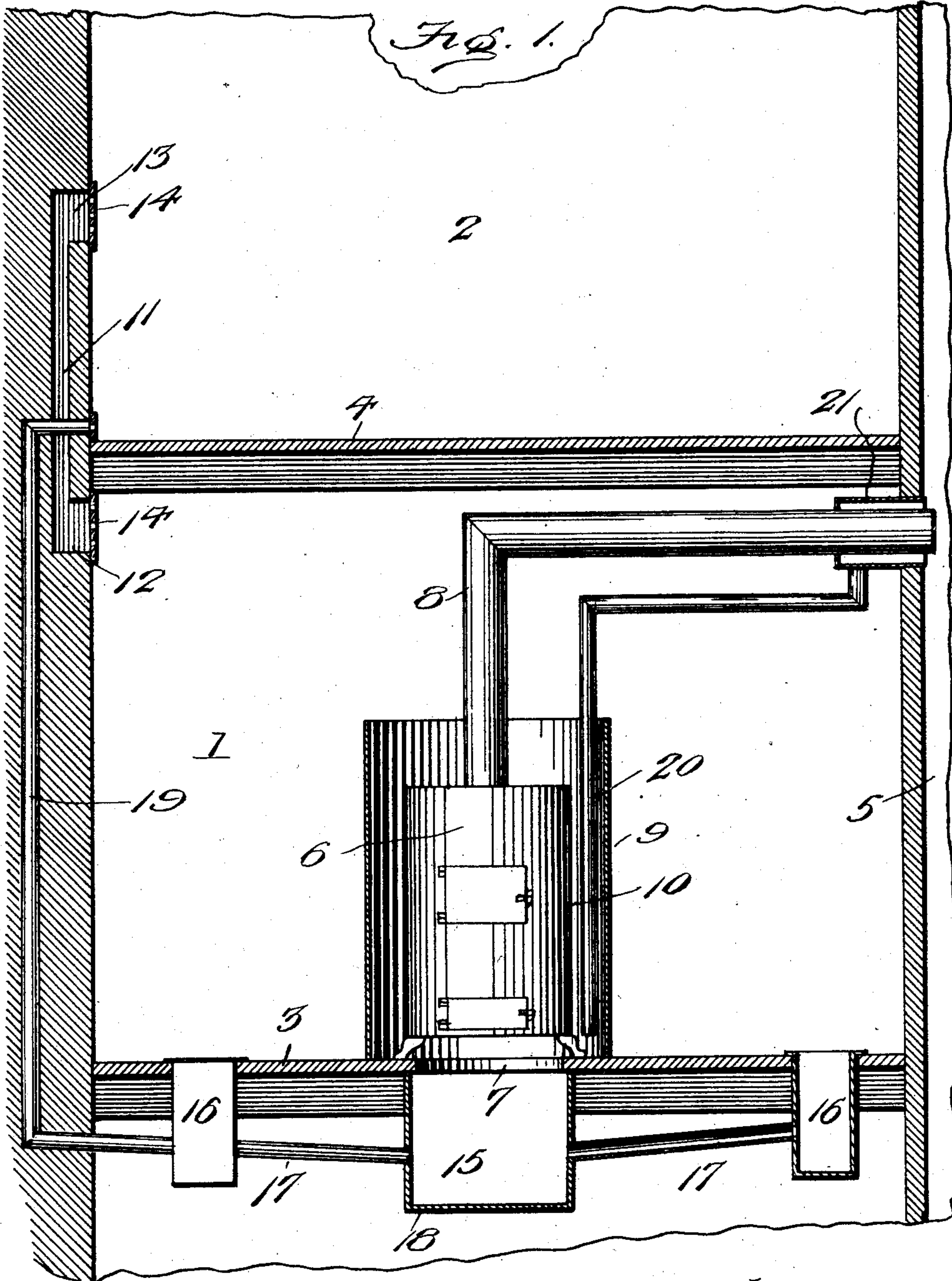


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HEATING AND VENTILATING SYSTEM.  
APPLICATION FILED FEB. 26, 1907.

907,044.

Patented Dec. 15, 1908.  
2 SHEETS—SHEET 1.



Witnesses  
C. F. Snow

C. C. Hines.

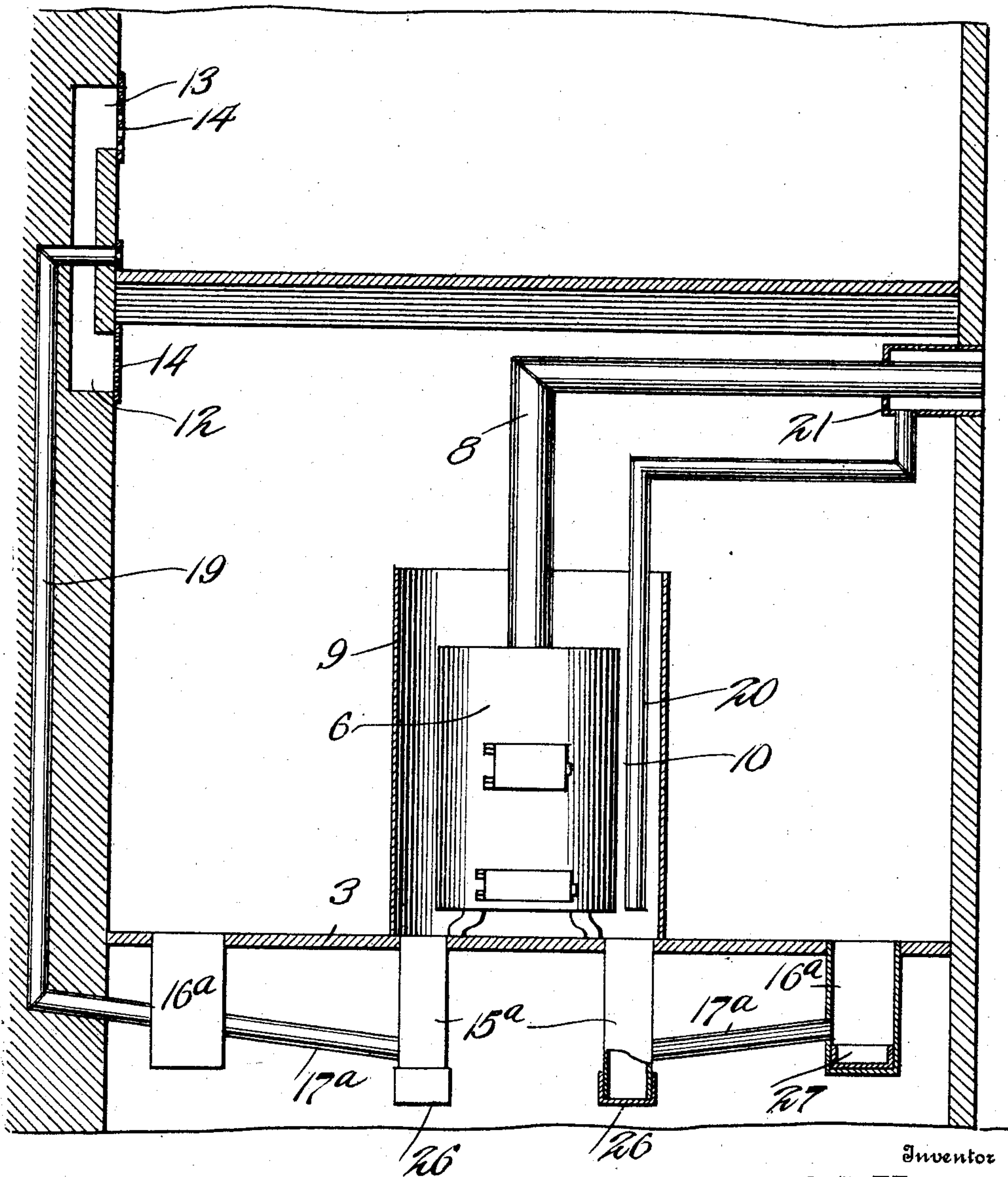
Inventor  
Dock D. Harr  
By Victor J. Evans  
Attorney

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Fig. 2.



Witnesses  
E. H. H. H. H.  
C. C. Hines.

Inventor  
D. D. Harr

By Victor J. Evans  
Attorney



# UNITED STATES PATENT OFFICE.

DOCK D. HARR, OF MINNEAPOLIS, MINNESOTA.

## HEATING AND VENTILATING SYSTEM.

No. 907,044.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed February 26, 1907. Serial No. 359,331.

*To all whom it may concern:*

Be it known that I, DOCK D. HARR, a citizen of the United States of America, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented new and useful Improvements in Heating and Ventilating Systems, of which the following is a specification.

This invention relates to improvements in heating and ventilating systems, the object of the invention being to provide means for more effectually utilizing the radiated heat from a stove or other heating device to warm one or more rooms of a building and for circulating the air in such a manner as to secure a free and perfect ventilation.

In the present illustrative embodiment of the invention,—Figure 1 is a vertical section through a portion of a building equipped with the invention. Fig. 2 is a similar view disclosing a modification.

Referring to the drawing, 1 and 2 designate superposed rooms of a building, 3 and 4 the respective floors thereof, and 5 a chimney of ordinary construction for the discharge of the products of combustion from the heater.

The heater 6 may comprise an ordinary wood or coal stove suitably supported upon the floor 3 above an opening 7 formed therein. A pipe 8 leads from this heater to the chimney 5 to discharge from the heater the smoke and other products of combustion. Surrounding the heater is a jacket 9, comprising a cylinder of metal or other suitable material open at its lower end and resting upon the floor and also open at its upper end, which extends a suitable distance above the top of the heater. The jacket is of a desired greater diameter than the heater to provide an intervening channel 10 through which the cold air entering the jacket from below the floor 3 through the opening 7 circulates upwardly and is heated by radiation from the stove, the heated air discharging through the upper open end of the jacket into the room 1 and also transmitting a portion of its heat to the jacket, whereby all of the available heat units are utilized to warm the room. If desired, one or more of the side walls of the building may be provided with a duct or channel 11 having an inlet 12 at its lower end communicating with the apartment 1 and an outlet 13 at its upper end communicating with the apartment 2,

whereby the warm air from the upper portion of the apartment 1 may pass into the apartment 2 to heat the latter. Cover or register plates 14 may be secured to the wall over the said inlet and outlet, and are suitably apertured for the flow of the heated air.

Secured to the underside of the floor 3 below the opening 7 and in open communication at its upper end therewith is a main air box or chamber 15, which may be of any preferred size and construction. On opposite sides of this box are cold air collecting boxes or walls 16 opening at their upper ends through the floor into the apartment 1. Pipes 17 lead from these cold air collecting boxes to the box 15 to conduct the cold air thereto. The cold air in the bottom of the apartment 1 flows downward into the boxes 16 and thence through the pipes 17 into the box 15, up through the opening 7 into the jacket 9, in which it is heated, the resultant heated air discharging from the top of the jacket back into the apartment 1, as will be readily understood. Preferably the pipes 17 are connected with the respective boxes 15 and 16 a suitable distance above the lower closed ends thereof, the portions of the boxes below the pipes thus being arranged to form traps or dust-collecting spaces 18, into which the dust and other foreign particles flowing with the air are deposited by their greater specific gravity, whereby the recirculation of such foreign substances back into the compartment is prevented and the air kept in a pure state. If desired, provision may be made for removing the cold and foul air from the upper apartment 2, to which end I have shown a cold air conducting pipe 19 extending vertically through one of the walls of the building and connecting one of the boxes 16 with the lower portion of compartment 2. The draft induced by the heating of the air in the jacket and the upward flow of the heated air into the apartment 1 causes the cold air to be drawn from the compartments through the connections described into the air box 15, thus maintaining a thorough and efficient circulation of the air.

Extending downward into the channel 10 between the stove and jacket is a ventilating pipe or flue 20, which terminates at its lower end above the bottom of the floor 3 and connects at its upper end with a drum 21 fitted in the pipe opening in the chimney wall and sur-



rounding the adjacent portion of the pipe 8. The outer end of this drum is open and communicates with the chimney, while its inner end is formed with an opening of sufficient diameter only for the passage of pipe 8. The drum may be of any desired length, and, as the air therein is heated by radiation from the pipe 8, a circulation is induced which causes a portion of the foul air in the bottom of the jacket to be drawn into the pipe 20 and discharged by the latter through the drum into the chimney 5. This construction of the ventilating pipe secures an absence of any retardation in the flow and exhaust of the foul air, such as is caused in those systems in which the foul air conductor connects with the smoke pipe and such air exhausts with the products of combustion into the outlet flue or chimney.

In Fig. 2 I have disclosed a modification in the construction of the cold air circulating means, wherein a plurality of main air boxes 15<sup>a</sup> are employed in lieu of the single box 15, which boxes 15<sup>a</sup> open at their upper ends through the floor 3 into the lower end of the channel 10 between the heater and jacket and are individually connected with the respective opposite cold air collecting boxes or wells 16<sup>a</sup> by the conducting pipes 17<sup>a</sup>. In this form the pipes also connect with the boxes above the lower ends thereof for the provision of the dust-collecting traps or spaces 18, and in order to facilitate removal of the collected dust a detachable cap or cover 26 may be provided upon the lower end or prolongation of each distributing box, while each collecting box 16<sup>a</sup> may have removably fitted therein, for a similar purpose, a dust collecting pan or tray 27. These and other similar arrangements fall within the spirit and scope of the invention.

It will be observed that by the construction described the hot air from the space between the heater and jacket is thrown out into the top of the room, while the cold air with the impurities are drawn from the bottom of the room downward through and beneath the floor, where the dust and impurities are deposited, the air thence passing up into the jacket and being heated and thrown out into the room. By this mode of operation the dust and other foreign particles are removed from the air, whereby the latter is kept in a pure and wholesome condition and thorough ventilation secured. The kind of heater employed is immaterial, as any type of heater in conjunction with which the

jacket may be employed may be successfully used.

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

1. The combination with the floor of a room or apartment to be heated, said floor having an opening therein, of a heater arranged within the apartment and elevated at its base above the opening in the floor, a drum inclosing the heater and projecting above and below the same and extending at its lower end down to the floor to close communication between said opening and room below the drum, a main air box wholly independent of the floor construction, said box being supported by and hanging pendent from the floor and communicating through the said opening in the floor with the base of the drum, a cold air collecting box also independent of the floor construction and pendent therefrom and communicating through the floor with the base of the apartment, and a conducting pipe connecting said boxes above their lower ends and below the floor line, whereby the lower portions of the boxes form dust traps or collecting spaces.

2. The combination with the floor of a room or apartment to be heated, said floor having an opening therein, of a heater arranged within the apartment and elevated at its base above said opening, an open-ended drum inclosing the heater and extending at its upper end above the heater and at its lower end below the heater and down to the floor to close direct communication between said opening and the room, a main air box wholly independent of the floor construction, said box being supported by and hanging pendent from the floor and communicating through the said opening in the latter with the base of the drum, a plurality of cold air collecting boxes also independent of the floor construction and pendent therefrom, and communicating through the floor at more or less remote points with the base of the apartment, and conducting pipes connecting said boxes with the main air box above the lower ends of said boxes and below the floor line, whereby the lower portions of the boxes form dust traps or collecting spaces.

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

DOCK D. HARR.

Witnesses:

F. A. JACOBS,

W. C. THOMPSON.