

1,062,269.

2 SHEETS—SHEET 1.

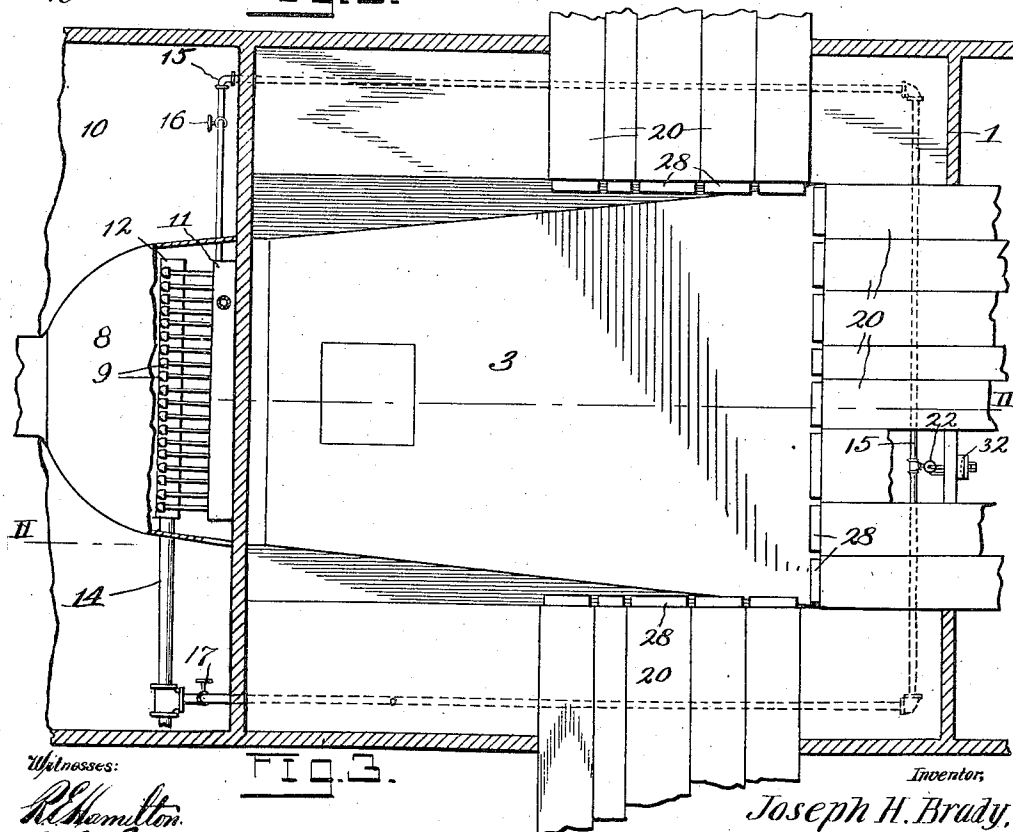
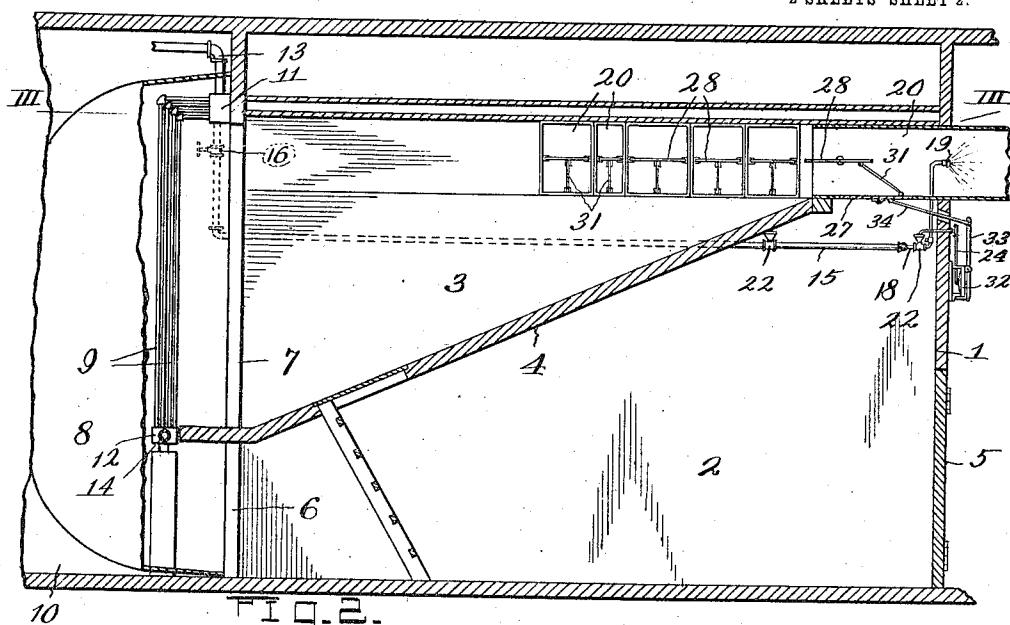


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2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH H. BRADY, OF KANSAS CITY, MISSOURI.

HUMIDITY-CONTROLLING APPARATUS.

1,062,269.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed November 13, 1911. Serial No. 659,957.

To all whom it may concern:

Be it known that I, JOSEPH H. BRADY, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Humidity-Controlling Apparatus, of which the following is a specification.

My invention relates to improvements in humidity controlling apparatus, and is well adapted for school and other public buildings.

The principal object of my invention is to provide an apparatus of this character whereby the humidity in each room of a building is individually controlled, so that more equal distribution of humidity throughout the building can be had than heretofore.

In order that the invention may be fully understood, reference will now be made to the accompanying drawings, in which:

Figure 1 is a broken vertical section of certain parts of the apparatus. Fig. 2 is a vertical section of the apparatus, taken on line II—II of Fig. 3. Fig. 3 is a horizontal section taken on line III—III of Fig. 2. Fig. 4 is an irregular vertical section of one of the ducts employed in carrying out the invention, taken on line IV—IV of Fig. 1.

In carrying out the invention I employ an apartment 1, divided into a temperate air-chamber 2, and a hot-air chamber 3, by a forwardly and upwardly inclined partition 4. Entrance may be had to the forward end of chamber 2 through a door 5, and said chamber is provided at its rear end with an inlet 6 for the admission of temperate air thereto. Chamber 3 is provided at its rear end with an inlet 7, for the admission thereto of hot air.

8 designates a fan for forcing air into chambers 2 and 3 through their respective inlets 6 and 7. The air in its passage to inlet 7 is heated by passing between heating-coils 9 interposed between the inlet 7 and the upper portion of fan 8. Fan 8 is arranged in an apartment 10 and its suction side has access to a supply of fresh air obtained, preferably, direct from the outer atmosphere. While for convenience, I have referred to the air entering chamber 2, as temperate air, as a matter of fact its temperature will fluctuate with that of the outer

atmosphere. Coils 9 communicate with headers 11 and 12, the former of which communicates with a heating medium, such for instance, as a steam-boiler, through a main supply-pipe 13, while the latter communicates with said medium through a main return-pipe 14.

15 designates a secondary supply-pipe leading from header 11, through the upper portion of chamber 2 and back to return-pipe 15. Supply-pipe 15 is provided with an inlet-valve 16 and an outlet valve 17 to control the passage of steam therethrough.

18 designates a plurality of branch-pipes leading from the secondary supply-pipe 15 and terminating in the form of spray-nozzles 19, each of which is adapted to discharge steam under low pressure into a duct 20. The flow of steam to the nozzles 19 may be either controlled manually through valves 21, or automatically through diaphragm-valves 22, which latter are actuated by thermostatically-controlled fluid in pipes 23, leading to said diaphragm-valves. Pipes 23 communicate with a like number of pipes 24, which receive air or other fluid under pressure from a suitable source, not shown, the flow of air through pipes 24 being controlled by thermostats 24^a distributed throughout the various rooms of the building equipped with the apparatus.

Ducts 20 lead from the upper portion of apartment 1 to the various rooms of the building, and have inlets 25 and 26 communicating, respectively, with the chambers 2 and 3. Inlets 25 and 26 of each duct are alternately opened and closed through the intermediacy of a set of dampers 27 and 28, pivotally-mounted at their central portions 29 and 30, respectively, and connected by a link 31, so that they will operate in unison. When one is in open position the other is in closed position, and vice versa. The set of dampers for each duct 20 is automatically controlled by a motor-valve 32, a lever 33, and a connecting-rod 34, pivotally-secured at its ends to lever 33 and a lug 35 at the underside of damper 27. The motor-valve 32 is automatically-controlled by the fluid under pressure in pipe 24. Lever 33 is fulcrumed at 36 to the casing of the motor-valve 32 and connected at its forward end to a retractile spring 37, also secured to the casing of the motor-valve 32, which latter is provided with a stem 38 bearing against

lever 33 to move the same in proper direction to expand the spring 37 and open the damper 27, see dotted lines on Fig. 1.

The operation of the apparatus briefly stated is as follows: Temperate and hot air is forced into chambers 2 and 3, respectively, and if the dampers 28 be open, the hot air is forced through the ducts 20 and into the rooms communicating therewith. In its passage through the ducts 20 the hot and comparatively dry air is permeated with steam or other moisture from the nozzles 19 and thereby obtains the requisite humidity. Should the hot air in the different rooms rise above a predetermined temperature, the thermostats in said rooms admit fluid under pressure to pipes 24, which fluid acting upon the motor-valves 32 causes the same through the intermediacy of their connecting parts to open dampers 27 and close dampers 28, thereby shutting out, for the time being, a further supply of hot air from chamber 3 and admitting air from chamber 2. The fluid under pressure also acts upon the diaphragm-valves 22, causing the same to automatically cut off the flow of steam or moist air into the nozzles 19. When the temperature in the rooms falls below a predetermined degree, the fluid under pressure to pipes 24 is cut off, so that the dampers 28 may be drawn open and the dampers 27 closed through the intermediacy of the springs 37, and the diaphragm-valves 22 may open to admit steam to the nozzles 19. As each duct 20 has its individual damper-controlling mechanism, the temperature in the various rooms is independently-controlled and as each duct 20 has its independently-controlled steam supply, the desired quantity of moisture can be supplied to each room, a result which it is impossible to obtain when the hot air for all the ducts is treated by moisture from a common nozzle.

Having thus described my invention what I claim and desire to secure by Letters Patent, is:—

1. In an apparatus of the character described, in combination, an air-duct having two inlets, one to admit temperate air and the other to admit hot air, dampers to alter-

nately open and close said inlets, a nozzle arranged to discharge moist fluid into said duct, a hot-air chamber communicating with the hot-air inlet, and a temperate air-chamber communicating with the temperate air inlet.

2. In an apparatus of the character described, in combination, an air-duct having two inlets, one to admit temperate air and the other to admit hot air, dampers to alternately open and close said inlets, a nozzle arranged to discharge moist fluid into said duct, a hot-air chamber communicating with the hot-air inlet, a temperate air-chamber communicating with the temperate air inlet, and automatic means to simultaneously control said dampers and the flow of fluid to said nozzle.

3. In an apparatus of the character described, in combination, an air-duct having two inlets, one to admit temperate air and the other to admit hot air, dampers to alternately open and close said inlets, a nozzle arranged to discharge moist fluid into said duct, a hot-air chamber communicating with the hot-air inlet, a temperate air-chamber communicating with the temperate air-inlet, said chambers having inlets, means for forcing air through said inlets into the chambers, and a heating-coil interposed between said means and the inlet to the hot-air chamber.

4. In an apparatus of the character described, in combination, a plurality of air-ducts each having a hot-air inlet and a temperate air inlet, a hot-air chamber communicating with the hot-air inlets, a temperate air-chamber communicating with the temperate air inlets, dampers to control the admission of air to said inlets, a nozzle in each duct to discharge moist fluid therein, and automatic means to control said dampers and the flow of fluid to the nozzles.

In testimony whereof I affix my signature, in the presence of two witnesses.

JOSEPH H. BRADY.

Witnesses:

F. G. FISCHER,
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