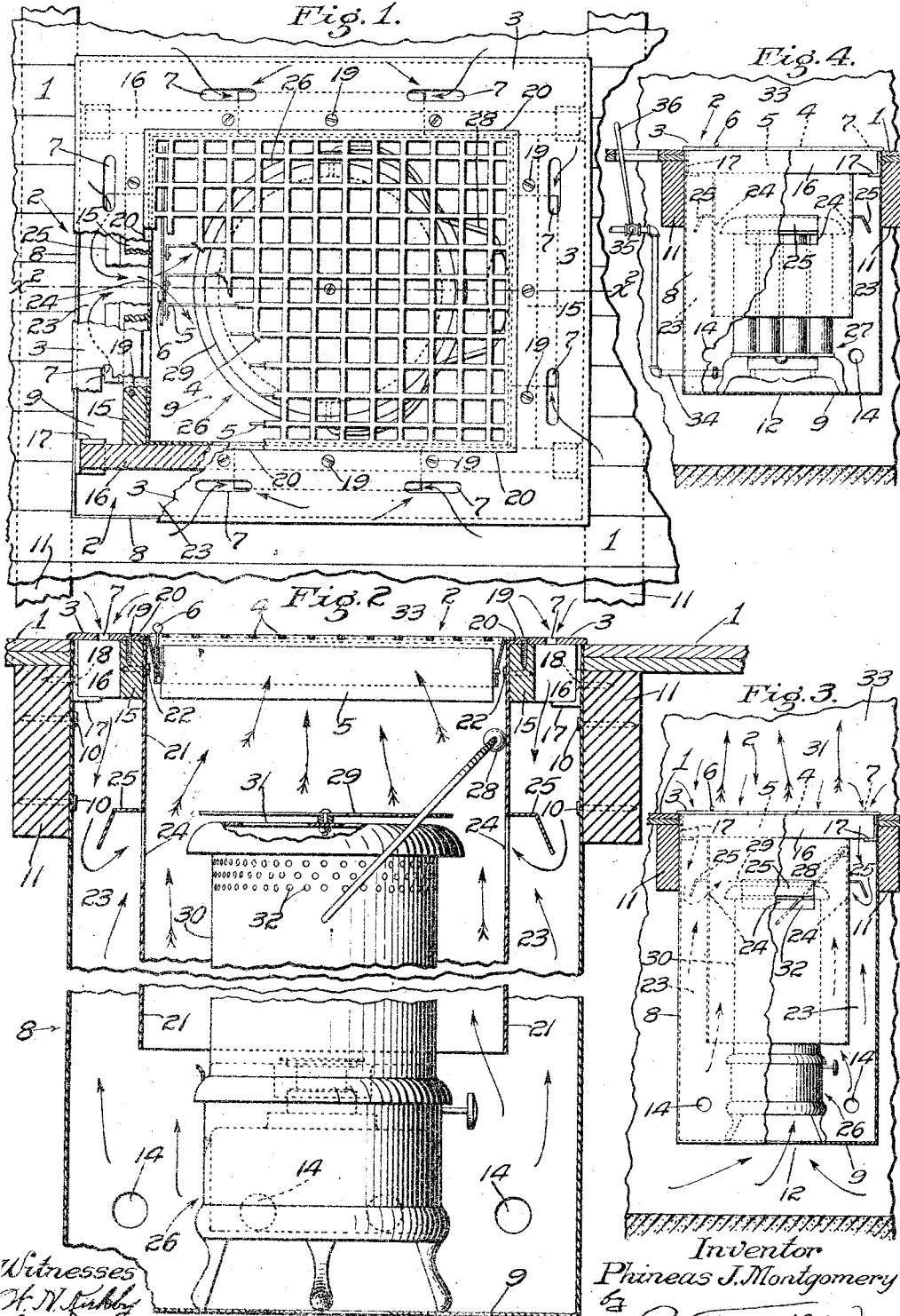


P. J. MONTGOMERY.
 DUPLEX VENTILATING HOT AIR CABINET FURNACE.
 APPLICATION FILED MAR. 22, 1912.

1,051,432.

Patented Jan. 28, 1913.



Witnesses
 H. N. Fisher
 E. Belle Rose

Inventor
 Phineas J. Montgomery
 by James R. Townsend
 Att'y.

UNITED STATES PATENT OFFICE.

PHINEAS J. MONTGOMERY, OF SANTA MONICA, CALIFORNIA.

DUPLEX VENTILATING HOT-AIR CABINET-FURNACE.

1,051,432.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed March 22, 1912. Serial No. 685,619.

To all whom it may concern:

Be it known that I, PHINEAS JAMES MONTGOMERY, a citizen of the United States, residing at Santa Monica, in the county of Los Angeles and State of California, have invented a new and useful Duplex Ventilating Hot-Air Cabinet-Furnace, of which the following is a specification.

An object of this invention is to provide cheap, simple and convenient means whereby buildings may be warmed by oil or gas heaters in a satisfactory manner and with superior ventilating effect minimizing the introduction of carbon monoxid into the room and maximizing the introduction of pure heated air; and also providing for satisfactory ventilation in connection with the heating arrangement.

The invention may be carried out in various forms.

The accompanying drawings illustrate the invention.

Figure 1 is a fragmental plan partly in section of a furnace constructed in accordance with this invention. Fig. 2 is a fragmental sectional elevation from line x^2-x^2 Fig. 1, showing the invention constructed as an oil burning furnace. Fig. 3 is an elevation on a reduced scale of the furnace shown in Fig. 2 as installed in the floor of a room to be heated. Fig. 4 is a broken elevation of a furnace embodying this invention as employed with a gas heater.

The floor structure 1 of the room or apartment to be immediately heated is provided with an orifice 2 which is supplied with a border 3 and a register grating 4 that has the usual ventilation regulating dampers 5 controlled by the usual foot-lever or handle 6. The border 3 is impervious to air, except at the down draft orifices 7.

Inside the floor orifice 2 is fitted an external casing 8 provided with a bottom 9 and fastened by suitable means as nails 10 to the sills 11 or other suitable portions of the floor structure. The casing bottom 9 is provided with a central draft orifice 12 and the walls of the casing are provided with ventilating orifices 14 near the level of the casing bottom. The outer edges of the border 3 extend over the casing 8 and the inner edges of said border extend over a frame formed of cross-bars 15 fastened to rails 16 that are supported by brackets 17 fixed by suitable means as screws or nails 18 to the casing 8 and the floor structure 11. The frame is

further supported by screws 19 inserted down through the border 3 which may be of cast-iron or other suitable material provided with an inner marginal recess 20 in which are seated the edges of the register grating 4. The inner casing 21 is fastened by suitable means as nails 22 to the inside of the frame formed by cross-bars 15 and rails 16 and extends downward from said frame toward the bottom 9 of the outer casing 8; there being a ventilating flue 23 formed between the casings 8 and 21, and extending entirely around the inner casing 21 which is provided with ventilating orifices 24 and with outwardly extending baffles or deflectors 25 that are arranged above the level of said ventilating orifices 24 to direct the down-draft outwardly and down and the up-draft inwardly, so that the down-draft and up-draft may both find exit from the flue through the orifices 24 into the inner casing.

The down draft orifices 7 communicate with the flue 23 and said flue is open at its lower end to the interior of the inner casing 21 which is surrounded by the flue passage 23.

The register grating 4 is loosely seated in its seat 20 and can be lifted from the border 3, thus giving access to the interior of the inner casing, which is of sufficient diameter to receive a suitable oil heater 26 or gas heater 27 that are directly over the orifice 12 so as to spread the air entering through the orifice equally to all sides of the inner casing. The bottom 9 of the outer casing serves as a support for such heater and the oil heater 26 can be lowered into and raised from the receptacle formed by the casing for the purpose of replenishing the oil supply therein, and for caring for lighting and extinguishing said heater.

The oil burning heater 26 may be of any suitable character, and may be provided with a handle 28 by which it may be lowered into or drawn out of the receptacle formed by the casings. On top of the oil heater a slightly elevated horizontal deflector plate 29 is provided and the upper end of the heater drum 30 is provided with perforations 31 to allow the escape of heated air beneath the deflector plate from the interior of the oil burner. Perforations 32 in the drum are provided for the first lateral blast of hot air and the deflector 29 provides for the second blast of such air.

The apparatus may be installed in buildings in the course of construction and also in completed buildings and when it is desired to warm a room with an oil burning furnace, the oil-heater 26 being supplied with oil and wick and being lighted, will be lowered into the compartment within the casings, the register grating 4 being removed for that purpose and then replaced. The heat from the heater causes a draft to arise inside the inner casing and the vacuum formed will be partly supplied by cold air flowing down through the down draft orifices 7 into the draft flue 23 past the baffles or deflectors 25 and in through the ventilating orifices 24 that are at or above the level of the top of the heater and the perforations 31 from which the hot air and the products of combustion will be emitted from the oil heater into the inner casing to mingle with the pure air from the orifices 24. The heat from the burner in the heater induces an upward draft through the flue 23 to the deflector 25 and through the orifices 24 of the inner casing 21 outside the heater; the draft through the flue 23 passing through the orifices 24 before contamination from the products of combustion, said products issuing from the perforations 31 and beneath the deflector 29 and commingling with the cold and fresh air from the orifices 7 and 14. It is thus seen that a circulation of air will be set up in the room; the heated air rising from the register grating, and the cold air flowing down through the border orifices 7, and that a great volume of heated air will pass into the room 33 through the register grating.

The operation with the gas heater is practically the same as that just described, the difference being that the gas heater is not required to be of as great length as the oil heater and it is supplied with fuel through a gas pipe 34 controlled by a valve 35 and its lever 36.

I claim:—

1. The combination with a floor structure having an orifice therein, of an ex-

ternal and internal casing let into the orifice and provided with a flue between them; the external casing being provided with a bottom and an inlet orifice; the internal casing terminating above the inlet orifice and provided with inlet orifices communicating with the flue; a border plate over the flue provided with down draft orifices and a register supported by the border; and a heater supported within the outer casing directly over the inlet orifice and extending up into the inner casing.

2. A cabinet furnace comprising an external casing provided with a bottom and having a draft orifice in such bottom and also provided with ventilating orifices in its walls; an inner casing open at its lower end and extending down into the external casing from the upper end of the external casing and forming therewith a flue, and provided with side orifices and with deflectors over said side orifices; a border plate over said flue provided with down draft orifices to supply air to said flue; and a register grating above the inner casing.

3. A cabinet furnace comprising an external casing provided with a bottom and having a draft orifice in such bottom and also provided with ventilating orifices in its walls; an inner casing open at its lower end and extending down into the external casing from the upper end of the external casing and forming therewith a flue, and provided with side orifices and with deflectors over said side orifices; a border plate over said flue provided with down draft orifices to supply air to said flue; a register grating above the inner casing, and a heater in the casing, provided with outlets for hot blast above the level of said side orifices and deflectors.

In testimony whereof I have hereunto set my hand at Los Angeles, California, this 15th day of March, 1912.

PHINEAS J. MONTGOMERY.

In presence of—

JAMES R. TOWNSEND,
L. BELLE RICE.