(No Model.) 2 Sheets—Sheet 1.

J. D. BARRIER.

HEATING AND VENTILATING STOVE.

No. 564,817. Patented July 28, 1896.

Fig: 1.

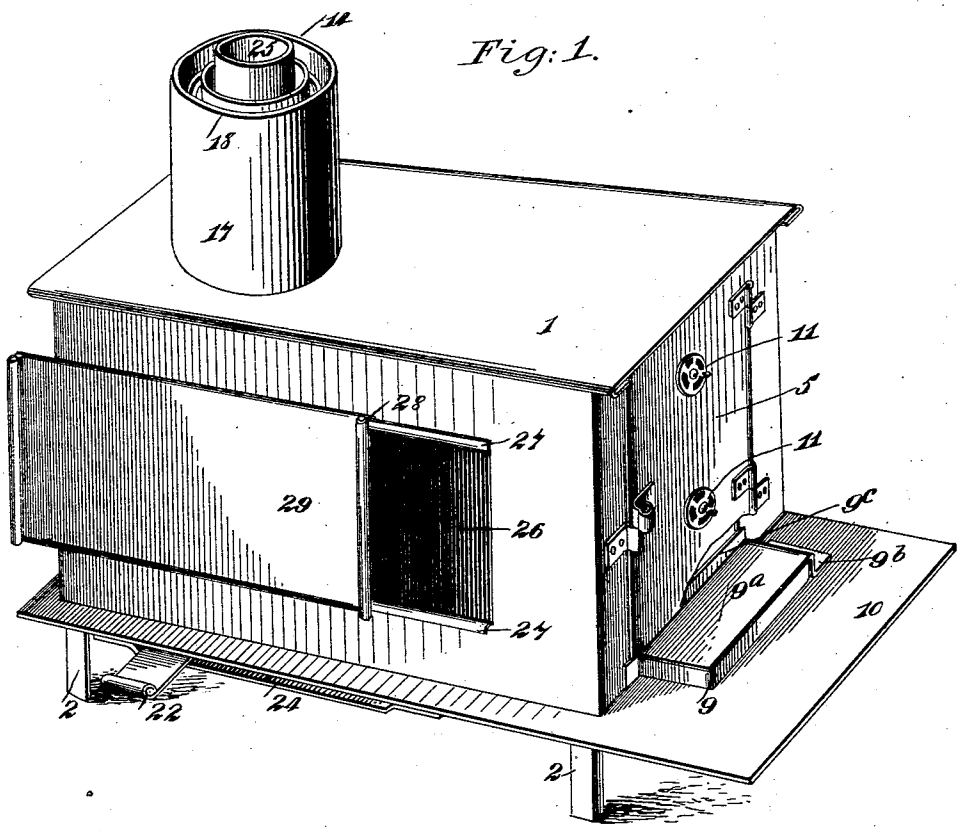
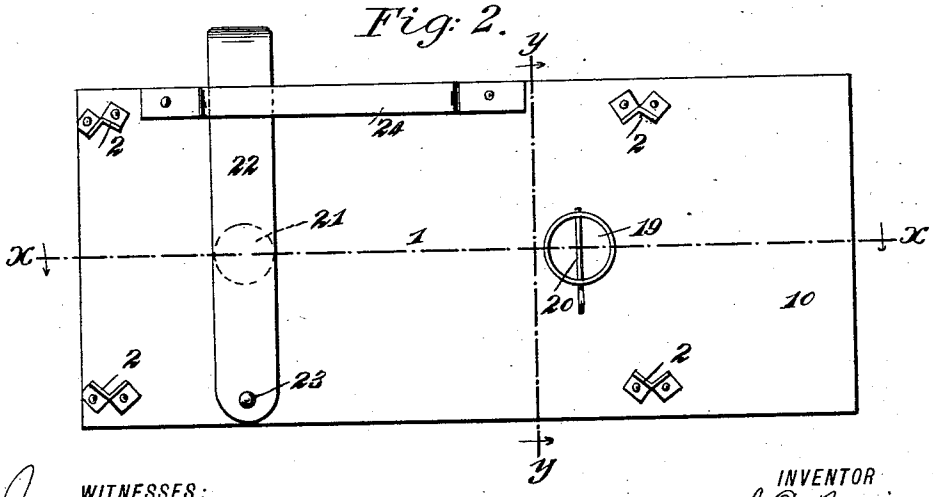


Fig: 2.



WITNESSES:
John A. Rennie.
J. L. Boxleringer

INVENTOR
J. D. Barrier,
BY Munn & Co
ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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HEATING AND VENTILATING STOVE.

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Fig. 3.

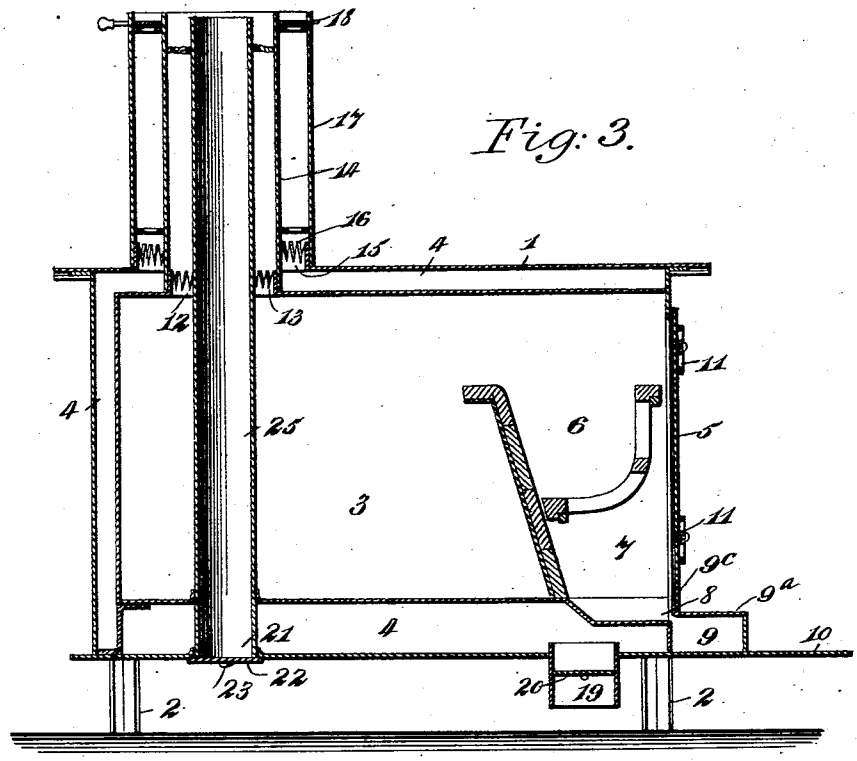
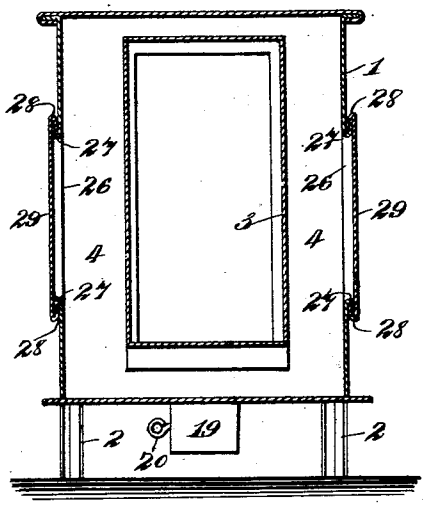


Fig. 4.



WITNESSES:

John A. Rennie

J. B. Baerlinger

INVENTOR

J. D. Barrier.

BY Munn & Co

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN D. BARRIER, OF MOUNT PLEASANT, NORTH CAROLINA.

HEATING AND VENTILATING STOVE.

SPECIFICATION forming part of Letters Patent No. 564,817, dated July 28, 1896.

Application filed August 14, 1895. Serial No. 559,258. (No model.)

To all whom it may concern:

Be it known that I, JOHN DANIEL BARRIER, of Mount Pleasant, in the county of Cabarrus and State of North Carolina, have invented certain new and useful Improvements in Heating and Ventilating Stoves, of which the following is a full, clear, and exact description.

This invention relates to stoves for heating purposes, such as are used in dwellings, schools, churches, and the like for heating or warming the air, and the object of the invention is to provide a device of this character of a simple and inexpensive construction, adapted not only for heating the air but for ventilating or purifying the air of the room or building heated by it, so that such air is freed from germs and impurities and is rendered wholesome and fit for respiration without the necessity of exposing the occupants of the room or building to the dangers of drafts of cold air, as is usual with other means employed for purposes of ventilation.

The invention consists in a heating device having double walls surrounding a fire-pot having an outlet for the heated products of combustion and surrounded by a drum connected at its lower end to the space between the double walls of the device, which constitutes a hot-air chamber, the upper end of the drum having communication with the air in the room and being provided with a damper, and a hot-air tube extending across the fire-pot of the heater and adapted to draw air from the room wherein the heater is located.

The invention also contemplates certain novel features of the construction, combination, and arrangement of the various parts of the improved heating and ventilating stove whereby certain important advantages are attained, and the device is made simpler, less expensive, and otherwise better adapted for use than other similar devices heretofore employed, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the ventilating and heating stove embodying my improvements. Fig. 2 is an inverted plan view of the same. Fig. 3 is a vertical section taken longitudinally through the stove in the plane indicated by the line $x\ x$ in Fig. 2, and Fig. 4 is a vertical sectional view taken at right angles to the plane of the section in Fig. 3 along the line $y\ y$ in Fig. 2.

In the views, 1 represents the outer shell or body of the stove, which is as shown rectangular in form, having legs 2 for supporting it above the floor of the room wherein the stove is located, and inside said shell or body 1 is supported in any manner an inner shell 3, also of rectangular form, but of less dimensions than said outer shell 1, whereby an air-chamber 4 is formed between said inner and outer shells at the top, sides, bottom, and one end of the stove, the other end of the stove being without such an air-chamber and having an opening formed through it adapted to be closed by a door 5, as clearly seen in Figs. 1 and 3.

The interior of the inner shell 3 is provided at its forward end adjacent to the door 5 with a grate 6 of suitable construction, adapted to support a fire, and below said grate is formed an ash-chamber 7, the forward part of which connects, by means of an opening 8, formed beneath the door 5, with an ash-pan 9, projecting from the front wall of the shell 1 over the hearth 10 of the stove. The ash-pan 9 is covered by a horizontally-swinging door or cover 9^a, having one end 9^b bent down and pivoted to the hearth 10 of the stove, and having at its inner edge an upturned flange 9^c to be engaged between the door 5 and the front of the stove, so that when the said door 5 is closed said cover 9^a may also be securely held in its closed position.

The fire on the grate 6 is adapted to be supplied with air for supporting combustion by means of openings formed in the door 5 and controlled by dampers or equivalent devices 11, and the products of combustion pass upward through an opening 12, formed in the top of the inner shell 3 at the rear part thereof, and surrounded by a flange 13 to receive and hold the lower end of the smoke-pipe 14, which conveys the said products of combustion to the flue or chimney.

The outer shell 1 is provided with an open-

ing 15 in its top, located above and of larger diameter than the opening 12 in shell 3, and similarly surrounded by a flange 16 to receive and hold a drum 17, encircling the smoke-pipe 14, and provided at its top with a damper or valve 18 to control the flow of air through said drum, as will be hereinafter explained.

At the bottom of the shell 1 at the front part thereof is provided an air-inlet 19, adapted for communication with the air outside the room or building in which the heater is arranged, and controlled by a valve or damper 20, and at the rear part of said bottom is provided another inlet 21, located directly beneath the openings 12 and 15 in the tops of the shells 3 and 1, but of less diameter than either of said openings, and controlled by a valve or damper 22, pivoted at 23 to the bottom of the outer shell 1 and guided at its end in a bracket 24, secured thereto, as clearly seen in Figs. 1 and 2.

The bottom of the inner shell 3 is provided with an opening located directly above and of substantially equal diameter to the opening or inlet 21 in the bottom of shell 1, and in said opening in shell 1 is secured the lower end of an air pipe or tube 25, which extends vertically through the shell 3 and centrally through the openings 12 and 15, being surrounded by the smoke-pipe 14 and drum 17 and having its upper part adapted for communication with the air outside of the room or building wherein the heating and ventilating stove is located, or with the flue or chimney.

Each side wall of the outer shell 1 is provided with an opening 26, cut through it, and having at its upper and lower sides, as clearly seen in the drawings, projecting guide-flanges 27, overturned at their edges to receive inturned flanges 28, formed on covers or doors 29, of suitable dimensions, arranged to slide on said guide-flanges 27, so as to more or less fully cover said openings 26, as will be explained hereinafter. As herein shown, the shell is provided with but two of said openings arranged in its opposite sides, but it will be evident that more or fewer may be provided and they may be variously located.

In operation, when it is desired to ventilate the room or building wherein the heater is located, the valve 20 is opened, so as to permit the cold air from outside the room or building to enter the air-space 4, the valve 22 being likewise opened to permit the vitiated air at the floor of the apartment to pass up through the pipe 25 and out at the chimney, owing to the draft created in said pipe 25 from the heat of the fire in the shell 3. At the same time the cold air entering said chamber 4 through the inlet-pipe 19 is also warmed and passes up through the drum 17, the valve or damper 18 at the top thereof being of course opened for this purpose, so that a supply of warm, fresh air is supplied to take the place of the vitiated air withdrawn from the rooms.

When more warmth is desired than can be obtained in the manner above described, the inflow and outflow of air through the respective pipes 19 and 25 may be lessened or regulated by more or less fully closing the valves 20 and 22, the damper 18 being left fully open and the side openings 26 of the outer shell 1 being more or less fully opened, so that the warm air of the room is passed into the air-chamber 4 to be reheated.

When heat near the stove only is desired, the side doors may be opened and the various valves or dampers 18, 20, and 22 may be closed, so that the circulation of air through the heater will be cut off and merely the air contacting with the stove will be heated or warmed.

From the above description of my invention it will be understood that the device is of an extremely simple and inexpensive construction, and is especially well adapted for ventilating and heating halls and apartments such as school-rooms, churches, and the like, where it is imperative that proper ventilation shall be had, this being provided for by my improved ventilating-heater without danger of harm resulting, as is common in cold-air ventilating devices.

It will also be obvious from the above description of my improved ventilating-heater that the device is susceptible of considerable modification without material departure from the principles and spirit of my invention, and for this reason I do not wish to be understood as limiting myself to the precise construction of the device herein set forth.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a heating device, the combination of a shell or casing having a combustion-chamber provided with a grate, a door hinged to the side of the casing and adapted to close the combustion-chamber, an ash-pit formed outside the combustion-chamber at the lower part thereof, and a door for said ash-pit, said ash-pit door being held in a closed position by the door of the combustion-chamber when the same is closed, substantially as set forth.

2. A heating device, comprising a shell or casing provided with a combustion-chamber having a grate, and having a hinged door affording access to the combustion-chamber, an ash-pit extending outside the casing at the lower part of the combustion-chamber and having an open top, a door arranged to move horizontally across the top of the ash-pit to close the same, said door being provided with an upturned flange along its side adjacent to the ash-pit, said flange being arranged to be engaged by the door of the combustion-chamber, whereby when said combustion-chamber door is closed, the ash-pit door is also held in a closed position, substantially as set forth.

JOHN D. BARRIER.

Witnesses:
JONAS COOK,
JOHN B. MCALLISTER.