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PATENTED FEB. 4, 1908.

J. L. WATERBURY & C. WATERMAN.

VENTILATING DEVICE.

APPLICATION FILED MAY 10, 1907.

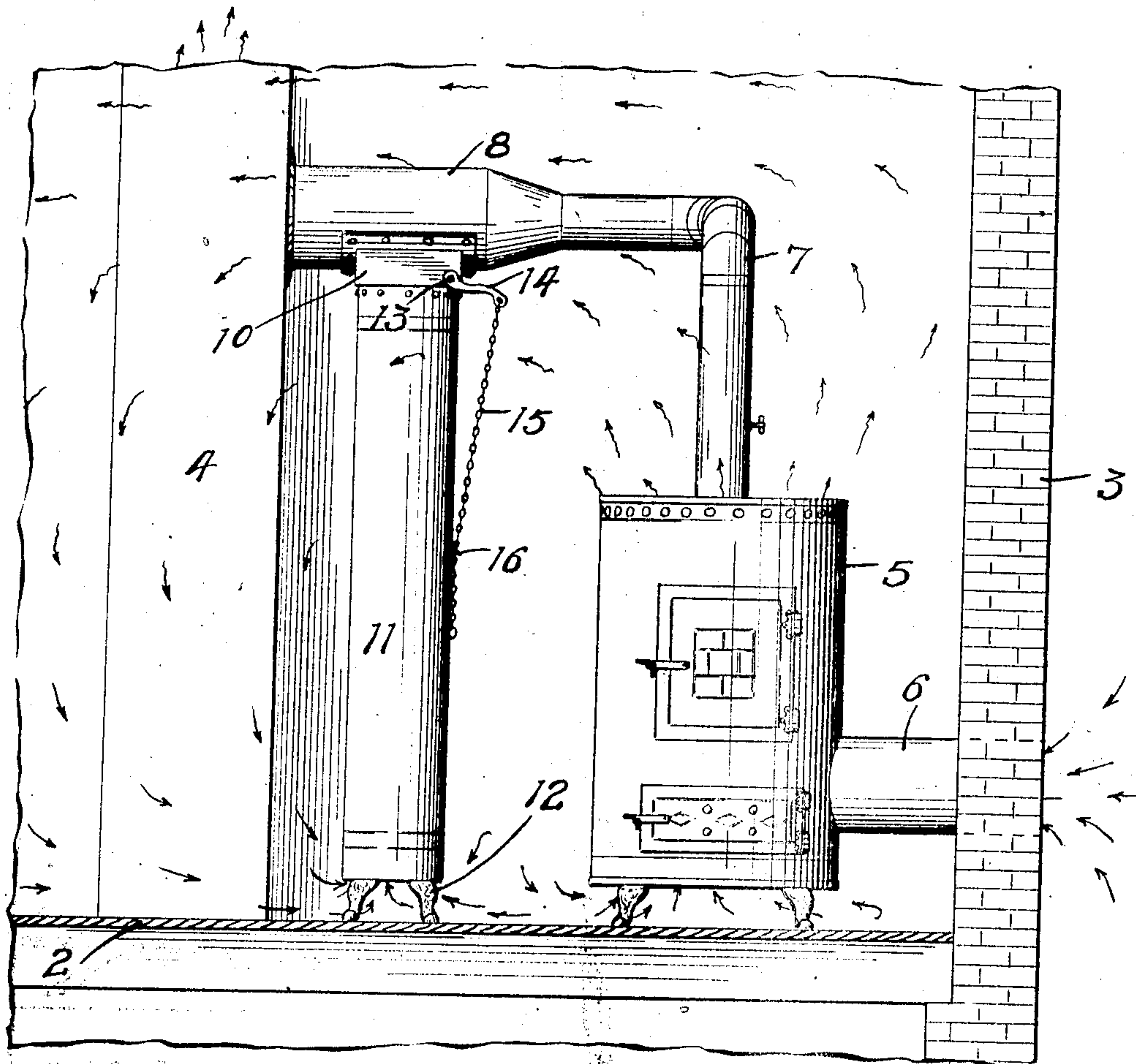


Fig. 1.

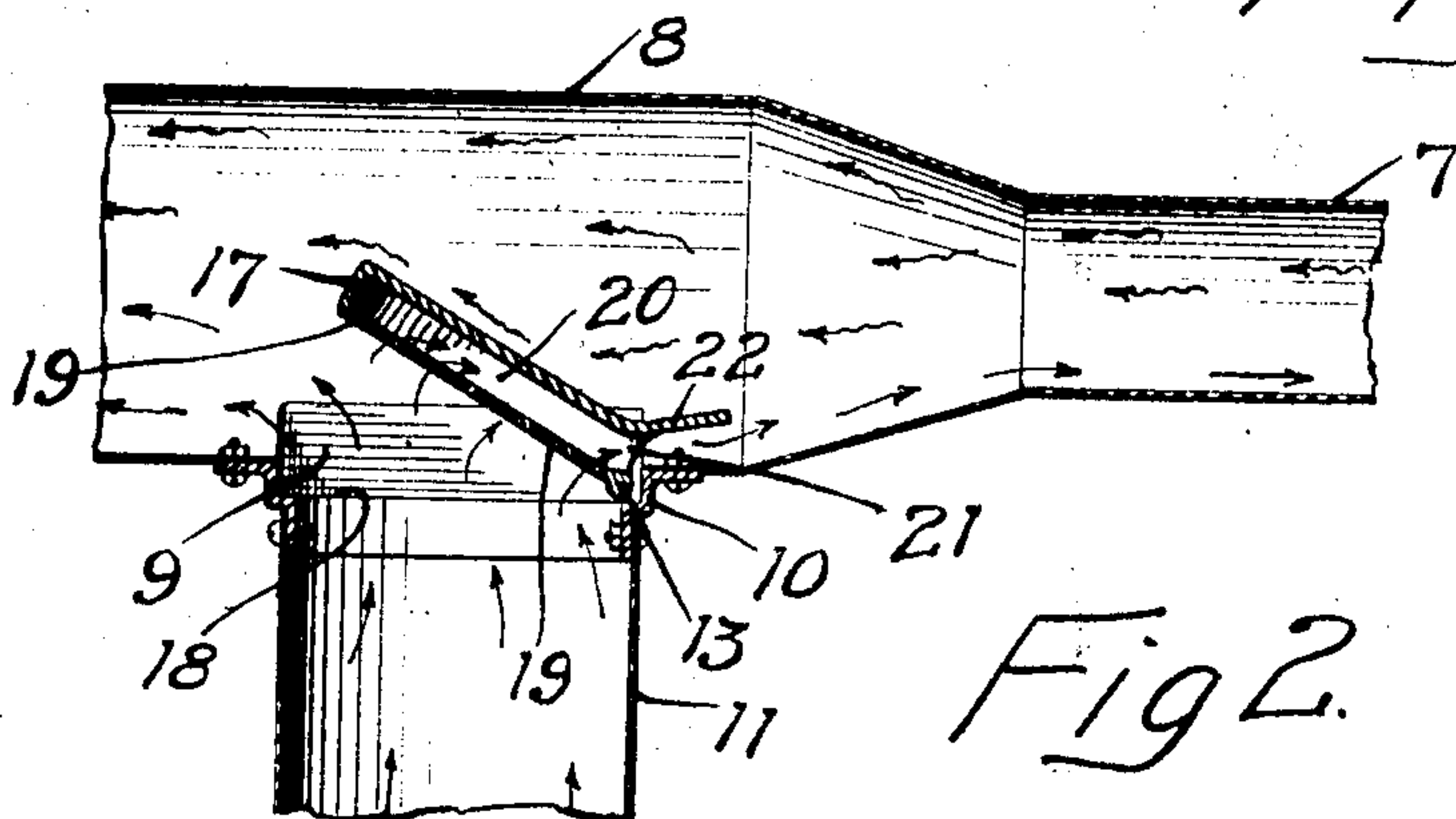


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES L. WATERBURY AND CLYDE WATERMAN, OF MINNEAPOLIS, MINNESOTA.

VENTILATING DEVICE.

No. 878,474.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed May 10, 1907. Serial No. 372,941.

To all whom it may concern:

Be it known that we, JAMES L. WATERBURY and CLYDE WATERMAN, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Ventilating Devices, of which the following is a specification.

Our invention relates to ventilating devices designed particularly for use in school rooms where stoves or similar heating apparatus are employed, with the smoke flue extending from the heater through the room to the chimney.

The device is also capable of use wherever a heating apparatus with a smoke flue in the room is employed and it is desired to remove the impure air and increase the radiating surface, and it may also be applied to the smoke flues of a heating apparatus located in the basement of a residence or other structure.

The object of our invention is to provide a simple inexpensive apparatus capable of use with any style of heater and easily and quickly controlled.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation of a heater and a ventilating device in connection therewith embodying our invention. Fig. 2 is a sectional view of a portion of the smoke flue at the point where the foul air flue is attached thereto.

In the drawings, 2 represents the floor of the room, 3 the outside wall, and 4 the chimney.

5 is a heater inclosed with an improved form of jacket which forms a part of our system, and is connected with the outside air through an intake pipe 6.

7 is the portion of the smoke flue connected with the heater and 8 is an enlarged section forming a continuation of the flue 7 and connecting it with the chimney. An opening 9 is provided in the under side of the section 8 inclosed by a frame 10 preferably of cast metal. A vertical flue 11 for the foul air is attached at its upper end to the frame 10 and has an open lower end supported upon the legs 12.

13 is a shaft pivoted in the frame 10 and provided with an arm 14 to which an operating chain 15 is attached, a hook 16 being provided on the side of the flue to engage the

chain and adjust the shaft and arm in any desired position. A valve 17 is mounted on said shaft and is adapted to fit a seat 18 in the frame 10 and close the top of the flue 11. The top of the valve 17 is imperforate and its bottom is provided with a series of holes 19 leading to a chamber 20, and the side walls of said chamber connecting the top and bottom of the valve are also imperforate except for an opening 21 provided therein near the shaft 13 and close to the bottom of the smoke flue. When the valve is raised to the position indicated in Fig. 2 to an angle of about 30 degrees, the cold air flowing up through the vertical flue 11 will be divided, a portion passing on through to the chimney and the remainder entering the holes 19 into the chamber 20 and from thence passing through the opening 21 and along the bottom of the smoke flue, to the combustion chamber of the heater where the oxygen in the air thus admitted will increase combustion. We thus avoid the necessity of opening the door of the heater and admitting the cold air directly over the fire. Such admission of air has always been objectionable as it has a tendency to deaden the fire and retard combustion, while air admitted along the lower wall of the smoke flue will increase and facilitate combustion. By taking in the air through the vertical flue and passing it down through the smoke flue we are able to heat it and deliver oxygen to the combustion chamber without any danger of checking the fire. A wing 22 is preferably formed on the valve extending in the rear of its pivot to act as a guide and direct the air along the lower wall of the smoke flue.

The section 8 of the smoke flue is of substantially the same diameter as the flue 11 and the currents of air and the product of combustion, will not, therefore, be retarded when they mingle at the junction of the smoke with the foul air flue. The enlarged portion 8 of the smoke flue and the upper portion of the foul air flue will be heated sufficiently by the gases and products of combustion, and a strong draft will be established up through the foul air flue to take away the impure air in the room and discharge it into the chimney. The apparatus can be made of any suitable size according to the capacity of the heater and the place where it is to be used.

We claim as our invention:

1. The combination, with a heater and

smoke flue, of a foul air flue communicating with said smoke flue, a valve provided at the junction of said smoke flue with said foul air flue, said valve being hinged on one side and adapted to close the discharge end of said foul air flue and to be swung across and partially close the passage through said smoke flue, said valve having an imperforate top and a perforated bottom with a chamber between them and an opening through the wall of said chamber, through which opening a portion of the air brought up by said foul air flue and admitted to said chamber is directed along the bottom of said smoke flue to the heater.

2. The combination, with a heater and a smoke flue connected therewith and a foul air flue communicating with said smoke flue, a valve provided at the junction of said smoke flue and said foul air flue and pivotally supported at one edge on the side of said foul air flue contiguous to said heater, said valve being arranged to close the top of said foul air flue and adapted when partially open to deflect the foul air from said flue along the bottom of said smoke flue, the heated air being conducted through said smoke flue over said valve and along the upper walls of said smoke flue, whereby the foul air is prevented from acting as a check upon the heated gases passing through said smoke flue.

3. The combination, with a heater and a smoke flue having an enlarged section and a chimney communicating therewith, of a foul air flue leading into said enlarged section and of substantially the same diameter as said enlarged section, said foul air flue having an open end near the floor and adapted to conduct the impure air into said enlarged section and mingle it with the products of combustion

from said smoke flue, and a valve hinged at the junction of said enlarged section with said foul air flue and adapted to close the discharge end of said foul air flue and swing across and partially close the passage through said enlarged section, and said valve having an imperforate top and a perforated bottom with a passage between them and through which passage a portion of the air brought up by said foul air flue and admitted to said enlarged section is directed along the bottom of said smoke flue to the heater while the remaining portion is mingled with the products of combustion and enters said chimney, substantially as described.

4. The combination, with a heater and a smoke flue connected therewith, of a chimney, said smoke flue having an enlarged section leading into said chimney and a foul air flue communicating with said enlarged section, a valve pivoted at the junction of said foul air flue with said enlarged smoke flue section and adapted when closed to prevent the discharge of foul air into said enlarged smoke flue section, said smoke flue being entirely unobstructed when said valve is closed and said valve when swung partially across said smoke flue acting as a deflector to direct the foul air currents along the bottom of said smoke flue and prevent them from acting as a check on the heated gases in the top of said smoke flue, substantially as described.

In witness whereof, we have hereunto set our hands this 3d day of May 1907.

JAMES L. WATERBURY
CLYDE WATERMAN.

Witnesses:

RICHARD PAUL,
J. B. ERA.