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No. 860,425. PATENTED JULY 16, 1907.

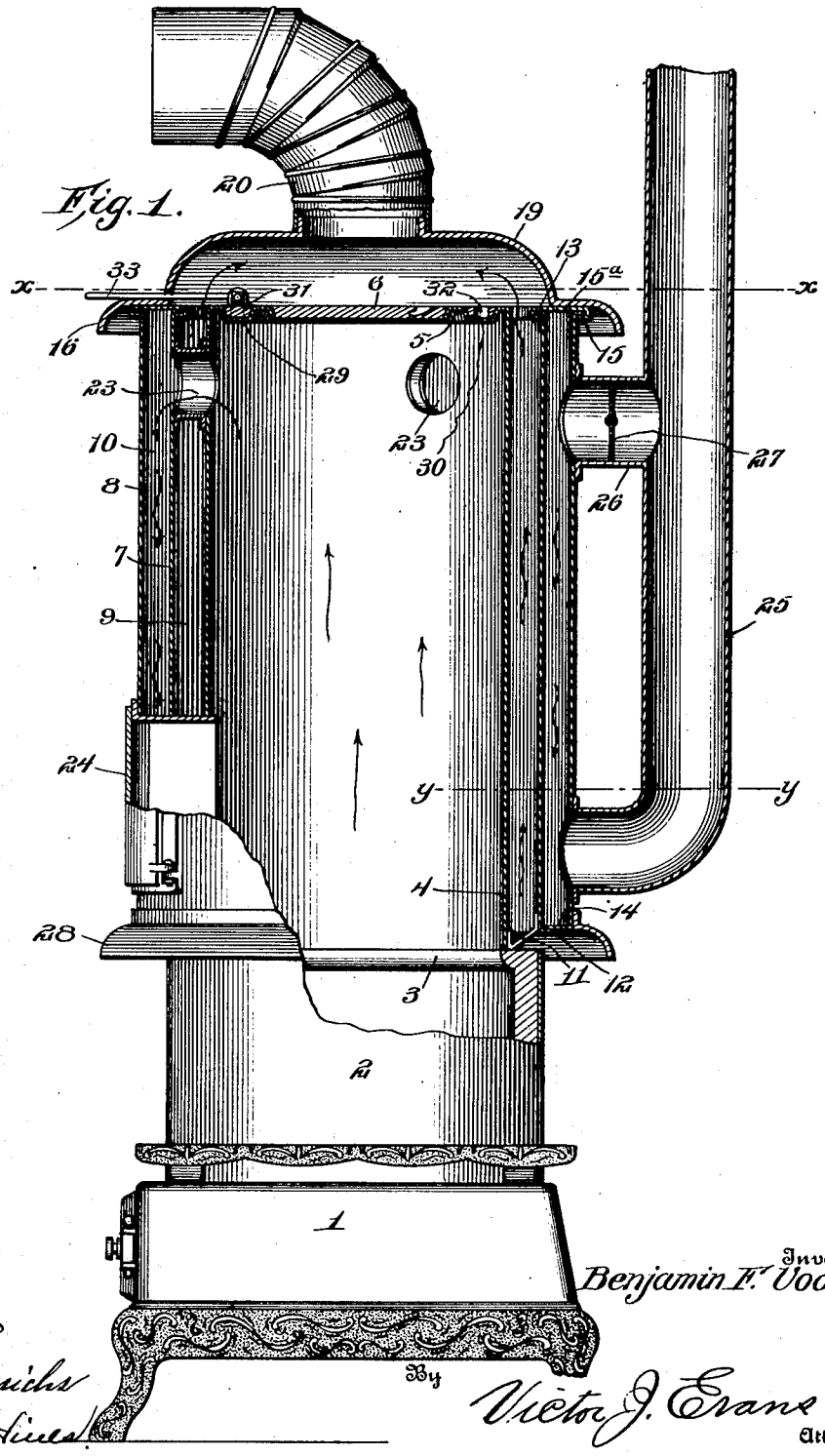
B. F. VOORHIS.

HEATING STOVE.

APPLICATION FILED JUNE 28, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

L. R. Hinrichs

C. C. Hines

Inventor

Benjamin F. Voorhis

By

Victor J. Evans

Attorney

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2 SHEETS—SHEET 2.

Fig. 2.

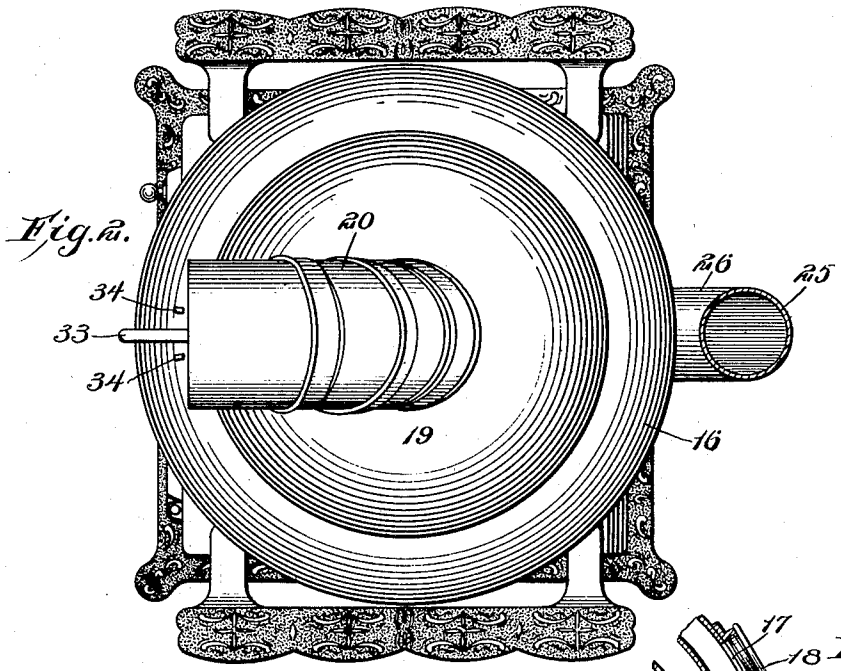


Fig. 4.

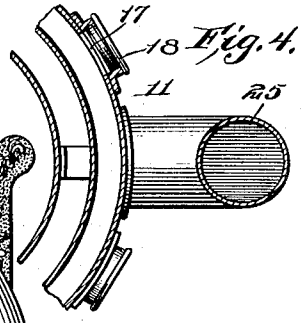
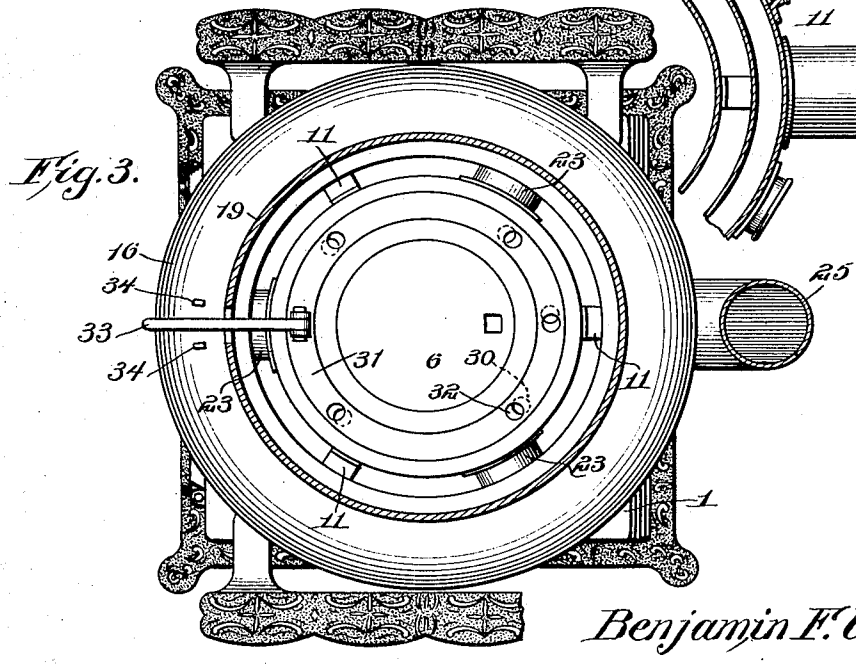


Fig. 3.



Inventor

Benjamin F. Voorhis

Witnesses

Louis R. Heinrichs

C. C. Hines.

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

BENJAMIN F. VOORHIS, OF NYACK, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE AUXILIARY MANUFACTURING AND MARKETING COMPANY, OF NYACK, NEW YORK.

HEATING-STOVE.

No. 860,425. Specification of Letters Patent. Patented July 16, 1907.

Application filed June 28, 1906. Serial No. 323,760.

To all whom it may concern:

Be it known that I, BENJAMIN F. VOORHIS, a citizen of the United States of America, residing at Nyack, in the county of Rockland and State of New York, have invented new and useful Improvements in Heating-Stoves, of which the following is a specification.

My invention relates to improvements in heating stoves, its object being to provide means for utilizing a greater proportion of the generated heat and more effectually heating air and discharging the same for circulation in the room or apartment to be heated.

Another object is to provide a stove of this character which in addition to possessing the foregoing advantages is simple of construction, easily regulated, ornamental in appearance, and susceptible of manufacture and sale at a low cost.

In the accompanying drawings,—Figure 1 is a view partly in elevation and partly in vertical section of a heating stove embodying my invention. Fig. 2 is a top plan view thereof. Fig. 3 is a horizontal section on line x—x of Fig. 1. Fig. 4 is a detail section on line y—y of Fig. 1.

In the drawings, 1 designates the base or ash pit and 2 the fire box of the stove, which may be of any preferred construction and provided with doors in the usual way. The lining of the fire box is formed at top with an inwardly extending horizontal flange 3 which supports the drum or main heating chamber 4, the latter consisting of a shell of sheet metal or other suitable material having a top plate or head 5 provided with an opening of proper form to receive and hold a closing lid or plate 6. The flange 3 further protects the base of the main heating chamber from the direct action of the radiated heat of the fire.

Surrounding the inner drum or shell 4 and arranged concentric therewith are inner and outer heating jackets 7 and 8, spaced to form intervening chambers 9 and 10. The inner jacket 7 comprises a shell supported at its lower end from the fire box by bracket pieces 11 and provided at its lower end with a short outwardly extending annular flange 12 and at its upper end with an inwardly extending flange 13. The flange 12 forms a support for the outer jacket 8, which has an inwardly extending flange 14 resting thereon and riveted or otherwise secured thereto, the said flanges 12 and 14 forming a closure for the lower end of the outer chamber 10. The upper end of the jacket 8 has a flange 15 coupled to the flange 13 of the jacket 7 by a coupling ring 15^a which is flanged for a seamed connection therewith and forms a closure for the upper end of the chamber 10. A depending rim flange or skirting 16 may be provided at the top of the jacket 8 to give an ornamental or finished appearance to the upper portion of the stove body. Hand-holes 17 closed by air tight screw caps 18 are provided in the jacket 8 to enable the chambers 10 to be cleaned and to give access to the heads and nuts of bolts, rivets or other fastenings used to connect the flanges 12 and 14 and to fasten the brackets 11. It will thus be seen that the outer heating chamber 10 is closed at top and bottom, while the chamber 9 is open at its lower end for the entrance of air and communicates at its upper end with a crown drum or hood 19 suitably mounted upon the upper ends of the jackets. The hood 19 is formed in its top with an opening with which communicates a rotary air discharge flue 20. This flue is preferably in form of a folding or telescopic elbow, so that it may be extended or contracted to discharge the heated air vertically or horizontally. By turning the flue on its axis, said flue may be disposed to discharge the heated air at any point in its plane of rotation, thus enabling the air to be circulated in any preferred manner throughout the room or compartment.

The main drum 4 communicates with the outer chamber 10 through connecting flues 23, and a fuel door 24 is provided to give access to the base of the heating chamber 4 in the usual manner. The chamber 10 communicates at its lower end with the lower end of an outlet flue or pipe 25, and may also communicate at its upper end with said flue through a connection 26, in which is arranged an air-tight direct-draft damper 27 to control the discharge of the products of combustion therethrough. A curved shield or skirt 28 depends from the lower edge of the outer jacket and covers the space below the same and between the two jackets and the upper edge of the fire box, and forms an ornamental fixture to conceal the space as well as a deflector to guide the air into the lower end of the inner chamber 9.

The top plate or head 5 of the main drum 4 is provided around the opening therein with a depressed seat recess or guideway 29 in which, at suitable intervals, are formed apertures 30. An annular valve or damper plate 31 is seated in and turns within said recess and is provided with a corresponding series of apertures 32 adapted to register with said apertures 30. The valve or damper may be retained in position in any preferred manner and is provided with an operating lever or handle 33 extending through a slot in the front of the hood and limited in its reverse movements by stops 34. By adjusting the valve or damper through this handle the sets of openings 30 and 32 may be thrown into and out of registering relation to open or close communication between the main drum and hood.

The operation is as follows: The valve or damper 31 normally closes the openings 30, so that the heated air and products of combustion pass from the main drum 4 through the outlet flues 23 into the outer heating chamber 10, and finally discharge through the outlet flue 25, the rapidity of exhaust of said products being controlled by regulating the damper 27. Air from the

exterior enters the lower end of the chamber 9 and flows upwardly therethrough and into the hood and finally discharges in a heated condition through the discharge flue 20 back into the room. In thus passing through the chamber 9 the air is heated by direct contact with the shells 4 and 7 and by the radiation of heat therethrough from the interior of the main drum and outer chamber 10, so that in its passage through the chamber 9 it will be heated to a high degree. By adjusting the flue 20 this heated air may be caused to discharge at any desired elevation and toward any desired portion of the room or apartment. When the damper 27 is closed, the products of combustion take the longer course and discharge through the chimney flue 25, entering the lower end of said flue at the base of chamber 10. The draft may be increased to a material degree by turning the valve or damper 31 until the perforations 30 and 32 register, whereupon air from the head drum 19 will pass down through said perforations into the main heating chamber and then flow with the products of combustion to the chimney flue 25.

It will be apparent that the construction described is not only productive of the advantages before stated, but heats the circulating air to a much higher degree than is possible with heating stoves of the ordinary type since the air in its course through the chamber 9 is heated both from the body of the stove and the outer surrounding heating chamber 10.

In the drawings I have shown by arrows the circulation of air and products of combustion through the stove and the circulation established when the damper 31 is open.

Having thus described the invention, what I claim is:

1. A stove comprising a base having a fire box, and a body supported upon the base and comprising inner, outer and intermediate shells forming a combustion chamber and inner and outer heating chambers, the upper end of the combustion chamber being in communication through passages with the upper end of the outer heating chamber, combined with a crown drum in communication with the combustion chamber and upper end of the intermediate heating chamber, the latter being open at its lower end to the atmosphere, a damper controlling communication between the combustion chamber and crown drum, an exhaust flue communicating with the upper and lower portions of the outer heating chamber, and a damper controlling the upper communicating passage.

2. A stove comprising a base having a fire box, an inner drum or shell in communication at its lower end with the fire box and provided with inlets at its upper end, a damper controlling said inlets, inner and outer heating jackets inclosing said shell and forming intervening heating chambers, the inner heating chamber being open at its upper and lower ends and the outer chamber closed at both ends, a crown drum or hood in communication with the upper end of the intermediate heating chamber, flues leading from the upper end of the inner shell to the outer heating chamber, an outlet pipe having communicating connections with the upper and lower ends of the outer heating chamber, and a controlling damper in the upper connection.

3. A stove comprising a base having a fire box, an inner shell communicating at its lower end with the fire box and provided at its upper end with air inlets, a damper controlling said inlets, inner and outer drums surrounding said shell and forming intervening heating chambers, the inner heating chamber being open at its upper and lower ends and the outer chamber closed at both ends and in communication through flues with the upper end of the outer heating chamber, the said jackets being connected at their upper ends by a coupling ring forming the closure for the upper end of the outer heating chamber, a crown drum supported by said ring and in communication with the upper end of the inner heating chamber and the inner shell through the said air inlets, a hot air flue leading from said crown drum, an outlet flue having communicating connections with the upper and lower ends of the outer heating chamber, and a controlling damper in the upper connection.

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

BENJAMIN F. VOORHIS.

Witnesses:
LOUIS GOLDBACK,
ABRAM H. ACKERMAN.