Aug. 7, 1923. 1,464,110

A. RAMSEY

HUMIDIFYING AIR VENT

Filed Aug. 5, 1920

Fig. 1.

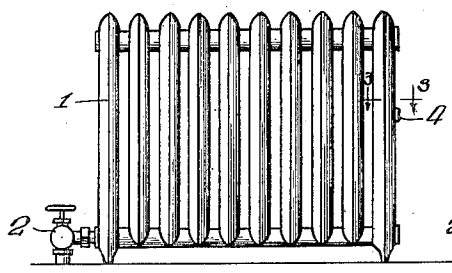


Fig. 2.

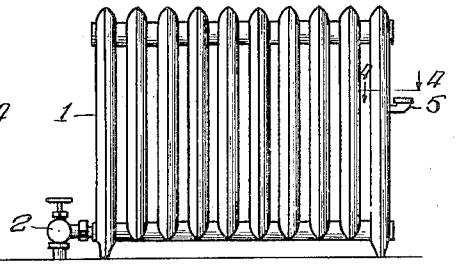


Fig. 3.

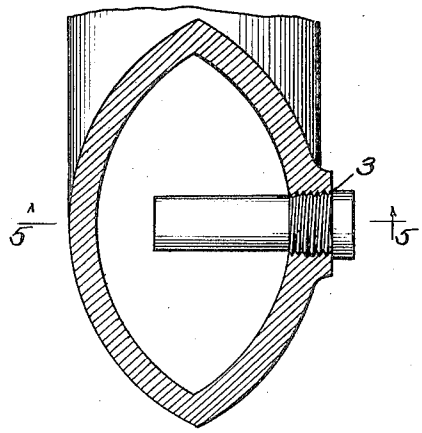


Fig. 4.

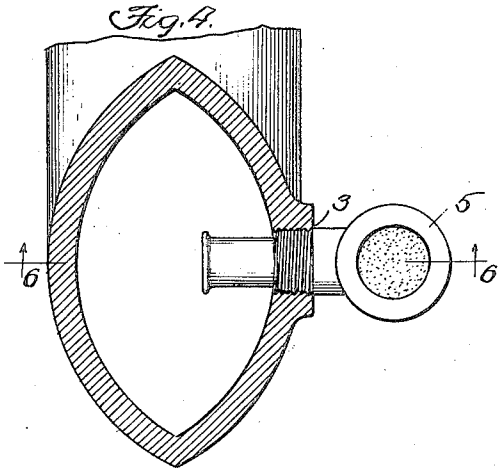


Fig. 5.

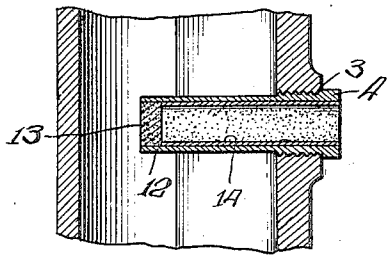
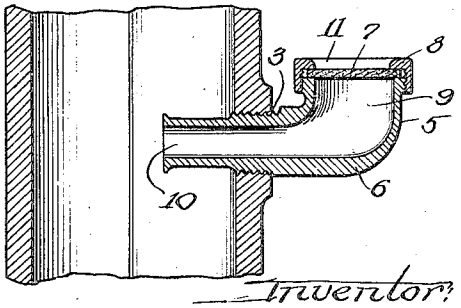


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALLAN RAMSEY, OF CHICAGO, ILLINOIS.

HUMIDIFYING AIR VENT.

Application filed August 5, 1920. Serial No. 401,306.

To all whom it may concern:

Be it known that I, ALLAN RAMSEY, a citizen of the United States of America, and a resident of Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Humidifying Air Vents, of which the following is a specification.

This invention relates primarily to humidifying air vents for steam radiators, but is not limited thereto, for it also relates to methods and devices in general adapted to supply steam for humidifying the atmosphere.

The main objects of my invention are to provide an improved and simplified form of attachment or vent of the character stated, adapted to prevent or minimize the condensation of steam passing therethrough and to effectually prevent the leakage of water of condensation, should any be formed, as upon turning on the steam; to provide in the passageway of an air vent a fluid-pervious material, wall or diaphragm adapted to permit the gradual escape of air, as usual in such devices when the steam is turned on, and then steam thereafter; to provide for collecting in the vent attachment whatever moisture may at first be condensed and then evaporating the same by heat from dry steam and from the wall of the vent; to provide such a device adapted to permit the restricted discharge of steam, without noise, spitting or sputter, into the room or space heated by the radiator, sufficient to produce that degree of humidity in the air which is necessary for living comfort or for a particular use of the space; and to provide such a vent of rigid unitary character and free of moving parts, adapted to permit air to flow back into the radiator when the steam is turned off.

An illustrative embodiment of this invention is shown in the accompanying drawings in which—

Fig. 1 is a side view of a steam radiator equipped with one form of my improved vent.

Fig. 2 is a similar view showing another embodiment of my improved vent.

Fig. 3 is mainly a horizontal section greatly enlarged on the line 3—3 of Fig. 1.

Fig. 4 is a similar view on the line 4—4 of Fig. 2.

Fig. 5 is a fragmentary vertical section on the line 5—5 of Fig. 3.

Fig. 6 is a similar view on the line 6—6 of Fig. 4.

Referring to the drawings, my improved humidifying air vent is shown attached to a steam radiator 1 of the usual form, having a steam supply valve 2, and having a threaded perforation at 3 to receive the correspondingly threaded stem of the humidifying air vent. For the purpose of illustrating my invention, I have shown two forms or styles of vents, indicated by the numerals 4 and 5 respectively. The vent 5 shown in Figs. 2, 4 and 6 includes an L-shaped body part 6 of elongated tubular form, a diaphragm or closure wall 7 of fluid pervious structure and preferably rigid disposed across the outer end of said vent, and a clamping ring 8 for securing the member 7 in place. The vertical outer part 9 of the tubular passageway is enlarged somewhat relative to the horizontal part 10, in order to provide for a retardation plate 7 of larger size and capacity than could be accommodated otherwise. A shallow cup-like receptacle 11 is provided above the diaphragm wherein any moisture which may be condensed when the steam is turned on may be collected and retained until evaporated by heat subsequently transmitted thereto by the outflowing steam. Any condensation occurring below the plate 7 runs back into the radiator.

Referring to the vent 4 shown in Figs. 1, 3 and 5, this embodiment comprises a straight elongated tubular body 12 threaded adjacent to its outer end to fit the radiator hole 3, a porous fluid retarding wall 13 at or adjacent to its inner end, and a capillary lining 14 extending preferably from said wall to the outer end of the tube 12.

It is to be noted that the inner end of the vent member projects horizontally well into the interior of the radiator, whereby it is readily heated to the full temperature of the steam. This feature in itself lessens the common tendency of such attachments to cause condensation and leakage of water.

The operation of said vent 4 shown in Figs. 1, 3 and 5 is as follows: When steam is supplied to the cold air-filled radiator, the air is first forced out through the fluid pervious member or porous plate 13, followed when the air is nearly all expelled by a mixture of steam and air, and later by dry steam. When the steam or mixture of steam and air begins to pass through the porous plate there

occurs a slight condensation of steam on the surface of the plate and on the inside of the tube 12 and its capillary lining 14. This water is held by the lining until dry steam begins to pass through said plate, at which time the temperature of both tube and lining is raised above the condensation point, whereupon the water held by said lining is evaporated and discharged into the air with the dry steam.

The operation of vent 5 shown in Figs. 2, 4 and 6 is substantially the same as the operation of vent 4 except that the water of condensation below the porous plate 7 runs back into the radiator, while that upon and above the plate is held in the cup 11 until its temperature is raised above the condensation point by the escaping steam, whereupon the water is evaporated and passes out into the air with the dry steam coming directly from the radiator. When the steam is turned off air gradually flows into the radiator and prevents a vacuum being formed by the condensation of the steam.

Various materials may be used for the fluid pervious members or plates 7 and 13, but I have found carbon to be well adapted for the purpose. The plates are to advantage made of various thicknesses, and being interchangeable, any desired degree of retardation may be attained.

The absorbent lining 14 of Fig. 5 may well be made of wire gauze or the like.

It is to be understood that the application or use of my invention is not limited to radiators, for the vents may obviously be attached to any source of steam.

Being interchangeable with ordinary air valves my dripless diaphragm vents are peculiarly adapted for household use. It is also adapted for use in offices, public buildings, factories, kilns of various sorts as for instance in drying varnishes, in cotton mills and wherever air moistening is desired.

Although but two specific embodiments of this invention are herein shown and described, it is to be understood that some of the details of the constructions shown may be altered or omitted without departing from the spirit of this invention as defined in the following claims.

I claim:

1. A humidifying air vent comprising a tubular body threaded exteriorly for application to a source of steam, in combination with a hard, rigid plate disposed across the opening through said tubular body, said plate being of porous character and adapted to permit restricted escape of air and steam under ordinary radiator pressures.

2. A steam radiator in combination with a humidifying air vent, the latter comprising an elongated tubular body projecting well into the radiator chamber for quick and effective heating and having a durable porous member disposed across the passageway, which member is adapted for the gradual escape of air or steam under ordinary radiator pressures.

3. A humidifying air vent comprising a tubular body threaded exteriorly between its ends for application to a steam chamber in combination with an interchangeable porous air and steam transmitting carbon closure member disposed across the tubular passageway, and a threaded locking ring to secure said member in place.

Signed at Chicago this 3rd day of Aug., 1920.

ALLAN RAMSEY.