Feb. 21, 1928.

1,660,052

G. W. SHEPHERD

ELECTRIC HEATER

Filed Dec. 7, 1926

2 Sheets-Sheet 1

Fig. 1.

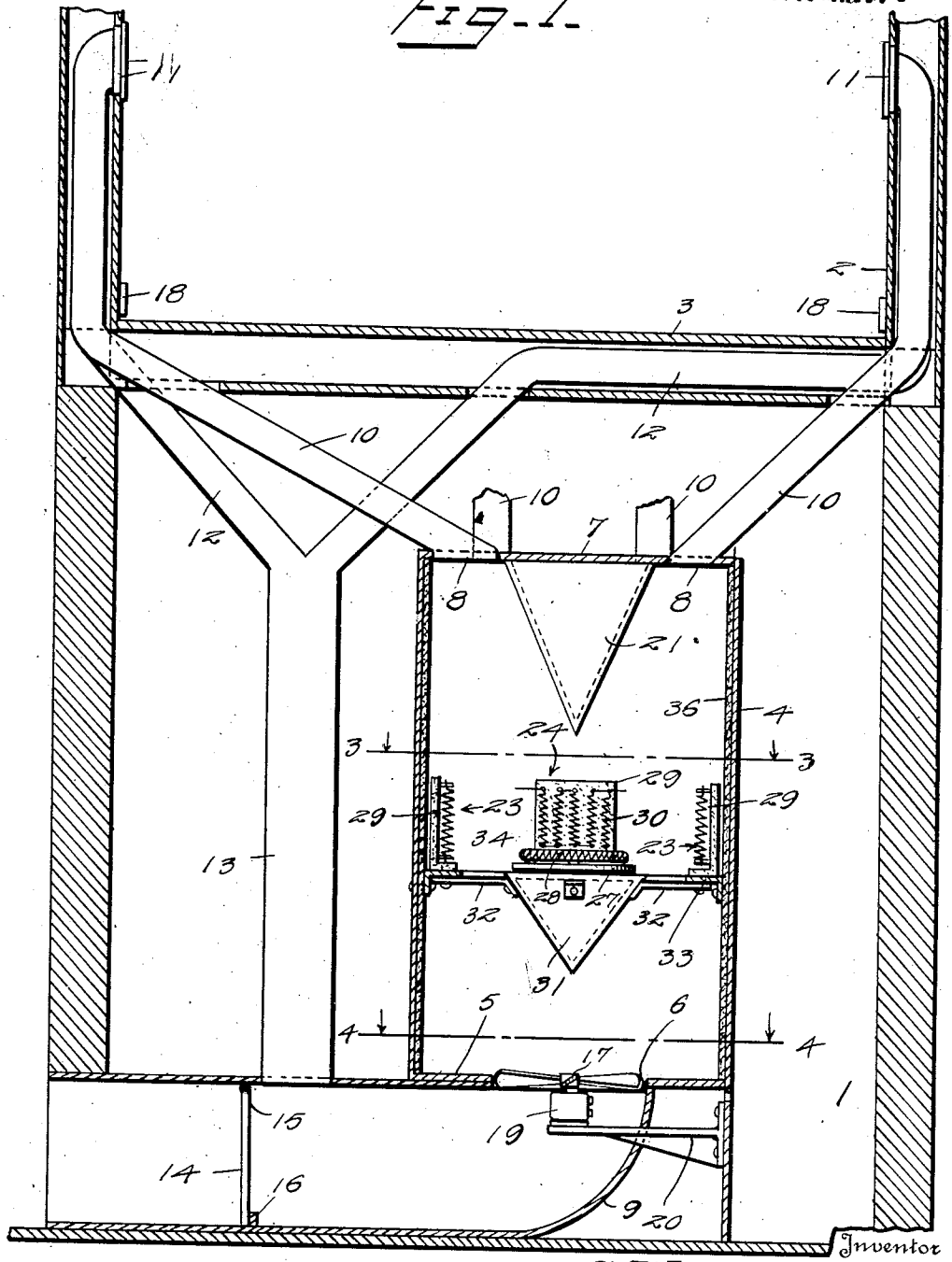

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Fig. 2.

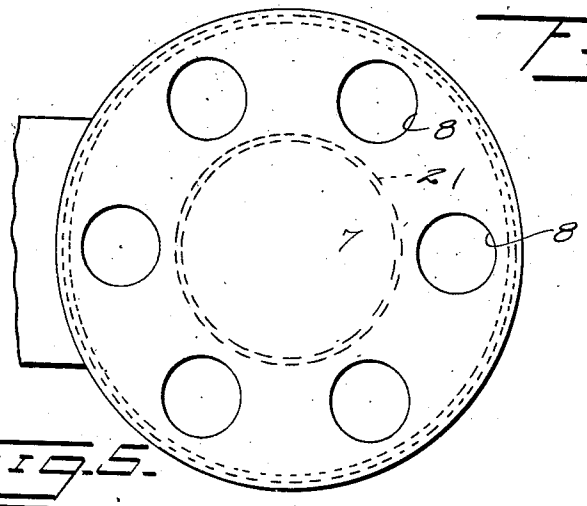


Fig. 5.

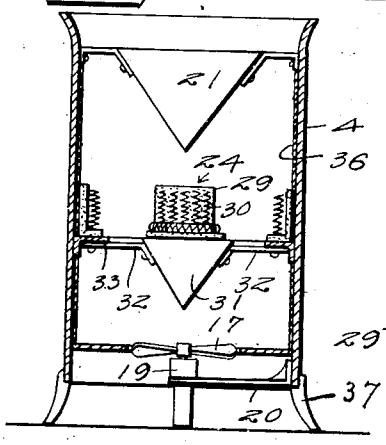
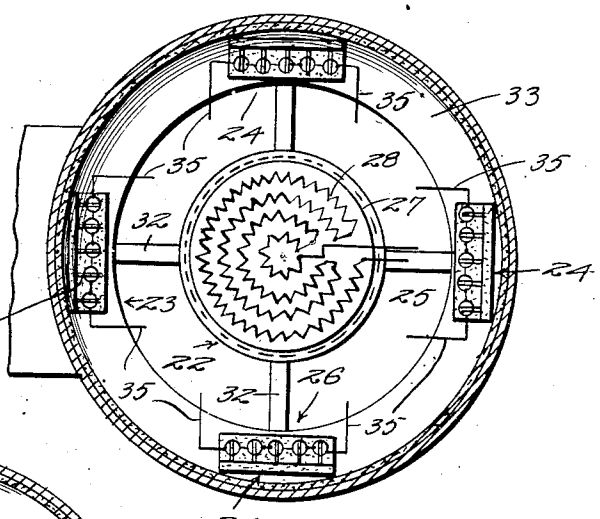


Fig. 3.



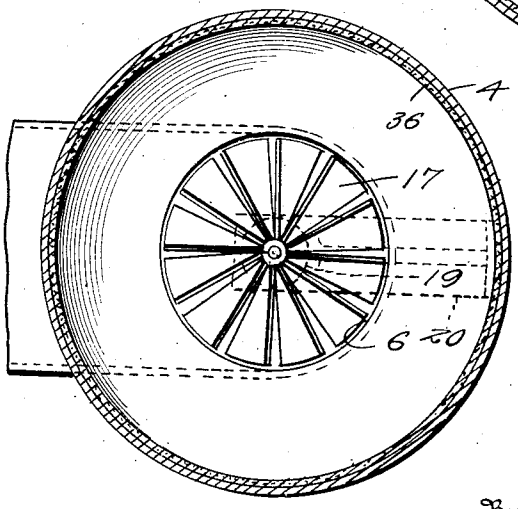


Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE W. SHEPHERD, OF TERRE HAUTE, INDIANA.

ELECTRIC HEATER.

Application filed December 7, 1926. Serial No. 153,091.

This invention relates to and has for one of its objects to provide a novel, simple and highly efficient electric heater which shall be adapted to be used for the purpose of heating all or one of the rooms of a building and which shall comprise a body provided in its top and bottom with openings to permit air to circulate therethrough, heating units arranged to provide a substantially annular heating zone, and means for insuring the passage of the air in equal volumes through each portion of the heating zone.

A further object of the invention is to provide a heater of the character set forth which shall comprise means for forcing air through the body and means for insuring the passage of the air in equal volumes through the outlet openings with which the heater will be provided when constructed on a scale large enough to heat all the rooms of a building and through the annular outlet opening with which the heater will be provided when constructed on a smaller scale for heating a single room.

The invention is hereinafter fully described and claimed, and illustrated in the accompanying drawings, wherein:

Figure 1 is a vertical sectional view illustrating the application of the heater for the purpose of heating all the rooms of a building,

Figure 2 is a top plan view of the heater,

Figure 3 is a sectional view taken on the horizontal plane indicated by the line 3—3 of Figure 1,

Figure 4 is a similar view taken on the horizontal plane indicated by the line 4—4 of Figure 1, and

Figure 5 is a sectional view taken on a plane extending vertically and centrally through the heater adapted for use in heating a single room.

Referring to the drawings by reference characters, 1 designates the furnace room, 2 a living room and 3 a floor of a building.

The furnace comprises a body 4 which is of cylindrical formation and provided in its bottom 5 with an intake opening 6 and in its top 7 with outlet openings 8. A cold air flue 9 communicates with the intake opening 6, and hot air pipes 10 communicate with the outlet openings 8. The hot air pipes 10 discharge into the room 2 above the floor 3 thereof, and are provided with registers 11 of any suitable or appropriate construction. Return flues 12 communicate with the room 2 at points adjacent the floor 3 thereof, and a flue 13 which in turn communicates with the cold air flue 9. A valve 14 is pivoted as at 15 within the cold air flue 9 outwardly beyond the return flue 13. The valve 14 is shown in closed position, and when in this position contacts with a stop 16. Any suitable or appropriate means, not shown, may be provided in order to permit the damper 14 to be moved into and supported in opened position, the damper being adapted when released to gravitate to closed position. A fan 17 is arranged within the intake opening 6 and when in operation with the damper 14 closed draws air from the room 2 into the body 4 by way of the flues 12, 13 and 9 and returns the air to the room in a heated condition by way of the pipes 10. Registers 18 of any well known or appropriate construction are connected to the intake ends of the flues 12, and together with the registers 11 provide means for controlling the amount of air taken from and returned to the room 2. When the damper 14 is closed air from outside of the building does not enter the heating system. The means for controlling the damper will preferably be of such construction as to permit the damper to be supported in fully or partly opened position in order that any desired amount of air from outside the building may be permitted to enter the heating system. The fan 17 is operated by an electric motor 19 which is supported by a bracket 20. To insure the entrance of equal volumes of heated air into the several pipes 10, an inverted conical deflector 21 is secured to and depends from the top 7. The outlet openings 8 are arranged in an annular row, and the deflector 21 is arranged within the row of openings.

Heating units 22, 23, 24, 25 and 26 are arranged within the body 4. The heating unit 22 is horizontally disposed and arranged within the center of the body 4, and comprises a circular insulating body 27 and a resistance element 28. The heating units 23—26 are vertically disposed and have an annular arrangement with respect to the heating unit 22. Each of the heating units 23—26 comprises an insulating body 29 and resistance elements 30. The heating unit 22 is supported upon an inverted conical deflector 31 which in turn is supported from the body 4 by bracket arms 32. The heating units 23—26 are supported by an annular flange 33 secured to and within the body 4

and occupying a horizontal position. The heating units 22—26 provide an annular heating zone 34 through which the air passes on its way through the body 4, and the resistance elements are exposed for contact with the air as it passes through the heating zone. The deflector 31 insures the passage of the air in equal volumes through each and every part of the heating zone 34. The resistance elements 28 and 30 may be connected in series or in parallel and to a source of current supply by leads 35. The body 4 is provided with a lining 36 of asbestos or other non-heat conducting material.

The heater as shown in Figure 5 is adapted to be used for the purpose of heating one room of a building. This heater differs from the one shown in Figures 1–4 only in that it is provided with legs 37 and is not provided with flues and hot air pipes. The remaining parts of this heater are designated by the same reference characters applied to the corresponding parts of the heater shown in Figures 1–4.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains. While I have described the principle of operation of the invention, together with the devices which I now consider to be the best embodiments thereof, I desire to have it understood that the devices shown are merely illustrative, and that such changes may be made when desired as are within the scope of the invention as claimed.

What is claimed is:—

1. An electric heater comprising a body provided in its bottom with an air inlet and in its top with an annular series of air outlets, a motor driven fan arranged in the inlet, a conical deflector secured to the top centrally of the outlets, a second conical deflector supported within the body below said first named deflector, and heating units arranged within the body between the deflectors and providing an annular heating zone.

2. An electric heater comprising a body provided with an inlet and an outlet, a downwardly tapering deflector arranged within the body between the inlet and outlet, a second downwardly tapering deflector arranged within the body directly above said first deflector, and a series of heating elements arranged within the body between the deflectors and laterally beyond the same.

3. An electric heater comprising a body provided with an inlet and an outlet, a downwardly tapering deflector arranged within the body between the inlet and outlet, a second downwardly tapering deflector arranged within the body directly above said first deflector, a series of heating elements arranged within the body between the deflectors and laterally beyond the same, and another heating element arranged within the body between and in alinement with the deflectors.

4. An electric heater comprising a body provided with an inlet and an outlet, an annular series of heating units, a heating unit arranged centrally with respect to said series of units and cooperating therewith to provide an annular heating zone, and a deflector located immediately below and centrally of the zone.

In testimony whereof I affix my signature.

GEORGE W. SHEPHERD.