F. P. MIES.

HEATING, COOLING, AND VENTILATING SYSTEM.

APPLICATION FILED MAR. 5, 1910.

998,975. Patented July 25, 1911.

Fig. 1.

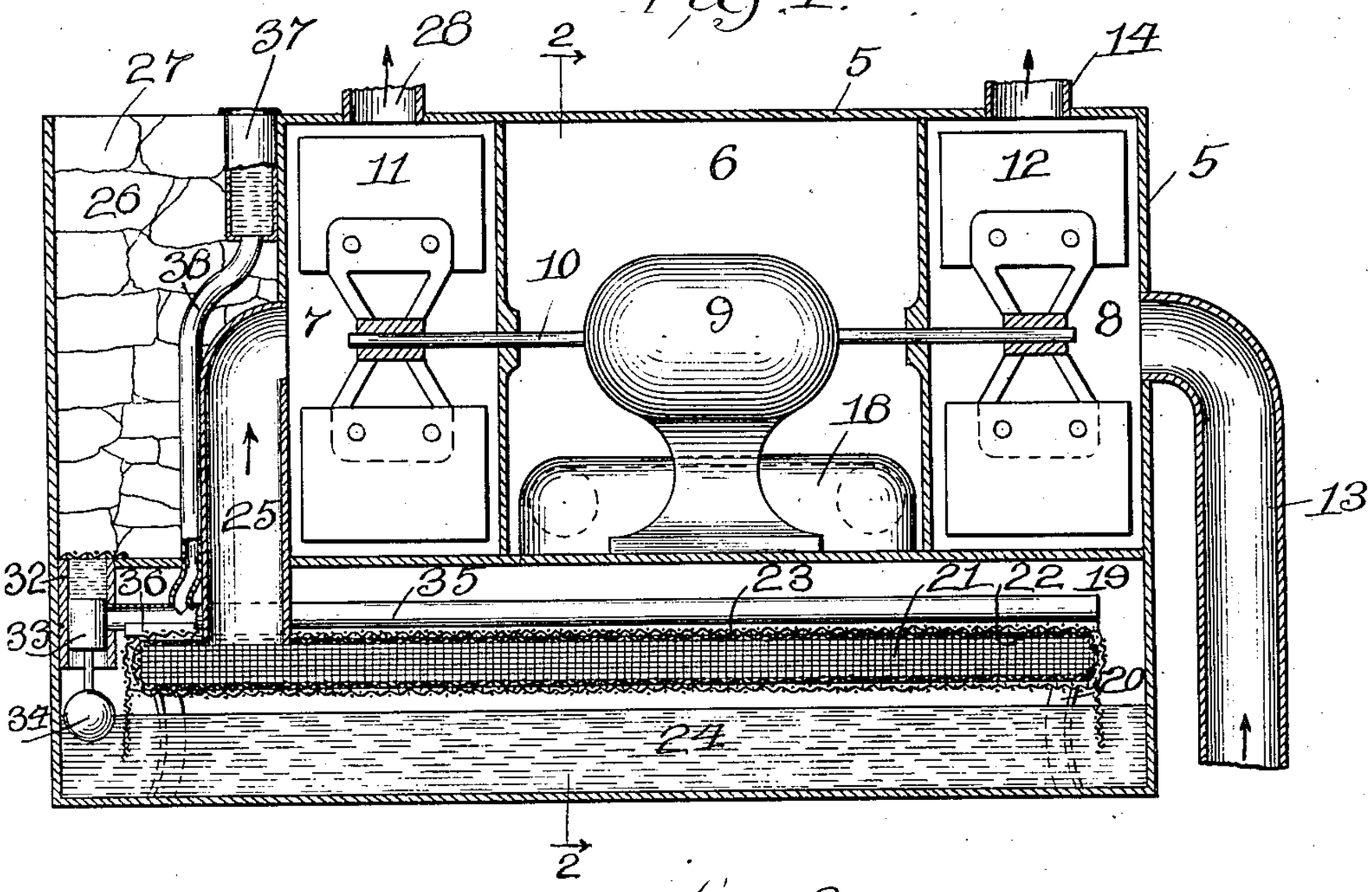
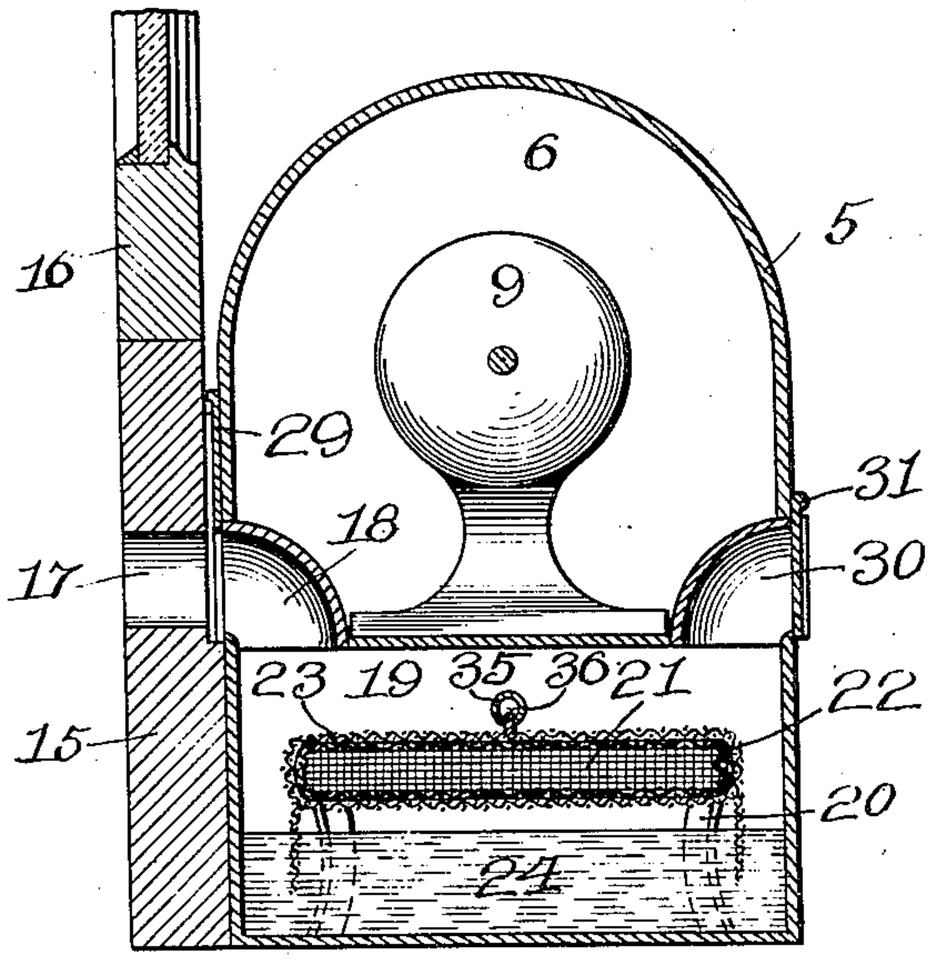


Fig. 2.



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UNITED STATES PATENT OFFICE.

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HEATING, COOLING, AND VENTILATING SYSTEM.

998,975. Specification of Letters Patent. Patented July 25, 1911.

Application filed March 5, 1910. Serial No. 547,554.

To all whom it may concern:

Be it known that I, FRANK P. MIES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Heating, Cooling, and Ventilating Systems, of which the following is a specification.

My invention relates to improvements in heating, cooling, and ventilating systems, and has for one of its objects to provide a simple, compact, portable, self-contained device, by the operation of which air may be taken into an apartment, cleaned, heated or cooled, and by the operation of which all of the foul air may, at the same time, be removed from the apartment.

Another object of my invention is to provide a device of the character described whereby the air forced into the room may be medicated, or pregnated with a suitable volatile or other sterilizing substance for the purpose of perfuming the air, to destroy germs therein, and rendering more sanitary the air which the occupants of the apartment are to breathe.

Other and further objects of my invention will become apparent to persons skilled in the art from the description and the accompanying drawing, wherein—

Figure 1 is a central longitudinal section of the device in elevation; and Fig. 2 is a cross section taken on line 2—2 of Fig. 1.

In each of the views the same reference characters indicate similar parts.

5 is a casing divided into three parts comprising a central chamber, 6, in which is located an electric motor, or other motor, for imparting power to the fans, located in fan chambers, 7 and 8, respectively. The motor, 9, is provided with shaft, 10, upon the end of which are secured the fans, 11 and 12, in chambers, 7 and 8, respectively. The chamber 8 communicates with the interior of the room by means of an intake pipe, 13, which may extend to the lower portion of the apartment or room or to any height desired for the purpose of removing the foul air from such chamber or apartment.

In Fig. 1 I have shown the discharge outlet, 14, at the top of the casing, but it is apparent that it may be at either side and conveniently arranged for discharge of air into the outside atmosphere. The casing, as a whole, is mounted upon a sideboard, 15, which is adapted to be included in a window casing in association with the window sash, 16. An opening, 17, is made in the board, 15, and this opening communicates with a downwardly deflected conduit or opening, 18, in the central chamber, 6. The air from the exterior enters the opening, 17, passes through the conduit, 18, thence downwardly into chamber, 19. The chamber 19 is a water reservoir or tank extending the full length of the device, and adapted to be partially filled. Mounted on legs, 20—20, is an air-filtering tubing, 21. The tube, 21, is composed of wire mesh fabric, 22, surrounded with a relatively fine mesh cloth fabric, 23. A part of the cloth surrounding the wire mesh tube may dip into the water reservoir, 19, below the surface of the water, 24, therein, as at 25, so as to maintain the cloth fabric 23 damp by the capillary effect of that part of the cloth which is in contact with the water.

When the air enters the chamber, 19, from the opening, 17, and conduit, 18, being drawn therein by the operation of fan 11, it is brought into contact with the damp vapors within the chamber 19, and any substances as dust, germs, etc., therein are precipitated and deposited in the water 24. A pipe 25, communicates with the tube, 21, and is connected to the eye of the fan 11. The suction produced by the fan causes the air to enter the foraminous tube 21, through the wire and cloth meshes, which are more or less damp, and in passing therein and in contact therewith becomes humidified to a greater or less extent and at the same time the substances carried in suspension in the air are deposited on the exterior surface of the tube 21.

A chamber, 26, is provided, through which the tube 25 passes in joining the tubes 21 and fan 11. The chamber 26 may be

filled with ice, 27, or hot water, as the case may be. If it is desired to cool the air before it enters the apartment, the chamber 26 is filled with ice, so that the air, in passing through the tube, 25, comes in contact with its chilled walls and becomes cooled before entering the apartment. If it is desired to heat the air, the chamber is to be filled with hot water or other heating agent.

After the air passes into the tube, 25, it is drawn into the casing, 7, and is discharged into the room or apartment through the opening 28.

A damper, 29, is provided for the opening, 18, by means of which the quantity of air admitted through said opening may be regulated, or the opening 18 may be entirely closed thereby. Another opening, 30, is provided on the opposite side of the casing, 6, and this opening is provided with a similar damper, 31. If the damper 29 be closed and the damper 31 be opened, the air will be taken from the room instead of from the exterior thereof, by the operation of the device, and it will be humidified, cleaned, and heated or cooled, and returned to the room in a more sanitary comfortable condition.

At the bottom of the casing is a small depending tube, 32, in the lower end of which is a valve, 33, supported by a float, 34, normally resting upon the upper surface of the water, 24, within the casing 19. A tube, 35, open longitudinally through its bottom wall, is supported immediately above the porous tube 21, and is provided with a wick, 36, which extends longitudinally of the tube, 35, and projects through the opening therein into the interior thereof. The tube, 35, is connected with the tube 32. The object of the tube 35 and wick 36 is to moisten the upper surface of the tube 21.

When the water 24 is lower in the casing or tank 19 than the height at which it is to be normally sustained, the float 34 will descend in response to the lowering of the upper surface of the water, and cause the valve 33 to open the communication between the tubes 32 and 35, and permit the entrained water from the ice chamber, 36, to pass into the tube 35. The wick 36 provides a means for distributing the water evenly and uniformly along the top surface of the tube 21.

The chamber 37, which is designed to contain the medicated or similar substance which may be in the liquid or powdered form, is connected to the tube, 35, by means of a tube or pipe 38. Any means for varying the flow of the medicinal material to the tube 35 may be provided.

From the arrangement of the apparatus, it will be observed that the quantity of air removed from the room is substantially proportional to the quantity of air taken into the room, and for this reason the pressure of the air in the room or apartment may be maintained uniform.

Having thus described my invention, what I claim is:

1. In a device of the character described, a casing containing a fan chamber, and a motor chamber, and a separate water chamber, the latter provided with an air intake, arranged to direct the incoming air directly upon the surface of the water in said water chamber, and an elongated conduit made of reticulated water holding material, and otherwise closed, supported above the water level in said water chamber, and an imperforate conduit connecting said perforate conduit with the intake opening of said fan casing whereby the incoming air is cleansed and humidified.

2. In a device of the character described, a casing containing a fan chamber, and a motor chamber, and a separate water chamber, the latter provided with an air intake, arranged to direct the incoming air directly upon the surface of the water in said water chamber, and an elongated conduit made of reticulated water holding material, and otherwise closed, supported above the water level in said water chamber, a fabric means for raising water to said perforate conduit extending therefrom to the water below, and an imperforate conduit connecting said perforate conduit with the intake opening of said fan casing whereby the incoming air is cleansed and humidified.

3. In a device of the character described, a casing containing a fan chamber, and a motor chamber, and a separate water chamber, the latter provided with an air intake, arranged to direct the incoming air directly upon the surface of the water in said water chamber, and an elongated conduit made of reticulated water holding material, and otherwise closed, supported above the water level in said water chamber, a temperature chamber for changing the temperature of the air, and an imperforate conduit passing through said temperature chamber and connecting said perforate conduit with the intake opening of the fan casing, whereby said incoming air is cleansed and its temperature controlled.

4. In a device of the character described, a fan having an intake and a discharge opening, a water tank having an air inlet opening, a hollow body having a reticulated wall supported above the water space in said tank, a casing inclosing a chamber to contain a heating or cooling medium, a conduit connecting the intake of said fan with said hollow body, passing through said chamber, and a receptacle for a medicated medium connected with said tank for feeding same into the path of the air.

5. In a device of the character described,

a casing including two fan compartments each provided with intake and discharge openings, and an intermediate compartment, a driving motor in the latter compartment having its shaft extending into each of the fan chambers, a fan in each said fan chambers, secured to the respective ends of said motor shaft, a water tank having an air intake opening, and an air conduit connecting said tank with the intake opening of one of said fans.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

FRANK P. MIES.

In the presence of—
FORÉE BAIN,
MARY F. ALLEN.