June 22, 1926. 1,589,428

E. C. ROSENOW

METHOD OF HUMIDIFYING AND STERILIZING AIR

Filed June 12, 1922

Fig. 1.

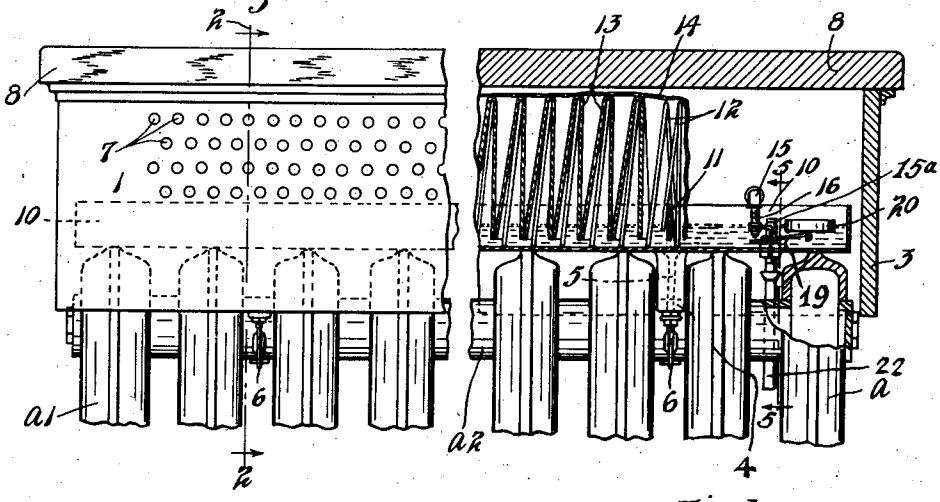


Fig. 2.

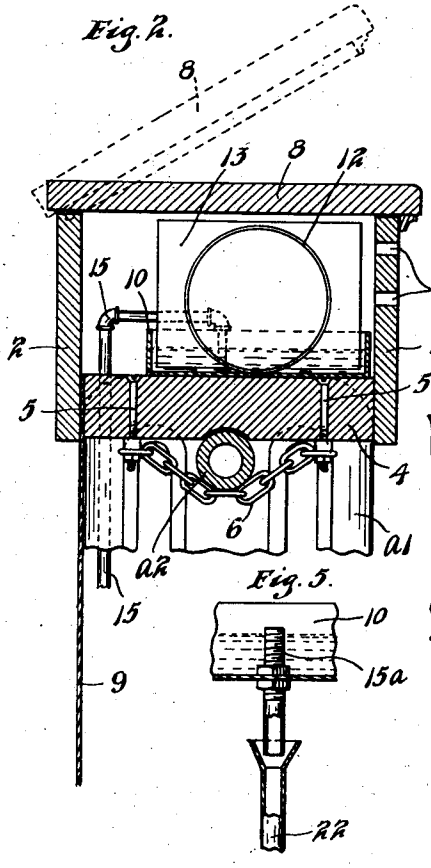


Fig. 3.

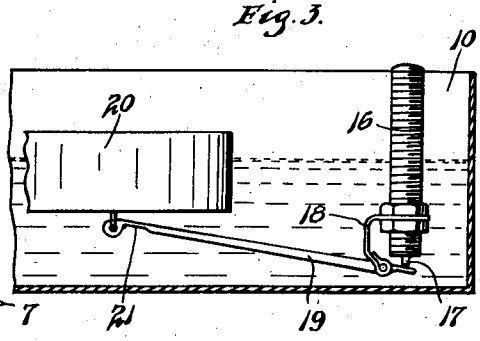


Fig. 4.

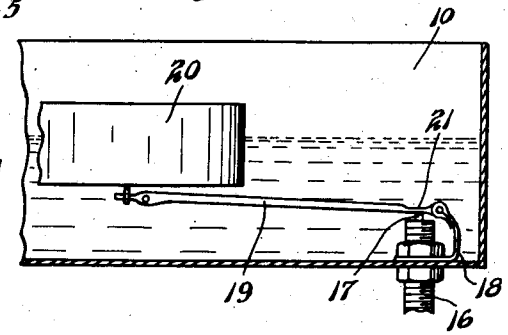


Fig. 5.

INVENTOR.
EDWARD C. ROSENOW.
BY HIS ATTORNEY.
James F. Williamson

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UNITED STATES PATENT OFFICE.

EDWARD C. ROSENOW, OF ROCHESTER, MINNESOTA.

METHOD OF HUMIDIFYING AND STERILIZING AIR.

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This invention relates to a method for humidifying, washing and sterilizing the air in heated rooms. It is well known that in closed heated rooms, the air becomes charged with bacteria and that there is more or less dust and other impurities therein. It is also well known that there is a circulation of air upward from the radiators which are commonly used to heat the rooms. This upward circulation of air carries with it a stream of dust which usually results in a soiled place on the ceiling, and if there are any draperies adjacent the radiator they are charged with dust and soiled.

It is an object of this invention to provide a method for utilizing the circulation caused by the radiator to humidify, wash and sterilize the air in the room.

It is a further object of the invention to use the heat of the radiator to circulate the air through a casing having means therein for trapping and killing the germs.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to the same parts throughout the different views, and in which,

Fig. 1 is a view partly in side elevation and partly in longitudinal section showing a radiator with the device attached thereto;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1, as indicated by the arrows, showing a portion of the device in a different position in dotted lines;

Fig. 3 is a view in vertical section on an enlarged scale of one end of the receptacle;

Fig. 4 is a similar view showing a modified arrangement; and

Fig. 5 is a fragmentary vertical section of the device taken on line 5—5 of Fig. 1.

Referring to the drawings, a radiator of the usual type for heating a room by steam or hot water is shown as a, having the individual sections a^1 and a longitudinal member a^2 connecting and extending between the sections adjacent the top thereof.

A frame is attached to the radiator comprising spaced front and rear side members 1 and 2 which extend longitudinally of the radiator and are connected by the end members 3. Spaced members 4 extend transversely between the side members 1 and 2 and are secured thereto in any suitable manner, these members being adapted to extend between the sections a^1 of the radiator and to rest upon and be supported by the longitudinally extending member a^2, and being shown as recessed for engagement with said member. The members 4 are further provided with spaced bolts 5 having grooved countersunk heads disposed in the upper surface of the members 4 and having threaded ends projecting therebeneath. A chain or other flexible member 6 has its end links or loops disposed over the bolts 5 against collars thereon adjacent the members 4, which links or loops are held in place by the nuts threaded on to the bolts. If preferred, the ends of the chain or the links thereof can be disposed directly against the members 4. After the nuts have been started on the bolts the same, together with the chain can be tightened by turning the bolts from the upper ends with a screw driver. The chain 6 is thus clamped tightly against the member a^2 and the frame is rigidly secured to the radiator. The front end of the frame is provided with a plurality of holes 7 suitably arranged to produce an artistic effect. The frame is provided with a cover 8 preferably made from a solid panel and having a molding flange around its edge adapted to fit over the front and ends of the frame, this cover preferably being removable and simply placed in position on the frame. A deflector 9 made of thin sheet material, preferably metal is secured to the rear member 2 and extends downward in the rear of the radiator substantially to the bottom thereof.

Supported on the transverse members 4 is a receptacle or tank 10 shown as being a shallow rectangular tank having a partition 11 adjacent one end thereof. This tank is disposed with its front side substantially in contact with the inner side of the member 1 and a coiled spring 12 of comparatively light wire is disposed between one end thereof and the partition 11 being detachably interlocked with the latter. Folded sheets 13 of absorbent material, preferably ordinary blotting paper, are placed over the convolutions of the spring 12 with their lower free ends disposed in the tank adjacent the bottom thereof and a curtain 14 of absorbent fabric material such as ordinary mosquito bar, covers the member 13 and depends at the sides and ends thereof into the tank 10. The tank 10 is adapted to contain a liquid and is provided with a supply pipe 15 and with an overflow pipe 15^a. It is desired to

maintain the liquid in the tank at substantially a constant level and for this purpose a valve is provided disposed in a casing 16 formed as a hollow stem exteriorly threaded. The valve is not shown but is of any common type and is spring-pressed to closing position or is moved to closing position under the action of both the spring and the fluid. Such valve is provided with a projecting plunger 17 which, when pressed upon will open the valve. This valve is similar to the well-known Schrader bicycle valve. In order to maintain the liquid at the desired level and operate the valve in casing 16, said casing is provided with a bracket 18 held thereon by clamping nuts threaded on said casing, which bracket has pivoted thereto a lever 19. Said lever has a projecting pivot or pintle which is received in an aperture at the end of said bracket. The other end of the lever 19 is connected to the bottom of a float member 20. The float member is made of considerable weight and when the water in the tank is lowered the same will drop by gravity and the other end of the lever 19 which is flattened and is disposed under the plunger 17 will contact with and raise said plunger, thus admitting water until the fluid is raised to a sufficient height to relieve the pressure of the end of the lever on the plunger 17.

The lever 19 is constructed so as to be reversible in order to be used with the same type of valve when it is desired to have the valve or entrance pipe projecting upwardly into the tank 10. The bracket 18 is reversed in position and the end of the lever which was attached to the float, as shown in Fig. 3, is connected to the apertured end of the bracket by a suitable pivot, the lever being provided with a flattened portion 21 adapted to extend over the plunger 17. The float 20 is attached to the other end of the lever and it will be apparent that the lever now acts as a third class lever and will open the valve when the float 20 drops on account of the lowered liquid level.

The liquid used in the tank 10 is preferably water containing an oxidizing or germicide substance. It has been found that potassium permanganate is a suitable substance to be used in the water. As the air rises adjacent the radiator due to the heating thereof the same will pass into the rear of the casing between the members 4 and the rear side of the casing and will pass forwardly through the casing and out of the holes 7. The radiator thus acts as a circulating means in applicant's process and combination. The members 13 and 14 will be substantially saturated with the liquid owing to capillary attraction and as the air passes forwardly the same will come into contact with the moist surface of said members and the dust, bacteria and other impurities will in a large measure be trapped and collected on said members. The water will be constantly evaporated and the atmosphere of the room will be humidified. The germicide and oxidizing agent will not evaporate and this agent will act to kill the germs and bacteria collected on the sheet members 13 and the curtain or fabric 14. Any decomposed material tending to make the water or saturated parts become foul will be oxidized by the oxidizing agent so that the apparatus will be kept in fresh and sanitary condition at all times. Actual tests made with the device show that the bacterial content of the air is reduced over fifty percent. The inside of the box or frame formed by the members 1, 2, 3 and 4, as well as the inside of the cover 8, will preferably be coated with water proof coating such as varnish and the outside of the members will be finished to correspond with the other woodwork of the room.

It is further noted that the pan 10, as shown in Figs. 1 and 3, is romovable by merely removing cover 8 and then turning the pan edgewise and sliding the same laterally and upwardly from under the inlet pipe 15.

From the above description it is seen that applicant has provided an extremely efficient method for the purpose intended and one which has great utility. The humidity of the air is automatically proportioned to the dryness thereof and the amount of heat radiated. The cleansing of the air protects the walls and draperies of the room against the soiling dust laden air arising from the radiator. The device, also, is efficient for cooling window radiator seats as the cover 8 can be constructed to form a seat or shelf. The device, as a whole, forms an efficient and ornamental apparatus, the action of which is entirely automatic. The control of the inlet of the water and the overflow pipe renders the device entirely safe and necessitates very little attention.

It, will, of course, be understood that various changes may be made in the steps and sequence of steps of the method without departing from the scope of applicant's invention, which, generally stated, consists in the method described and set forth in the appended claims.

What is claimed is:

1. The method of producing a sterilized and clean atmosphere in a room which consists in providing and maintaining a body of water with a sterilizing oxidizing non-volatile germicide in solution therein and circulating the air in said room through an absorbent sheet of fabric material disposed in contract with said water and moistened thereby, thus trapping the dust, impurities and germs in the air on said sheet of material whereby said germs are killed by said

germicide and said water kept in a sanitary condition by said germicide and the air in said room cleaned and sterilized without having odors or fumes imparted thereto.

2. The method for producing a sterilized and clean atmosphere in a room which consists in providing and maintaining a body of water with an oxidizing non-volatile germicide in solution therein and circulating the air in said room into contact with an absorbent sheet of fabric material disposed in contact with said water and moistened thereby, thus trapping the dust, impurities and germs in the air on said sheet of material whereby said germs are killed by said germicide and said water kept in a sanitary condition by said germicide and the air in said room cleaned and sterilized without having odors or fumes imparted thereto.

In testimony whereof I affix my signature.

EDWARD C. ROSENOW.