

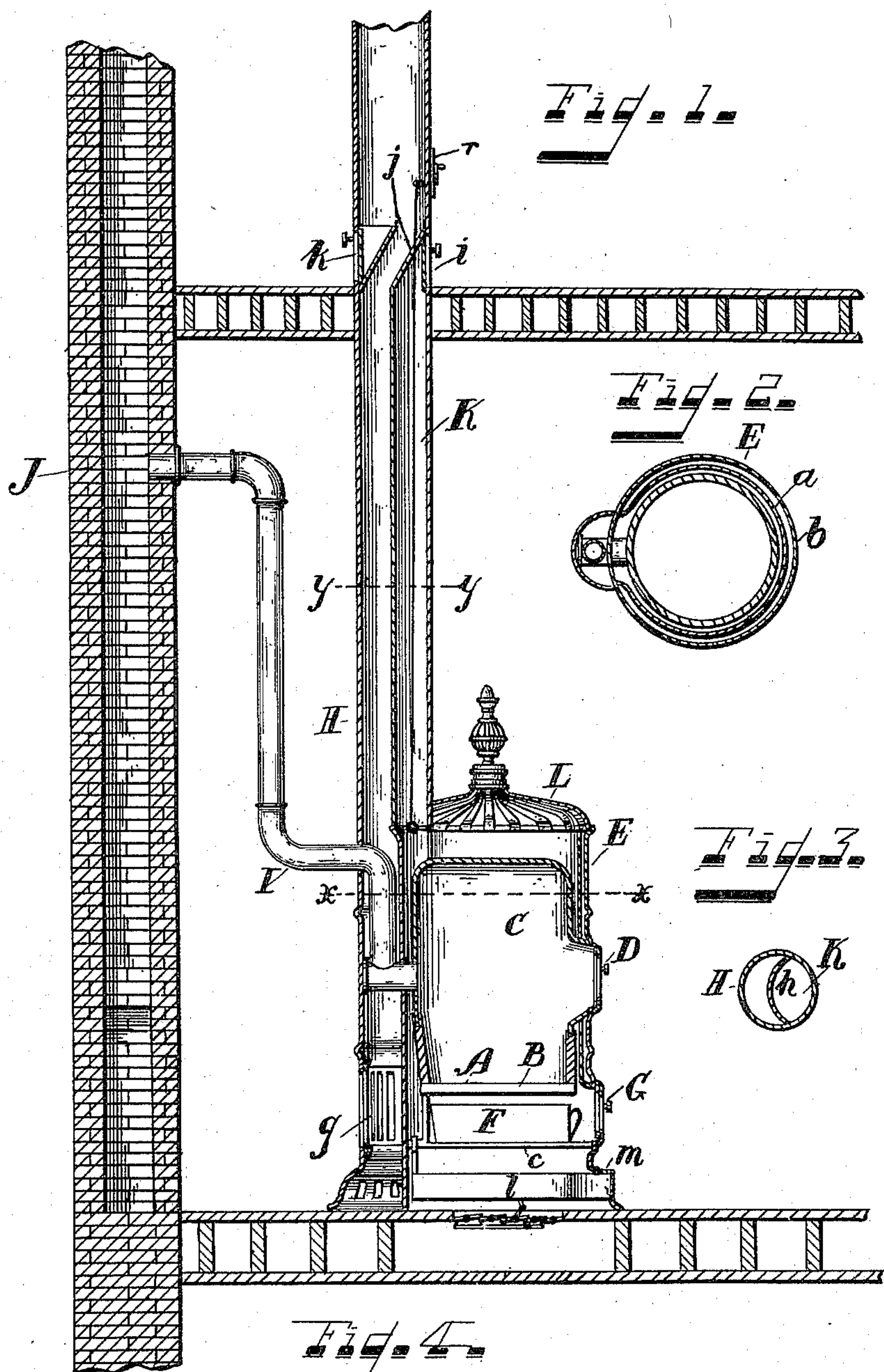
(No Model.)

2 Sheets—Sheet 1.

J. W. JOHNSON & W. W. ENSIGN.
HEATER AND VENTILATOR.

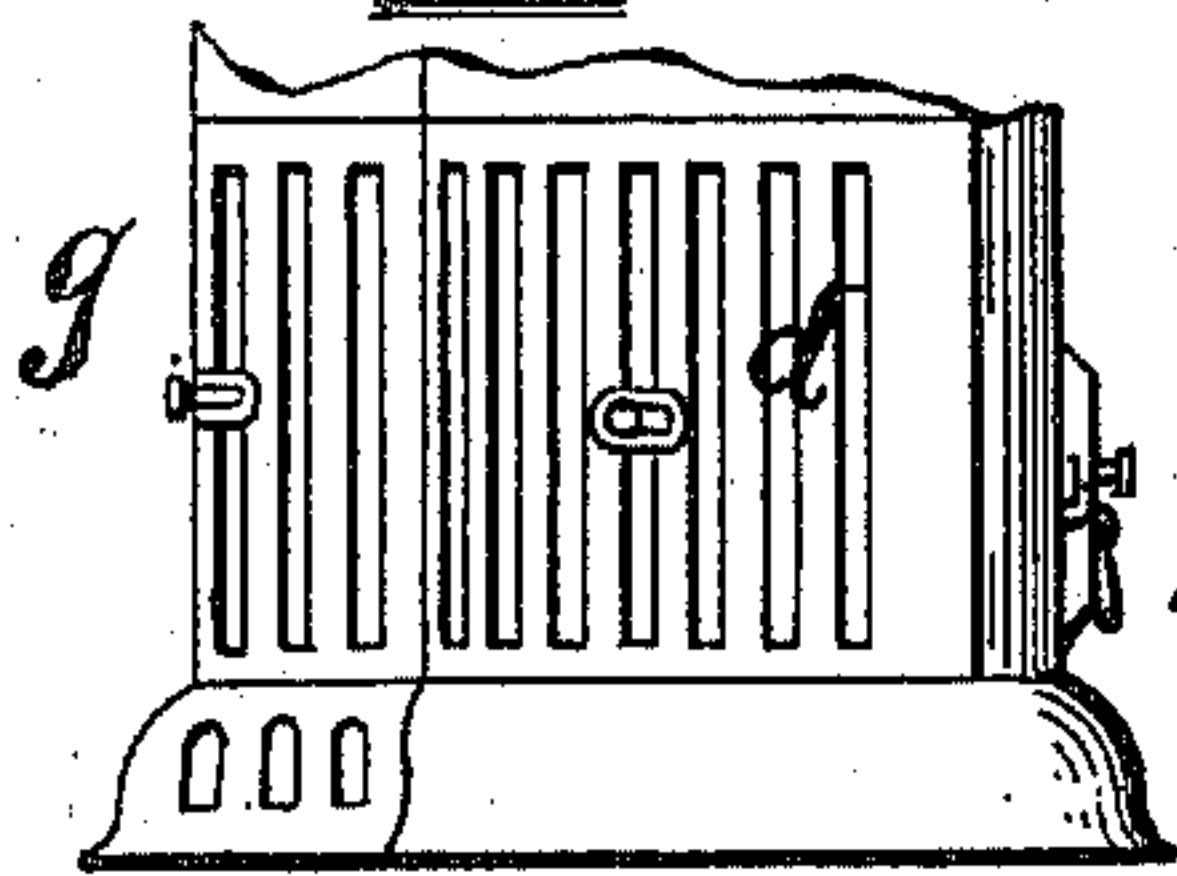
No. 578,993.

Patented Mar. 16, 1897.



Witnesses

Bernard J. Hausfeld
William R. Fay.



Inventors.

Joseph W. Johnson
and Wm W. Ensign
by Chas. M. Beck
their Attorney.

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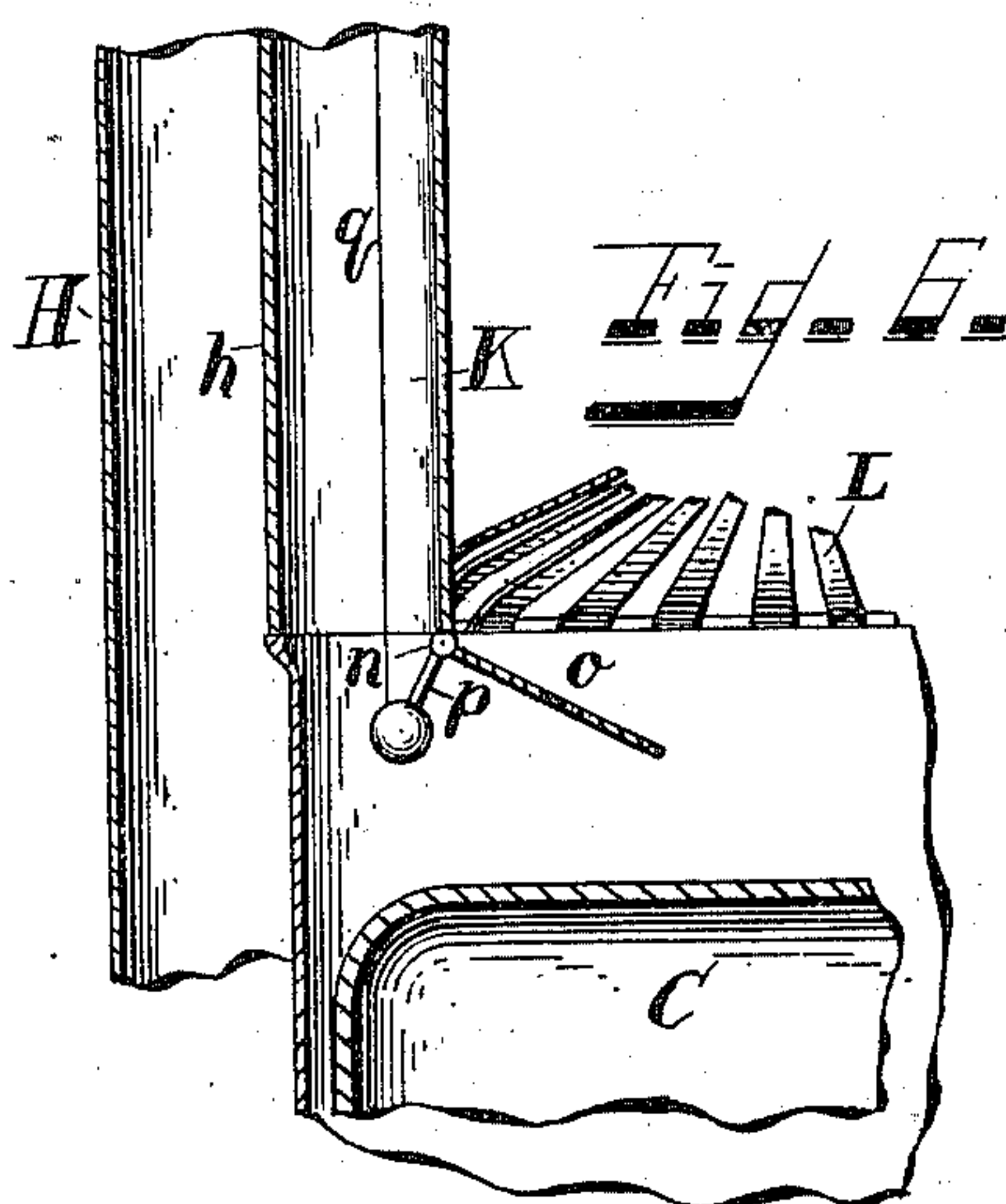
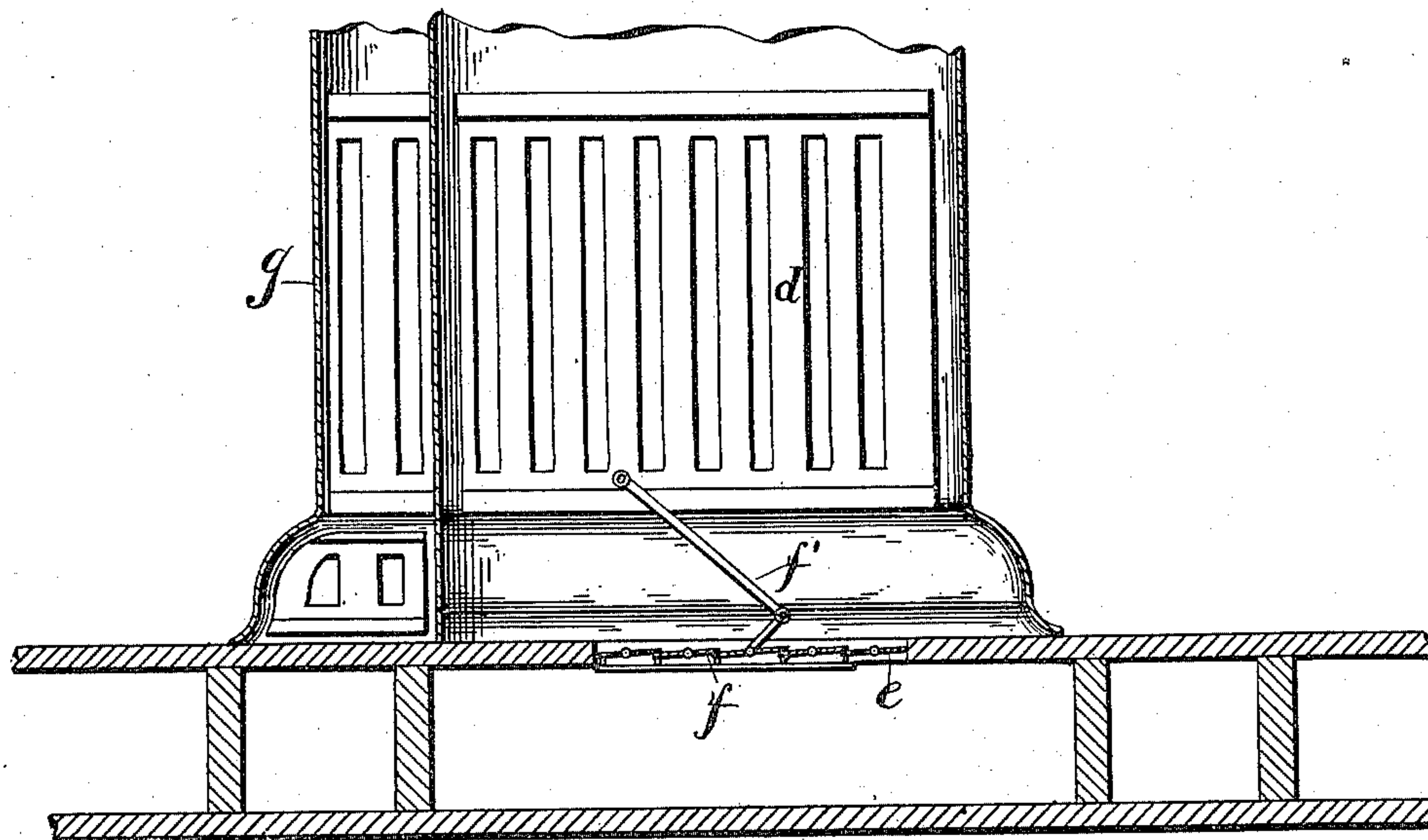
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Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH W. JOHNSON, OF HARTWELL, AND WILLIAM W. ENSIGN, OF CINCINNATI, OHIO, ASSIGNORS TO THE PECK-WILLIAMSON HEATING AND VENTILATING COMPANY, OF OHIO.

HEATER AND VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 578,993, dated March 16, 1897.

Application filed June 6, 1896. Serial No. 594,613. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH W. JOHNSON, residing at Hartwell, and WILLIAM W. ENSIGN, residing at Cincinnati, in the county of Hamilton, State of Ohio, citizens of the United States, have invented certain new and useful Improvements in Heaters and Ventilators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to heaters designed to both warm and ventilate rooms of buildings, and is particularly designed for use in school-rooms and public buildings; and it has for its object a novel construction and arrangement of the parts whereby the best results in both heating and ventilating are obtained.

The novelty of our invention will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1, Sheet 1, is a sectional elevation of a portion of a building, showing the application of our improved heater and ventilator, which is illustrated in central section. Fig. 2, Sheet 1, is a transverse plan on the dotted line *x x* of Fig. 1. Fig. 3, Sheet 1, is a transverse plan of the vent-flue on the dotted line *y y* of Fig. 1. Fig. 4, Sheet 1, is an elevation of the lower part of the heater, showing the air-registers. Fig. 5, Sheet 2, is an enlarged sectional elevation of the base of the shell of the heater and the subjacent flooring. Fig. 6, Sheet 2, is a detail sectional view, enlarged, of the upper part of the heater, including part of the vent and warm-air flues.

The same letters of reference are used to indicate identical parts in all the figures.

The heater proper is composed of a fire-pot A, with suitable grate B, and a combustion-chamber C, with a door D opening into the fire-pot for the introduction of the fuel. The heater is suitably supported in a shell or casing E, preferably of sheet metal, and with double walls *a b*, Fig. 2, extending entirely around the heater from top to bottom, except in the rear, where only the outer wall *b* is continued around. The purpose of this con-

struction is to form an insulating or non-conducting chamber to prevent lateral radiation of the heat. On a partition *c*, within the shell E, rests an ash-pan F directly beneath the grate and removable through a door G, provided with the usual draft-register.

Forming a part of the shell E, directly at its rear, is a vertical vent-flue H, which extends up through the room above that in which the heater is located and out through the roof of the building, or it may terminate with its open end within the attic when the latter is provided with suitable openings for the escape of the foul air. The smoke-pipe I extends from the heating-chamber up through the vent-flue H for some distance, and thence enters the smoke-flue J for carrying off the products of combustion.

The top or cap L of the shell E is provided with radial slits or openings to permit the air within the shell which has been warmed by the heater to pass freely out into the room containing the heater, and air is supplied within the shell at its base either through a register *d*, Fig. 4, in the shell or through a source of fresh-air supply from the outside through an opening *e* in the floor, which is provided with a suitable register *f*, connected by a pivoted link *f'* with the register *d*, as seen in Fig. 5, in such manner that the opening of the register *d* will close the register *f* and the closing of the register *d* will open the register *f*, as will be readily understood. The cold air from without enters under the flooring and passes up into the shell through the register *f* when the latter is open.

On very cold days, in starting to warm the room, the register *f* would be closed and the register *d* opened, thus causing the air within the room to circulate through the shell and around the heater, and this condition would be maintained until the room was sufficiently warm, when the register *d* would be closed and the register *f* thereby opened to admit only pure fresh air to the interior of the shell. The base of the vent-flue H, which does not communicate with the interior of the shell, is likewise provided with a register *g* to admit the foul air to enter the vent-flue to be carried out up through the roof or into the attic, an

upward current or draft being maintained in said vent-flue both by means of that portion of the smoke-pipe therein and by direct radiation through the single wall of the shell adjacent to the vent-flue.

To heat and ventilate the room immediately over that in which the heater is located, we place a partition *h* within the vent-flue, forming a second heating-flue *K*, whose lower end opens into the shell *E* at the base of the cap *L*, and whose upper end opens adjacent to a register *i* in the room above to permit warm air to enter the room. A deflector *j* is located within the vent-flue opposite the register *i* and has behind it a register *k* to admit foul air from the room above the heater to enter the vent-flue and pass off up with that from the room below.

As seen in Figs. 1 and 5, we hinge, as at *n*, a deflecting-plate *o* at or near the lower open end of the warm-air flue *K*, and this plate carries a weighted arm *p*, from which a chain or cord *q* is extended up through the flue *K* to the room above, where its upper end is connected to a crank indicator *r* near the register *i*, so that the occupant of the room above may raise or lower the cord *q* to admit more or less warm air from the shell into the flue *K*.

We suspend in the base of the shell *E*, beneath the partition *c*, a water-pan *l*, which serves both to moisten the air entering the shell and to protect the flooring beneath it from becoming heated or charred, and this pan is inclined toward its end which projects from the base, where it is covered by a suitable door *m*, so that in filling it with water the overflow, if any, cannot take place within the base of the shell, but will occur at the projecting lip on the outside of the shell.

By the above construction we produce a combined heater and ventilator which is both simple in construction, efficient in action, and pleasing in appearance, and it is obvious that while it can be used to not only heat the room in which it is located and the room above it, it may be used solely to heat the room in which it is located in one-story buildings, and the separate warm-air flue *K* and registers *i* *k* may be dispensed with.

Having thus fully described our invention, we claim—

1. In a heater and ventilator, the combination with an outer shell having an open top and a fresh-air register or opening in its bottom, of a heater within said shell, a vent-flue forming part of and extending up from said

shell, said vent-flue being out of communication with said outer shell and having a foul-air register in its base, and a smoke-pipe for the heater entering said vent-flue and passing upward therethrough in a vertical direction for a short distance to induce a draft in said flue, and then out to the chimney, substantially as described.

2. In a heater and ventilator, the combination with a double-walled outer shell having an open top and a fresh-air register or opening in its bottom, of a heater within said shell, a vent-flue forming part of and extending up from said shell, said vent-flue being out of communication with said outer shell and having a foul-air register in its base, and a smoke-pipe for the heater entering said vent-flue and passing upward therethrough in a vertical direction for a short distance to induce a draft in said flue, and then out to the chimney, substantially as described.

3. In a heater and ventilator, the combination with a heating-shell, of a vent-flue forming part of and extending up from said shell, a warm-air flue lying within said vent-flue and traversing said vent-flue for a part of its length, said warm-air flue communicating at its lower end with said shell and at its upper end with a register in the room above, substantially as described.

4. In a heater and ventilator, the combination of the heating-shell, a vent-flue forming part of and extending up from said shell, a warm-air flue within said vent-flue opening at its lower end into said shell and at its upper end at a register in the room above, a deflector in the vent-flue opposite said register and a second foul-air register in the vent-flue behind the deflector, substantially as described.

5. In a heater and ventilator having an exterior heating-shell with an open top for the escape of heated air into the room containing the heater and a warm-air flue extending upward from said heating-shell, the combination therewith of a deflector hinged adjacent to the warm-air flue so as to be adjustable in said shell, and means for operating said deflector from the room above, substantially as described.

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Witnesses:

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