No. 688,132. Patented Dec. 3, 1901.

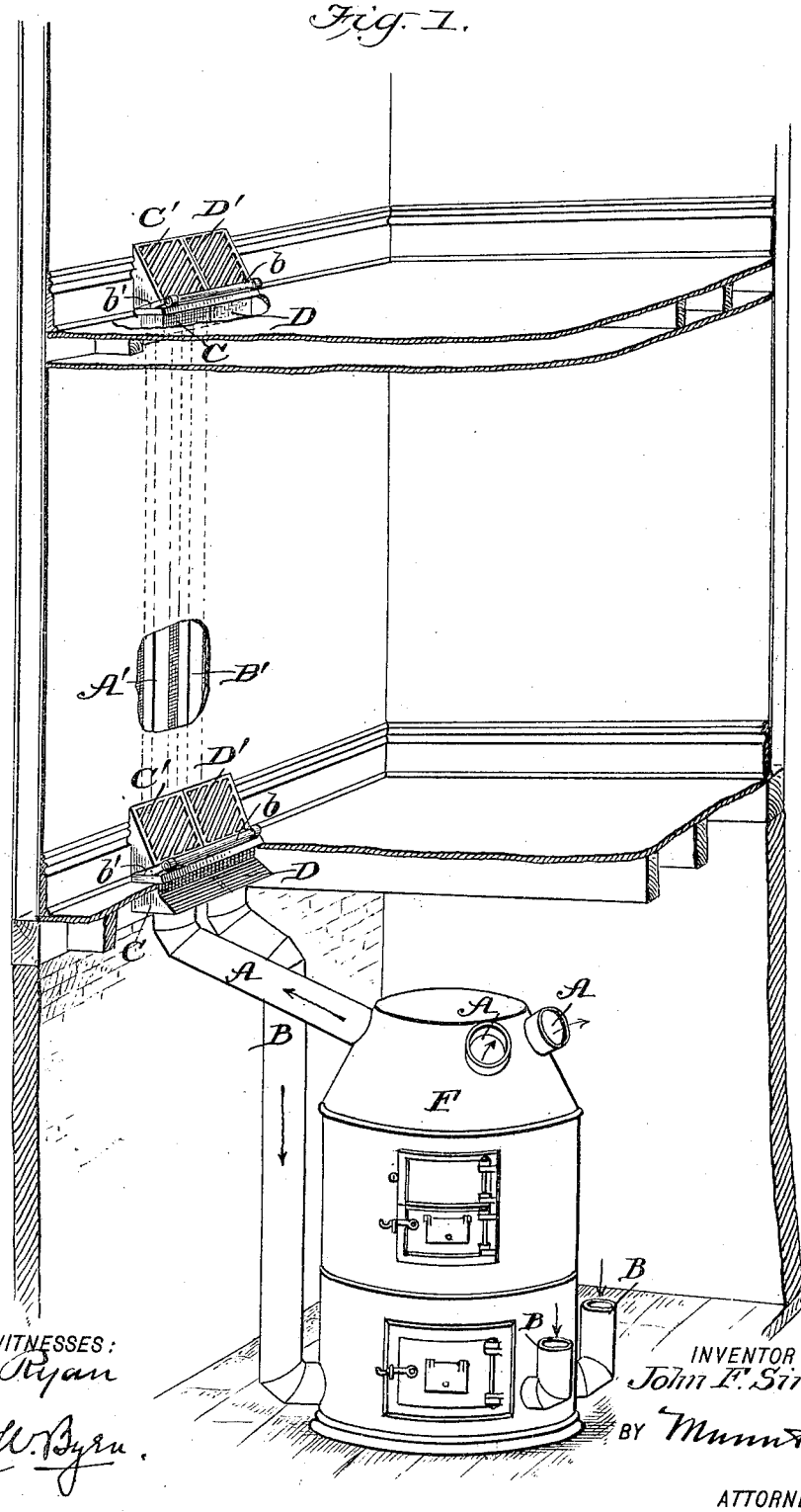
J. F. SIMS.

HEATING AND VENTILATING APPARATUS.

(Application filed Feb. 21, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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Fig. 2.

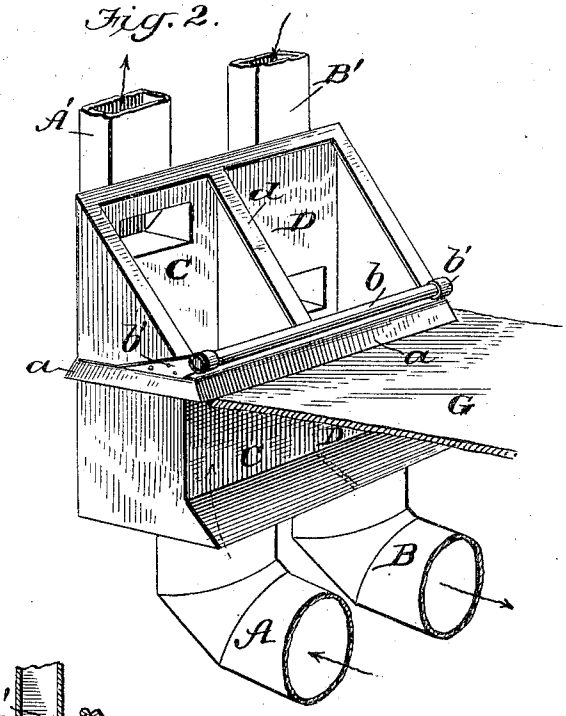
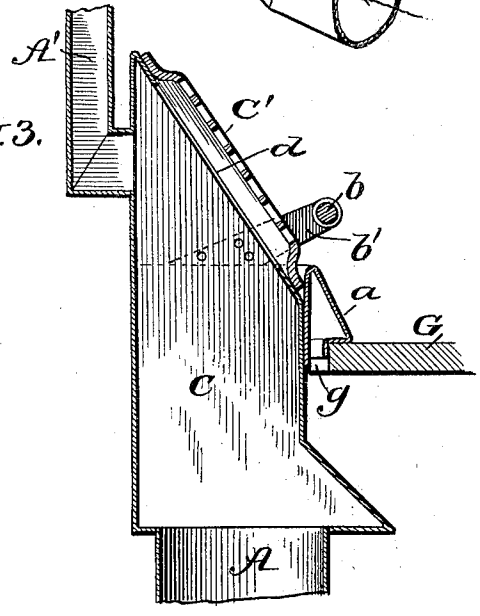


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN FRANKLIN SIMS, OF ILLIOPOLIS, ILLINOIS.

HEATING AND VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 688,132, dated December 3, 1901.

Application filed February 21, 1901. Serial No. 48,283. (No model.)

To all whom it may concern:

Be it known that I, JOHN FRANKLIN SIMS, of Illiopolis, in the county of Sangamon and State of Illinois, have invented a new and useful Improvement in Heating and Ventilating Registers, of which the following is a specification.

My invention is in the nature of a novel construction and arrangement of heating and ventilating register operating upon the principle of a closed circulation of air-currents from a furnace in the cellar or basement up to and through the several rooms of a building and thence back again to the furnace in an endless cycle of circulation, as will be hereinafter fully described with reference to the drawings, in which—

Figure 1 is a sectional perspective view of a building with the furnace-pipes and registers in position. Fig. 2 is a perspective view of one of the register-boxes with the register removed, and Fig. 3 is a vertical sectional view through one of the register-boxes.

In the drawings, Fig. 1, F represents the furnace, which is located in the cellar or basement and which instead of having a cold-air duct leading from the air outside the house has a series of pipes B, which extend from the various rooms of the building down to and open through the casing of the furnace near the bottom to supply air to the furnace, which when heated rises from convection through the upper pipes A and passes to the various rooms of the building.

The pipes A and B which go to any particular room are arranged in pairs and communicate with sheet-metal register-boxes, each of which has two compartments separated by a partition. One of these compartments C communicates at its lower end with the uptake-pipe A from the furnace and receives hot air therefrom, a part of which is discharged into the first room above through a register-grating C′ and the balance of which is carried by a pipe A′ up to a similar register-box on the next floor above, and so on. The other compartment D of the register-box communicates below with the cold-air pipe B, leading to the furnace, and opens through the register-grating D′ on the floor above, so as to draw air from that room, and also communicates with the cold-air pipe B′, which runs to the floor above and takes cold air from the second story above through its register-grating D′. The circulation of air-currents according to this system is from the several rooms down through the register-openings D′ D′ and the pipes B′ B to the furnace, where upon being heated it rises through the pipes A and A′ and enters the rooms through the register-openings C′ C′.

The double register-boxes, it will be seen, project slightly into the room and are on the the floor-line and against the wall and open above the floor with an incline grating, in front and at the lower edge of which is a foot rail or rest *b*, sustained in brackets or arms *b′* at the sides, which are bolted or screwed to the ends of the register-boxes. The register-boxes (see Figs. 2 and 3) extend partly above and partly below the floor, between which and the register-boxes a space *g* is left to avoid the contact of heated metal with the woodwork, and to cover and inclose this space *g* in the floor a collar *a* is attached to the register-box and extends around three sides of the same, being flanged and bent at its lower edge to form a shoulder and fit the edge of the woodwork, so as to make a neat finish without danger from fire and to act as a support to hold the register-box in the opening cut in the floor. This collar *a* is extended a little above the lower edge of the inclined face *d* of the register-box, so as to form a trough, as seen in Fig. 3, to receive and retain the register-gratings C′ D′. The collar *a* may be soldered to the box or riveted thereto or rigidly secured in any other way.

The lower register-box has an enlarged lower end below the floor-line, so as to receive the full size of furnace-pipes and still allow the opening through the floor to be of the smallest size, thus economizing floor-space. The inclined-face register-box, it will be seen, combines the advantages of both the floor-register and the wall-register.

The system of heating with which my register-box is designed to be used secures a very great economy of heat and fuel, as it does not have to heat the cold air from outside the house, but air that has been already partially heated. It also equalizes the temperature throughout the building and heats uniformly the air from the ceiling to the floor. It is

also free from outside dust and is not disturbed, as most furnaces are, by the change in the direction of the wind. There has not been any general adoption of this system of heating, however, for the reason that it involves double the amount of piping, double the number of registers, much cutting up of floors or walls, and double the number and special provision of vertical flues. With my form of double register-box there is only one cutting of the floor for each room and one vertical flue, in which both the warm and cold air pipes are contained, and, besides, a better distribution of warm air and withdrawal of foul air is obtained, as the natural circulation of the foul air along the floor-line is toward the hot-air register.

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

1. A register-box composed of a single casing having a vertical partition in it dividing it into two compartments, one for the incoming, and the other for the outgoing air, and a register-grating arranged in an inclined position on the face of the said box substantially as shown and described.

2. A register-box composed of a single casing having a vertical partition in it dividing it into two compartments, an inclined grating arranged on the face of said casing, brackets secured to the sides of said casing, and a foot-rest supported in said brackets at the bottom edge of the grating substantially as shown and described.

3. A register-box arranged to project into the room and having an inclined face, and a rigidly-attached heat-protection collar *a* extending around the register-box and formed with a shoulder supported upon the edge of the floor about said box substantially as described.

4. A register-box arranged to project into the room and having an inclined face, a heat-protection collar *a* extending around the register-box and supported upon the edge of the floor about said box, said collar being extended above the lower edge of the inclined face to form a retaining-seat, and the register-grating supported in said retaining-seat substantially as described.

JOHN FRANKLIN SIMS.

Witnesses:
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