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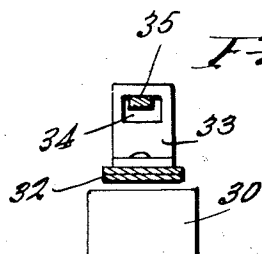
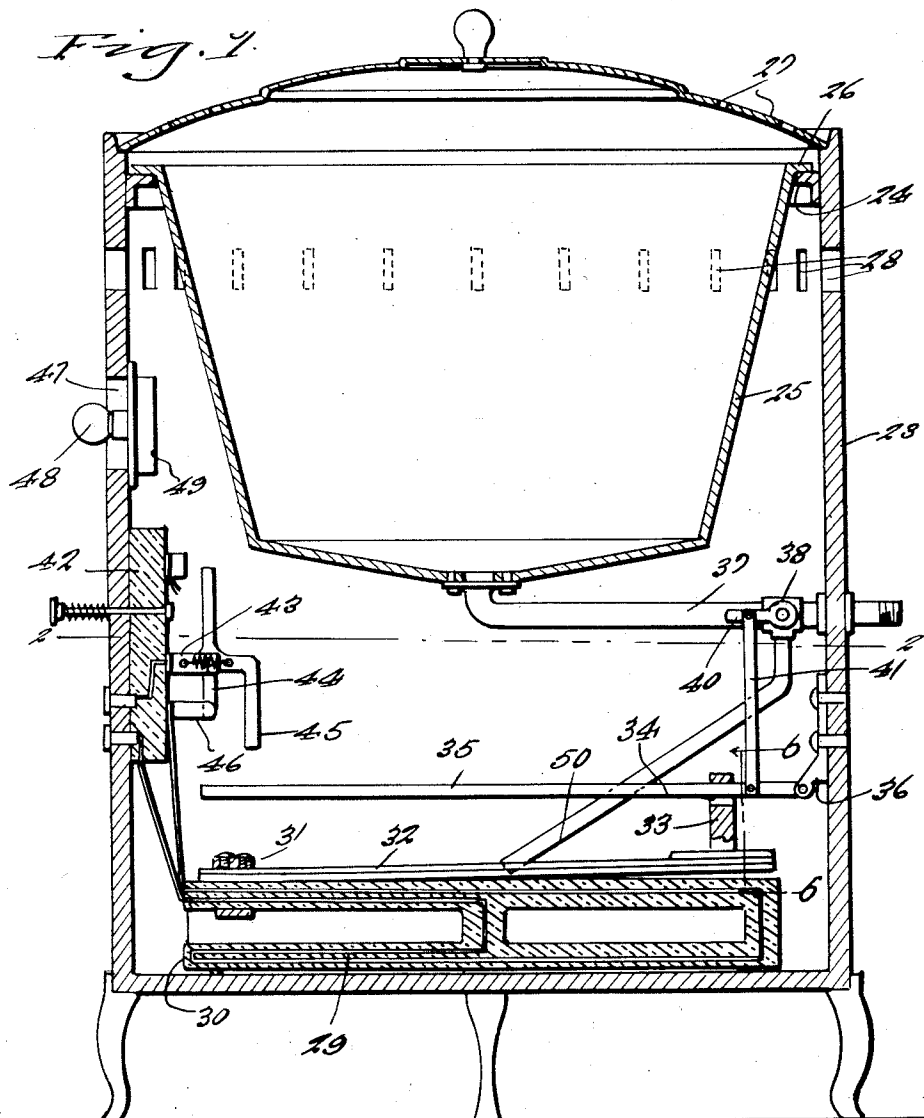
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1,828,702

AUTOMATIC HUMIDIFIER

Filed Sept. 16, 1930

3 Sheets-Sheet 1



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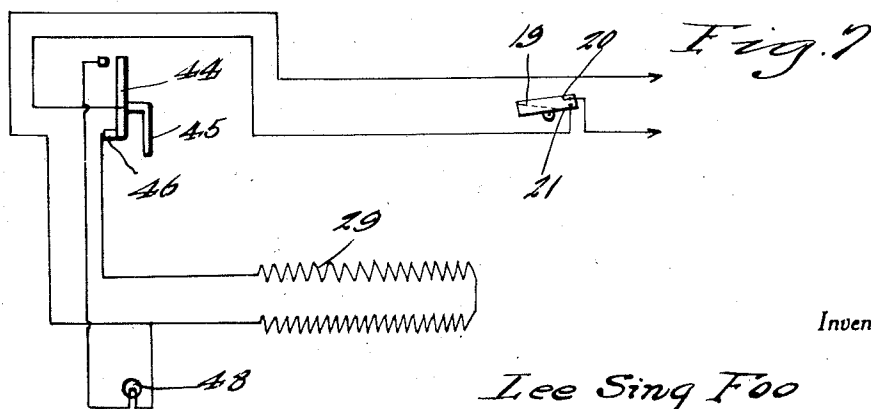
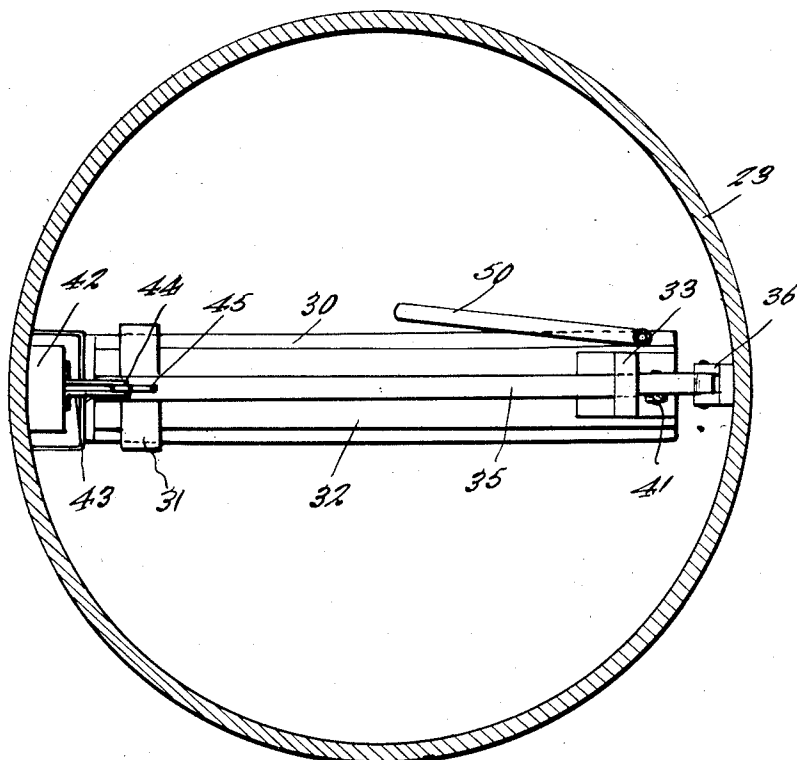
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Fig. 2.



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Fig. 3.

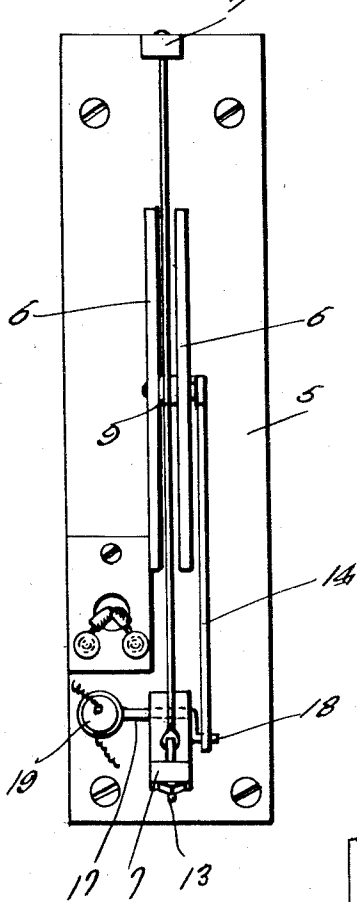


Fig. 4.

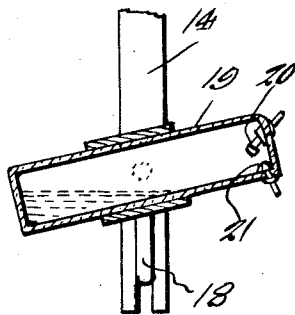
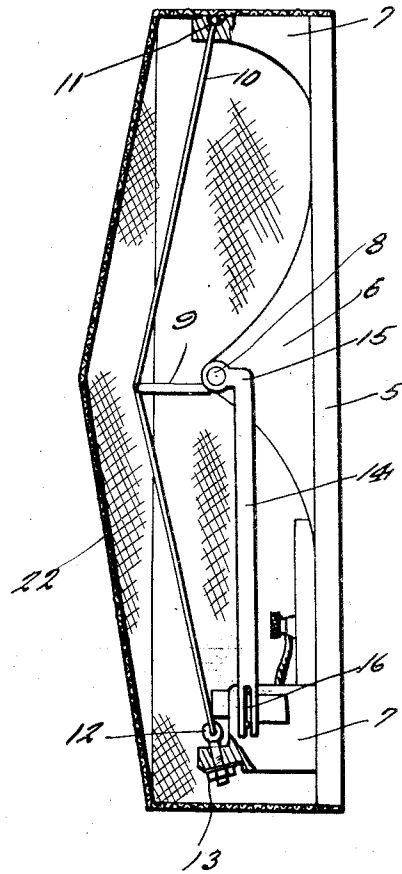


Fig. 5.

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UNITED STATES PATENT OFFICE

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AUTOMATIC HUMIDIFIER

Application filed September 16, 1930. Serial No. 432,341.

This invention appertains to new and useful improvements in automatic humidifiers, especially adapted for use in buildings, particularly in homes, offices, warehouses, and other places of habitation.

The principal object of the invention is to provide a humidifier which will require a minimum amount of attention and which in operation will be entirely automatic.

During the course of the following specification and claims, other important objects and advantages of the invention will readily become apparent to the reader.

In the drawings:—

Figure 1 represents a vertical sectional view through the humidifier.

Fig. 2 represents a horizontal sectional view taken substantially on the line 2—2 of Fig. 1.

Fig. 3 represents an elevational view of the thermostat with the shield removed.

Fig. 4 represents a side elevational view of the thermostat showing the shield in section.

Fig. 5 represents a fragmentary sectional view disclosing the mercury switch.

Fig. 6 represents a sectional view taken substantially on the line 6—6 of Fig. 1.

Fig. 7 represents a diagrammatic view disclosing the electrical connection between the electrical devices involved.

Referring to the drawings wherein like numerals designate like parts, it can be seen that the thermostat includes a base 5 on which the brackets 6—6 are located. A protuberance 7 is provided at each end of the base 5. A shaft 8 is journaled through the bracket 6—6 and carries an outwardly projecting arm 9. A cord 10 made up of a plurality of preferably human hair saturated in alcohol or some other suitable liquid has one end secured to one of the protuberances 7 as at 11 while its opposite end is secured to the eye screw 12 which is disposed through the other protuberance 7 and equipped with a nut 13.

An elongated arm 14 is provided with a laterally disposed end secured to one end of the shaft 8, while its opposite end is provided with a slot 16.

Journaled through the protuberance 7

through which the eye bolt 12 extends is a shaft 17 which is provided with a crank 18 at one end thereof located within the slot 16 of the lever 14. This shaft 17 rockably supports the mercury bulb 19 which has a pair of contacts 20 and 21 therein. A shield 22 of suitable material is disposed over the base 5 and the materials secured thereto to protect the same.

The humidifier includes a container 23, open at its top and closed at its bottom. The shoulder 24 secured to the inner side of the container adjacent the top thereof serves to support the reservoir 25 by its flange 26.

A perforated lid 27 may be placed over the open top of the container 23 in the manner shown in Fig. 1. A plurality of openings 28 are provided in the side walls of the container 23 and at circumferentially spaced intervals.

A heating element 29 is enclosed in the jacket 30 of suitable material and secured to this jacket by clamp 31 is one end of the thermostatic element 32, the opposite end of which is free and has an upstanding block 33 thereon having an opening 34 therein for receiving the pivotal beam 35, which is pivotally secured to the bracket 36. A drain pipe 37 extends from the bottom of the reservoir 25, through the valve 38 and through the side wall of the container 23.

In instances where the city water supply is not available the outer end of the drain pipe 37 is plugged and the reservoir 25 is filled with water. The valve 38 has a lever 40 operating the same, and a link 41 is interposed between the beam 35 and the lever 40.

Secured to the inner side of the container 23 is a di-electric block 42 to which the bracket 43 is secured. This bracket 43 carries the switch blade 44 which is provided with an arm 45 normally overlying the beam. A contact 46 is engaged by the blade 44 when the heating element is energized. An opening 47 in the wall of the container 23 has the bulb 48 projecting therethrough from the socket structure 49 secured to the inner side of the container.

As is clearly shown in Fig. 7, the source of current extends through the contacts 20 and

21 to the contacts 46 and when these contacts are bridged by the blade 44 the current will pass to the heating element 29.

Obviously when the heating element reaches a certain temperature, the element 32 rises at its free end to lift the beam 35, thus resulting in the operation of the valve so that water is discharged through the pipe 6, and deposited over the jacket surrounding the heating element. Thus steam is generated which passes upwardly and outwardly through the opening 8 in the container.

From the foregoing it will be seen that when the air becomes dry, in the room or other enclosure in which the device is placed the hair string 10 will shrink and thus cause the lever 14 to be moved on its pivot 8 by the arm 9 and this movement of the lever 14 will cause a partial rotation of the shaft 17 so that the mercury switch 19 will be tilted to cause the mercury to cover the contacts 20 and 21. Thus current will flow to the heating element 29 and after a certain period of time the thermostat bar 32 will rise and tilt the lever 35 so that the valve 38 will be opened through means of the link 41 and water passed from the pipe 37 either from the tank 25 or the main through the pipe 50 upon the jackets 30, the heat from which will cause the water to be turned into steam which will pass through the perforations 28 and thus supply moisture to the room.

The moist air in the room will then act on the hair string 10 to cause the same to expand and then the lever 14 will turn the mercury switch to its original position and break the circuit to the heating element so that the device will be set for future operation when the air again becomes dry.

If the tank 25 should be empty when the valve is open, the heat from the heating element will cause the bar 35 to continue its upward movement until the end of the bar will strike the switch 45 and move the same to a position where the spring 44' snaps the switch open so that the circuit would be broken.

In order to close this switch one would have to push in the spring plunger 50 which would engage a part of the switch blade and give the same a partial movement so that the spring 44' would complete the movement of the blade 44.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having thus described my invention, what I claim as new is:—

1. Means for moistening air in a room or the like comprising an electrical heating element, a circuit for the same, a switch in the circuit, means for closing the circuit when the air becomes dry, a water supply pipe dis-

charging on the heating element, a valve in said pipe and means actuated by the heat from the element for opening the valve whereby the water flowing on to the heating element is converted into steam and after the air is moistened by the steam the switch operating means returns to normal position and the switch is opened.

2. Means for supplying moisture to the air of a room or the like comprising a heating element, a circuit for the same, a switch in the circuit, means for closing the switch when the air becomes dry and for opening the switch when the air is moistened, a water supply pipe discharging on to the heating element for converting the water into steam to moisten the air, a valve in said pipe, means operated by the heat from the element for opening the valve, such means closing the valve upon cooling of the heating element and means whereby such means will break the circuit upon the failure of the water supply to the heating element.

3. Means for supplying moisture to air in a room or the like comprising a heating element, a circuit therefor, a switch in the circuit, means for closing the switch when the air becomes dry and such means opening the switch when the air is moist, a valved water supply pipe discharging on to the heating element, a thermostat located adjacent the heating element, and means operated thereby for opening the valve for supplying water to the heating element to convert the water into steam, a second switch in the circuit, and means for opening the same by the thermostat operated means if water should not be supplied to the heating element.

4. Means for supplying moisture to air in a room or the like comprising a heating element, a circuit therefor, a switch in the circuit, means for closing the switch when the air becomes dry and such means opening the switch when the air is moist, a valved water supply pipe discharging on to the heating element, a thermostat located adjacent the heating element, and means operated thereby for opening the valve for supplying water to the heating element to convert the water into steam, a second switch in the circuit, and means for opening the same by the thermostat operated means if water should not be supplied to the heating element, and a manually operated spring plunger closing the second switch.

5. Means for moistening air in a room or the like comprising a casing having openings therein, heating elements in the casing, a circuit for the same, a switch in the circuit located at a point remote from the casing, means for normally holding the switch in an open position, means associated with said means for closing the switch when the air becomes dry, a water supply pipe discharging on to the heating element, a valve therein,

a thermostat connected with the element, a lever operated by the thermostat, a link connecting the lever with the valve whereby the valve is opened when the lever is moved by the thermostat, a second switch in the circuit located in the casing, said second switch having a part thereon which is contacted by the lever when said lever is actuated by the thermostat to an extent greater than that required for the opening of the valve whereby said second switch will be opened to break the circuit and manually operated means for closing the second switch.

In testimony whereof I affix my signature.
LEE SING FOO.