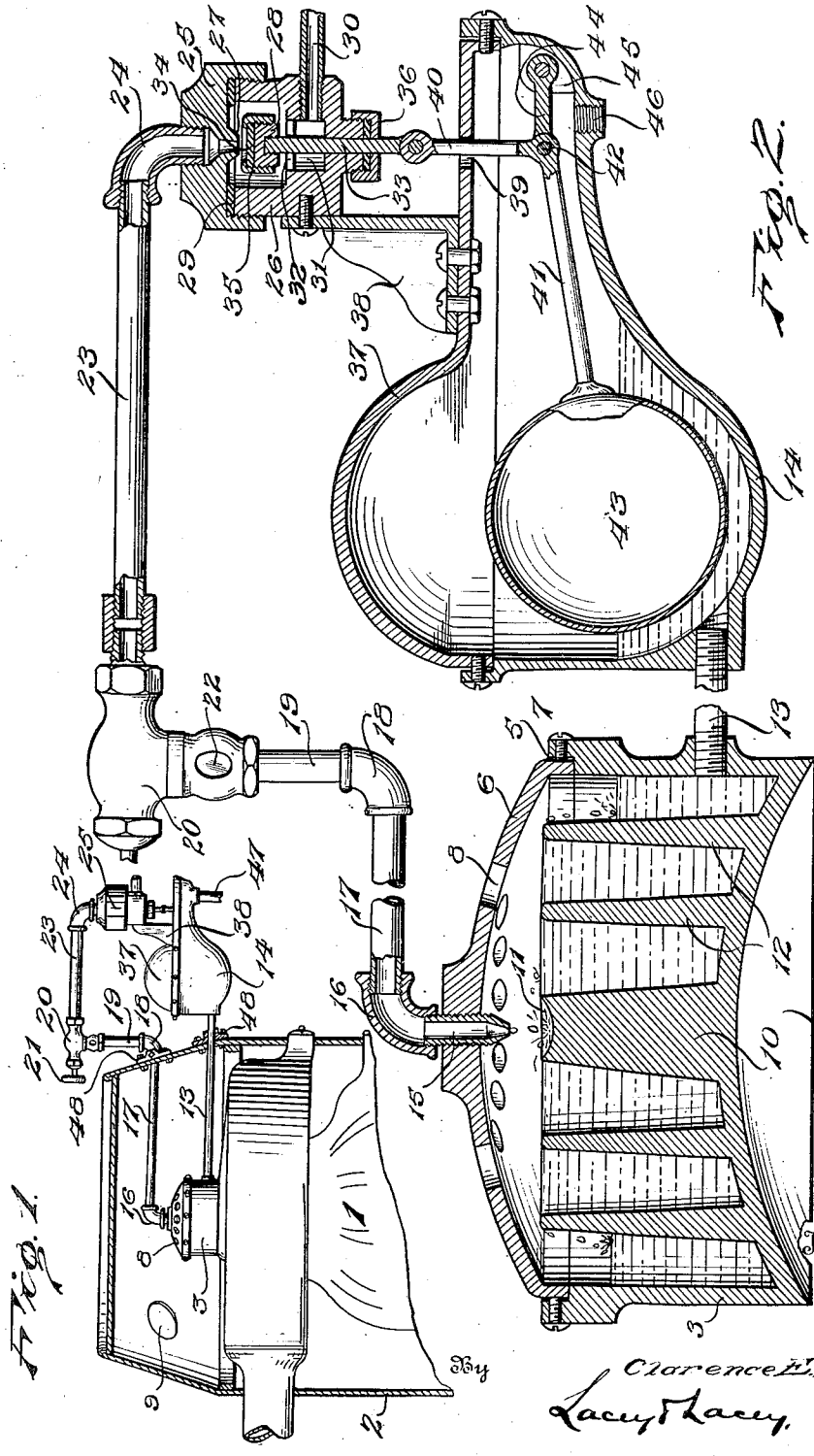

Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

CLARENCE E. SALLADA, OF HURON, SOUTH DAKOTA.

AIR MOISTENER.

Application filed August 10, 1922. Serial No. 580,951.

To all whom it may concern:

Be it known that I, CLARENCE E. SALLADA, a citizen of the United States, residing at Huron, in the county of Beadle and State of South Dakota, have invented certain new and useful Improvements in Air Moisteners, of which the following is a specification.

The primary object of this invention is to provide a simple, inexpensive and efficient apparatus which may be readily mounted upon a hot-air furnace and by which a sufficient amount of moisture will be generated and caused to circulate with the hot air through the heating flues and the rooms of a building. One object of the present invention is to provide a device for the stated purpose which may be readily placed in position and securely held without requiring the drilling of any holes in the furnace shell, and another object of the invention is to provide means whereby the feeding of water to be evaporated may be automatically controlled. These stated objects and other objects which will appear incidentally in the course of the following description are attained in the use of such an apparatus as is illustrated in the accompanying drawing, and the invention resides in certain novel features which will be particularly pointed out in the claims following the description.

In the drawing:

Figure 1 is a view, partly in elevation and partly in vertical section, of the upper portion of a hot air furnace having my invention applied thereto; and

Fig. 2 is an enlarged sectional elevation of the apparatus embodying the present invention.

The furnace, a portion of which is indicated at 1, may be of any preferred or well-known form and is provided with an outer sheet metal casing 2 in the usual manner. In carrying out my invention, I employ a vaporizing pan 3 which may be cast in one integral structure and has a concave bottom 4 of proper curvature to fit closely upon the arched top of the furnace. This vaporizing pan may, of course, be of any form but is preferably circular and is provided with a rabbeted upper edge, as indicated at 5, to receive and support a cover 6 which is held in place by set screws or similar fastenings 7 inserted through the rim or outer wall of the pan so as to bear upon the depending edge or rim of the cover, as clearly shown in Fig. 2. The cover is provided with openings 8 therethrough to permit the escape of the generated vapor or steam into the space between the furnace and the outer casing 2 whence it will flow through the heating flues, one of which is indicated at 9, to the several rooms of the building. The vaporizing pan is provided with a central post 10 having a dished or cup-like upper extremity 11 and concentric with the said post and preferably equi-distant therefrom, the pan is constructed with annular walls 12, thereby dividing the interior of the pan into several annular chambers. The outer wall of the vaporizing pan is constructed with an escape port in which is secured the end of an outlet pipe 13 which leads to and into a float chamber or reservoir 14 which will be presently more particularly described. Secured through the cover 6 at the center of the same is a nipple 15 which is alined axially with the post 10 and through which water is discharged onto the cup-like upper extremity 11 of the post.

This nipple is coupled by an elbow 16 to a pipe 17 which extends through the side of the casing 2 and at the exterior of said casing is connected by an elbow 18 with a short pipe or tube 19 leading from the drip-regulating valve 20. The valve 20 may be of any well-known form and is provided with a handle 21 whereby it may be set to regulate the flow of water and is also provided with a sight tube 22 whereby the flow of water may be observed and accuracy in the regulation of the same consequently attained. A feed pipe 23 leads into the valve 20 and the outer end of this pipe 23 is connected by an elbow 24 with the cap 25 as shown. The cap 25 is fitted upon the upper end of a valve body 26 and is constructed interiorly with a post 27 which constitutes the seat for a valve 28, a gasket 29 being preferably arranged between the edge of the valve body 26 and the cap, as shown and as will be readily understood. Leading into the valve body 26 through the side of the same is a main supply pipe 30 which may be connected with the city water main or, if there be no central water system, may lead from a storage tank located at any convenient point. The said pipe 30 discharges into a lower chamber 31 within the valve body across which is a guide 32 for the valve stem 33, the valve 28 being secured upon the upper extremity of the valve stem above the

guide 32 and adapted to engage the seat 27 when the stem is raised by the overflow of water. The valve 28 may be of any suitable construction and is illustrated as comprising a block or circular body having a flexible or elastic disk 34 secured thereon by a collar 35, the flexible disk being obviously adapted to bear against the seat 27 and form a close contact therewith. A packing gland 36 is provided upon the under side of the valve body 26 to prevent leakage around the valve stem in an obvious manner.

The float chamber 14 is carried by the outer end of the outlet pipe 13, as clearly shown, and comprises a body of somewhat elongated form, and a correspondingly shaped cover or cap 37 fitted to and secured upon the body. The valve body 26 is carried by a bracket or post 38 rigidly secured upon the cover 37, as shown most clearly in Fig. 2. Through the cover 37 is formed a slot 39 to accommodate the arm 40 of an angle lever, the other arm 41 of said lever being disposed within the float chamber and extending from its fulcrum 42 toward the supply end of the float chamber and being equipped with a float 43 of the usual globular form. The fulcrum 42 may conveniently be a pin inserted through an arm or bracket 44 secured in any convenient manner within the float chamber, as by having its end fitted between lugs 45 and riveted or bolted thereto. It will be readily noted upon reference to the drawing that the float chamber has an enlarged portion nearer the furnace and its end more remote from the furnace is reduced vertically so that the bottom of the float chamber rises as it recedes from the furnace. In the higher portion of the bottom of the float chamber is provided an opening 46 which receives the end of an overflow pipe 47, which pipe may lead to a sewer or may merely have its lower open end arranged to discharge onto the cellar floor.

It is thought the operation of my improved apparatus will be readily understood. The flow of water is regulated by the drip valve 20 so that the water will flow into the vaporizing pan only in such a quantity as may be readily vaporized or converted into steam when the furnace is in use. The water will drip onto the upper extremity of the post 10 and will splash over the said post into the annular chamber surrounding the same and if the heat of the furnace should not be great enough to vaporize the water as rapidly as it is discharged from the nipple 15, the water will accumulate in the said innermost annular chamber until it rises to the inner wall 12 and overflows the same into the intermediate annular chamber. It will then in turn accumulate in the intermediate chamber and eventually overflow the outer annular wall 12 and accumulate in the outer annular chamber between the same and the outer wall of the pan. Normally however, the flow of the water will be so slow that it will all be evaporated before reaching the outermost annular chamber, it being remembered that the vaporizing pan rests directly upon the upper end or top of the furnace and, consequently, will be highly heated throughout so that the water flowing over the post 10 and the several annular walls will be completely vaporized and no water will accumulate in the outermost annular chamber. In the normal operation of the furnace, it is very seldom that water will accumulate in the intermediate annular chamber, but it will be vaporized as rapidly as it flows into the vaporizing pan and the vapor will pass off through the openings 8 into the heating flues, as previously stated. Should the fire go out or get very low, the water may accumulate in the outermost annular chamber and rise to the level of the outlet pipe 13, whereupon it will flow through said pipe and accumulate in the float chamber 14. As it accumulates in the float chamber, however, the float will rise as the level of the water rises and the upward movement of the float will swing the angle lever 41, 40 about its fulcrum 42 and carry the valve 28 against its seat 27 so that the further flow of water will be cut off. When the fire is again kindled or again reaches its desired intensity, the water accumulated in the float chamber and the outermost annular chamber of the vaporizing pan will be evaporated and as it evaporates, the level of the water in the float chamber will fall and, consequently, the float will be lowered and the valve 28 unseated, whereupon the feeding of water through the several connections to the vaporizing pan will be resumed. Should some accident occur causing breakage of any of the parts or otherwise disarranging the apparatus so that it will fail to operate properly and promptly respond to the variations in the level of the water and cut off the flow, the water will obviously rise within the float chamber 14 and thence escape through the waste pipe 47. As has been stated, this pipe may lead into a sewer or may be so disposed that it will discharge upon the cellar floor and the latter arrangement may be preferred inasmuch as the presence of the water upon the floor of the cellar will give notice that the apparatus is out of order. No harm can result from thus permitting the waste water to be discharged upon the cellar floor inasmuch as ordinarily the flow of the water will be cut off before it reaches the height at which the escape opening 46 is loaded. It will be readily noted that all the parts of my apparatus, except the vaporizing pan and the pipes connected directly therewith, are outside the casing of the furnace and, therefore, should

some accident happen to the mechanism, the waste water will not flow down upon the outside of the furnace and cause rusting of the same. To apply the apparatus to a furnace, it is not necessary to drill any holes in the furnace and it is necessary only to punch two holes in the outside casing. These holes may be covered by collars or washer plates, indicated at 48, which collars or plates encircle the pipes 13 and 17 and may be secured thereto by set screws. They are also secured to the furnace casing by bolts or rivets so that displacement of the apparatus will be prevented.

Having thus described the invention, what is claimed as new is:

1. An air-moistening attachment for hot-air furnaces comprising a vaporizing pan constructed to rest upon the top of the furnace, a cover for the pan having outlet openings therethrough, means exterior to the furnace and its casing for supplying water through the cover to the pan, means within the pan to retard the flow of water therethrough, and means leading from the pan to the exterior of the furnace for carrying off excess water.

2. An air-moistening attachment for hot-air furnaces comprising a vaporizing pan constructed to rest upon the top of the furnace, means exterior to the furnace for supplying water to said pan in regulated quantities, and means supported exteriorly of the furnace and operated by overflow from the pan for controlling the supply of water to the pan.

3. An air-moistening attachment for hot-air furnaces comprising a vaporizing pan constructed to rest upon the top of the furnace and provided interiorly with a central post and with annular walls concentric with the post dividing the pan into a plurality of concentric annular chambers, a cover for the pan provided with outlet openings therethrough, a float chamber disposed at the exterior of the furnace, an outlet pipe leading from the pan to said float chamber, means for feeding water through the cover to the vaporizing pan and delivering said water upon the upper end of the post in the pan, means interposed in said feeding means for regulating the flow of the water, a valve supported upon the float chamber, a float within the float chamber, and operative connections between said valve and the float whereby the inflow of water will be controlled by the overflow from the vaporizing pan.

4. An air-moistening attachment for hot-air furnaces comprising a vaporizing pan, means for feeding water into said pan, means for retarding the flow of water within the pan, a float chamber disposed at the exterior of the furnace, an overflow connection between the vaporizing pan and the float chamber, an outlet from the float chamber in a plane above the said overflow connections, a valve body supported upon the float chamber, a valve within the said valve body, a supply pipe communicating with the interior of said valve body, a valve stem carrying the said valve and extending through the bottom of the valve body, a float within the float chamber, and an angle lever fulcrumed within the float chamber and having one extremity equipped with the said float and its other extremity pivotally connected to the lower end of the valve stem.

In testimony whereof I affix my signature.

CLARENCE E. SALLADA. [L. S.]