Feb. 27, 1951 G. MATTOX 2,543,583

THERMOELECTRIC FURNACE

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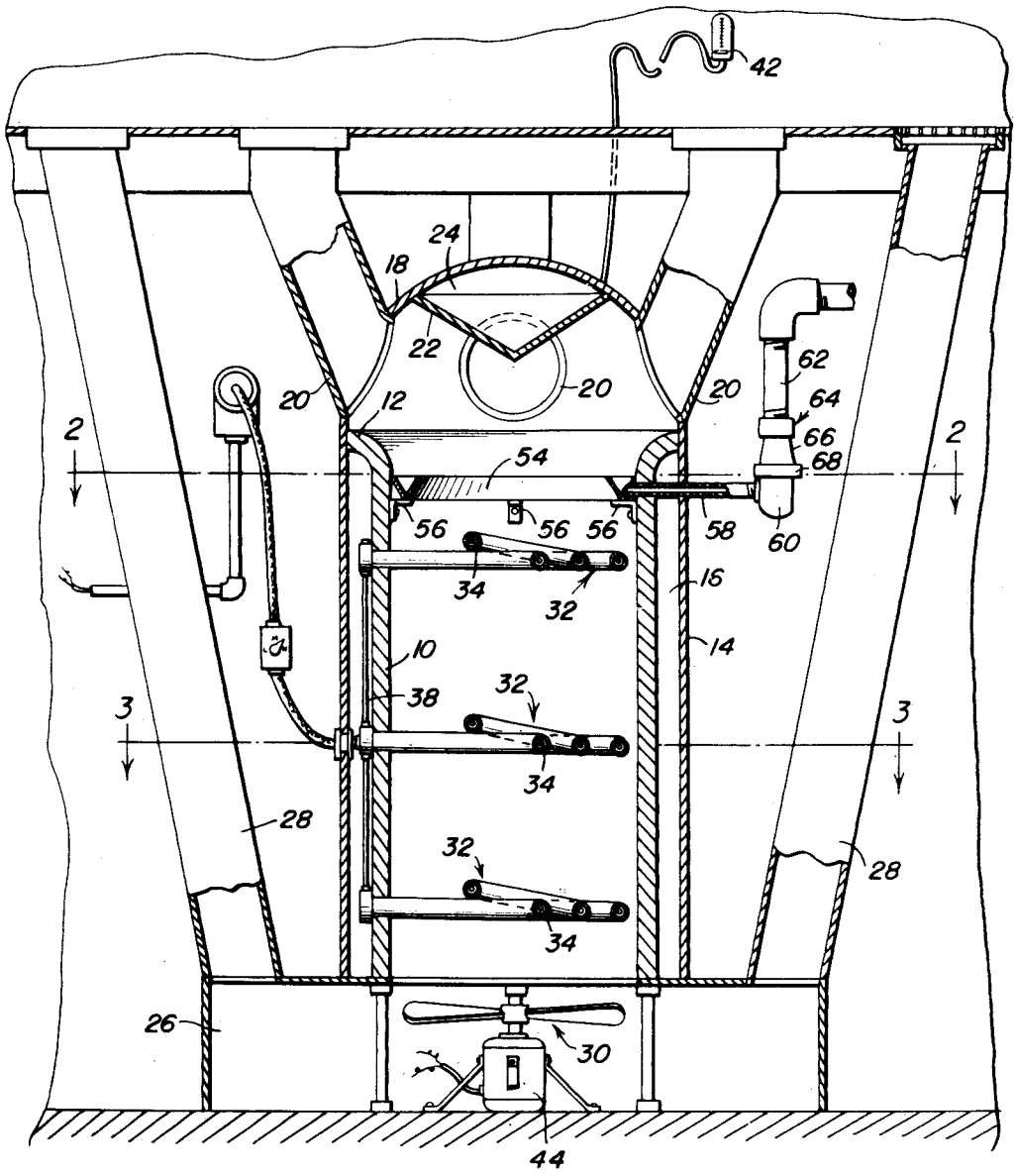


Fig. 1.

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Fig. 2.

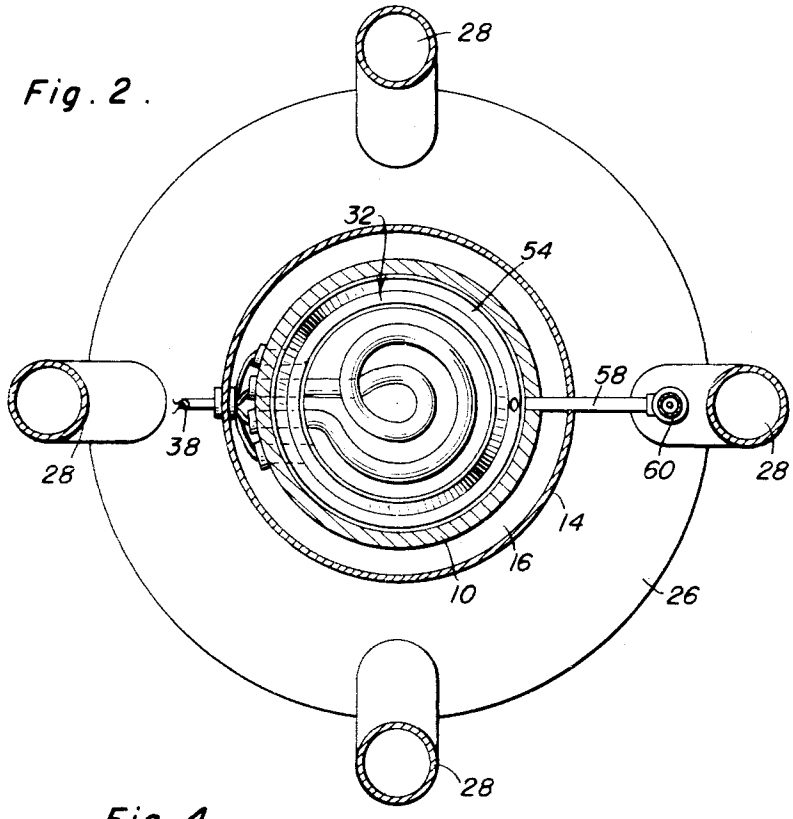
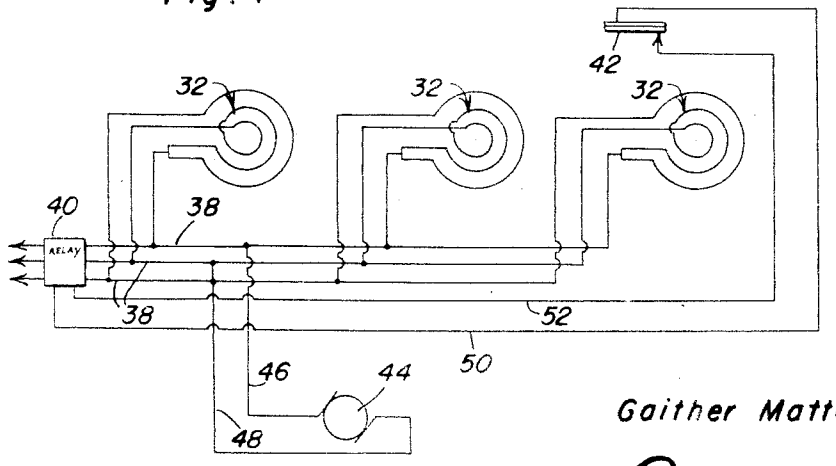


Fig. 4



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Fig. 3.

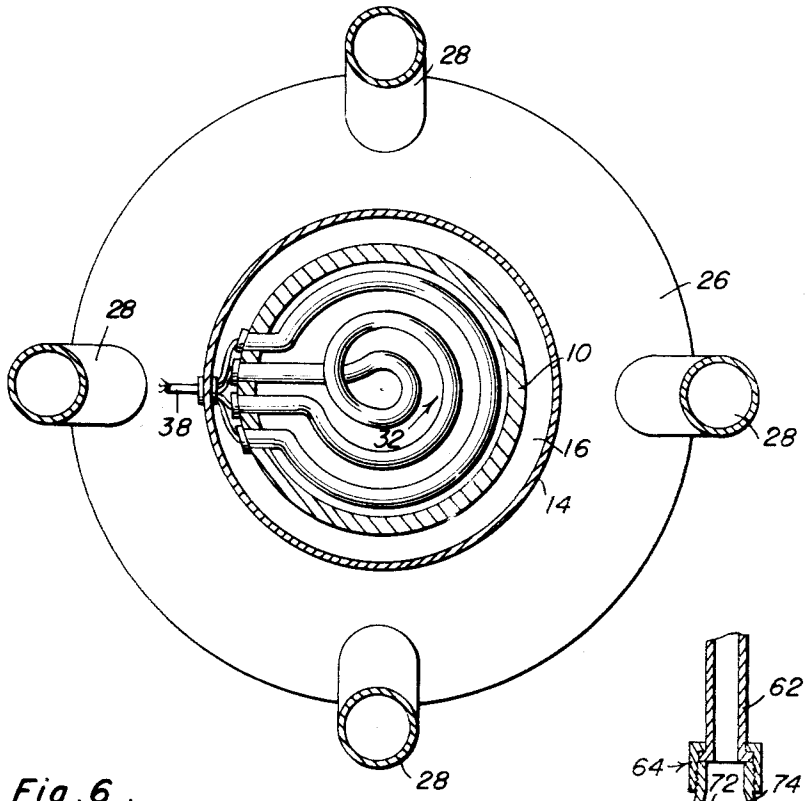
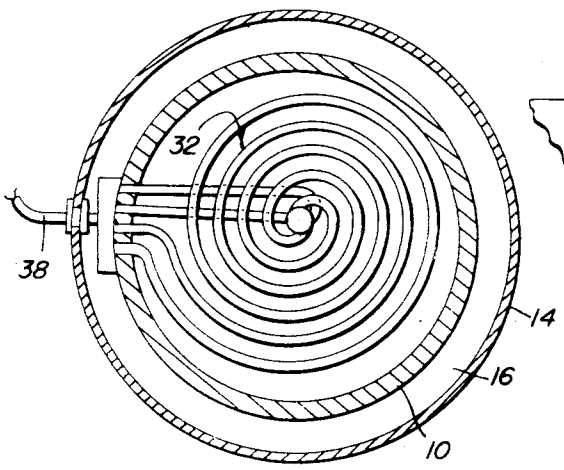


Fig. 6.



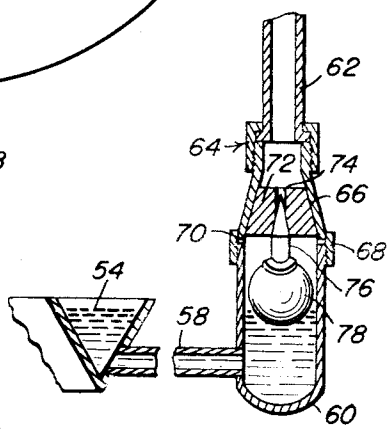


Fig. 5.

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UNITED STATES PATENT OFFICE

2,543,583

THERMOELECTRIC FURNACE

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Application April 5, 1948, Serial No. 19,032

2 Claims. (Cl. 219—39)

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This invention relates to novel and useful improvements in furnaces of the electrical type.

An object of this invention is to conduct relatively cool air to the lower portion of a housing, impel the air by means of fan over a plurality of spaced electric heaters, humidify the air, then conduct it through a plurality of outlet pipes, which outlet pipes are secured to an outer housing adjacent the first-mentioned housing and insulated therefrom by means of air space.

Another object of this invention is to maintain a constant level of fluid in the humidifying means automatically.

A still further object of this invention is to control the electrically operative heating means and air impelling means through the utility of a thermostat.

Ancillary objects and features of novelty will become apparent to those skilled in the art, and following the description of the preferred form of the invention, illustrated in the accompanying drawings, wherein:

Figure 1 is a longitudinal sectional view of the preferred form of the invention, portions being shown in elevation;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1 in the direction of the arrows;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a wiring diagram utilized in association with the invention;

Figure 5 is a sectional view of the valve structure and forming a part of the present invention; and

Figure 6 is a sectional view showing the make-up of a single heating unit forming a portion of the invention.

This invention has been developed to provide a device for more efficaciously heating air such as that to be used in warming a house. Humidifying the air after it has been heated but before it is directed to respective rooms, renders the utility of the present invention in conventional domiciles a step forward since humidification conventionally takes place only in relatively large buildings and particularly wherein air conditioning units are used.

An inner housing 10 is provided with a flared upper portion 12. The inner housing is formed of any suitable material which might effectively be used in conjunction with a heating plant of this nature.

An outer housing 14 is positioned around said inner housing 10, contacting the inner housing

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only at the terminal portion of the flared section 12. Thus, an insulating air space 16 is supplied annularly about the inner housing.

A dome 18 may be formed integral with the outer housing or if desired, secured thereto and this dome has a plurality of outlet ducts or conduits 20 in communication therewith. As is seen by inspection of Figure 1, these outlet ducts 20 communicate with any number of rooms.

A baffle 22 is supplied in the dome portion 18 and directs heated air to the outlet conduits or ducts 20. It is seen that this baffle 22 is spaced (in the most part) from the dome or outer housing thereby forming an insulating space 24. It will be noted that any insulating material may be supplied in the insulating spaces 24 and 16 if it is found desired, however, an air chamber in itself is an effective insulator.

A lower chamber 26 communicates with the inner housing 10 and has a plurality of ducts 28 connected therewith. These last-mentioned ducts are cool air inlet ducts. A conventional fan generally indicated at 30 is seated in the compartment 26 and positioned directly below the center axis of the housing. The air impeller 30 assists in conducting the air from the room or other portions of a structure and urging it through the inner housing 10.

As the air is impelled by the fan 30 it travels over three or more successive heating units generally indicated at 32. These heating units are formed by a plurality of spirals of tubing material, each spiral containing an electrically operative heating element 34 of conventional character. Noting Figures 3 and 6 it will be seen that the spirals of tubing terminate through the inner housing 10 and in the air space 16. Then a common lead 38 connects the respective outlets or leads for the heating element 34. The lead 38 extends to a relay 40 which is thermostatically controlled by means of the conventional thermostat 42. The fan 30 is, of course, actuated by a conventional motor 44, which motor is also controlled by the thermostatically operative relay 40. Conventional leads or conductors 46 and 48 are used for wiring the relay and the fan motor together. Also, conventional lead wires 50 and 52 extend from the thermostat 42 to the relay.

A tray 54 is secured in the inner housing 10 adjacent the flared portion 12. Suitable brackets 56 may seat the tray 34 and a small conduit 58 is communicated with the substantially V-shaped (in cross section) annular tray 54, a receptacle 60 is secured to the said conduit 58 and has a water inlet conduit 62 communicated therewith.

A conventional union 64 joins the said conduit 62 and the receptacle 60. A tapered neck portion 66 is interconnected between the union and the actual receptacle through the medium of a conventional threaded collar 68. Of course, a gasket 70 may be interposed between the receptacle 60 and the tapered neck portion 66. A resilient bushing 72 having a bore 74 through the central portion thereof is seated in the tapered neck 66. This bore serves as a recipient for a needle valve 76 having a buoyant float 78 attached thereto. The float is maintained on the surface of the liquid in the receptacle 60 thereby controlling the amount of liquid in the tray 54. By this means a constant amount of liquid is maintained for humidifying purposes in the tray 54.

Of course, certain conventional electrical apparatus may be used in association with the invention such as a manually controlled thermostat whereby temperature settings may be selectively chosen and further, if it is found desirable a conventional humidistat may be used in association with the invention. In this proposed humidistat construction a solenoid valve could be substituted in lieu of the float valve construction desired above whereby the plunger of the solenoid could act as a valve plunger and permit water to flow in the tray 54 upon predetermined settings of humidity measurement in either a single room or a plurality of rooms.

While there has been described and illustrated but preferred forms of the invention, it is apparent that variations may be made without departing from the spirit thereof. Accordingly, limitation is sought only in accordance with the scope of the following claims.

Having described the invention, what is claimed as new is:

1. A heating plant comprising an inner housing and an outer housing with insulating dead air space between the housings, air inlet ducts communicating with the lower portion of said inner housing, air outlet ducts communicating with the upper end of said inner housing, a fan in said inner housing, electrically operative heating means in said inner housing, and heat responsive means for controlling the actuation of said heating means and said fan, means in said inner housing for humidifying air after it has passed over the heating means, said humidifying means comprising an annular tray secured to the inside surface of said inner housing and forming an air passage through the open center thereof, an inlet conduit extending through said housing and secured to said tray, and a liquid level responsive valve in said conduit for maintaining a constant amount of liquid in said tray.

2. A heating plant comprising an inner housing and an outer housing with insulating dead air space between the housings, air inlet ducts communicating with the lower portion of said inner housing, air outlet ducts communicating with the upper end of said inner housing, a fan in said inner housing, electrically operative heating means in said inner housing, and heat responsive means for controlling the actuation of said heating means and said fan, means in said inner housing for humidifying air after it has passed over the heating means, said humidifying means including an upwardly opening annular tray disposed around the inside surface of the inner housing with means for supplying liquid to said tray, a baffle secured to said outer housing between said outlet ducts for directing heated air into said last-named ducts, said baffle being spaced from said outer housing forming an insulating space.

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