

(No Model.)

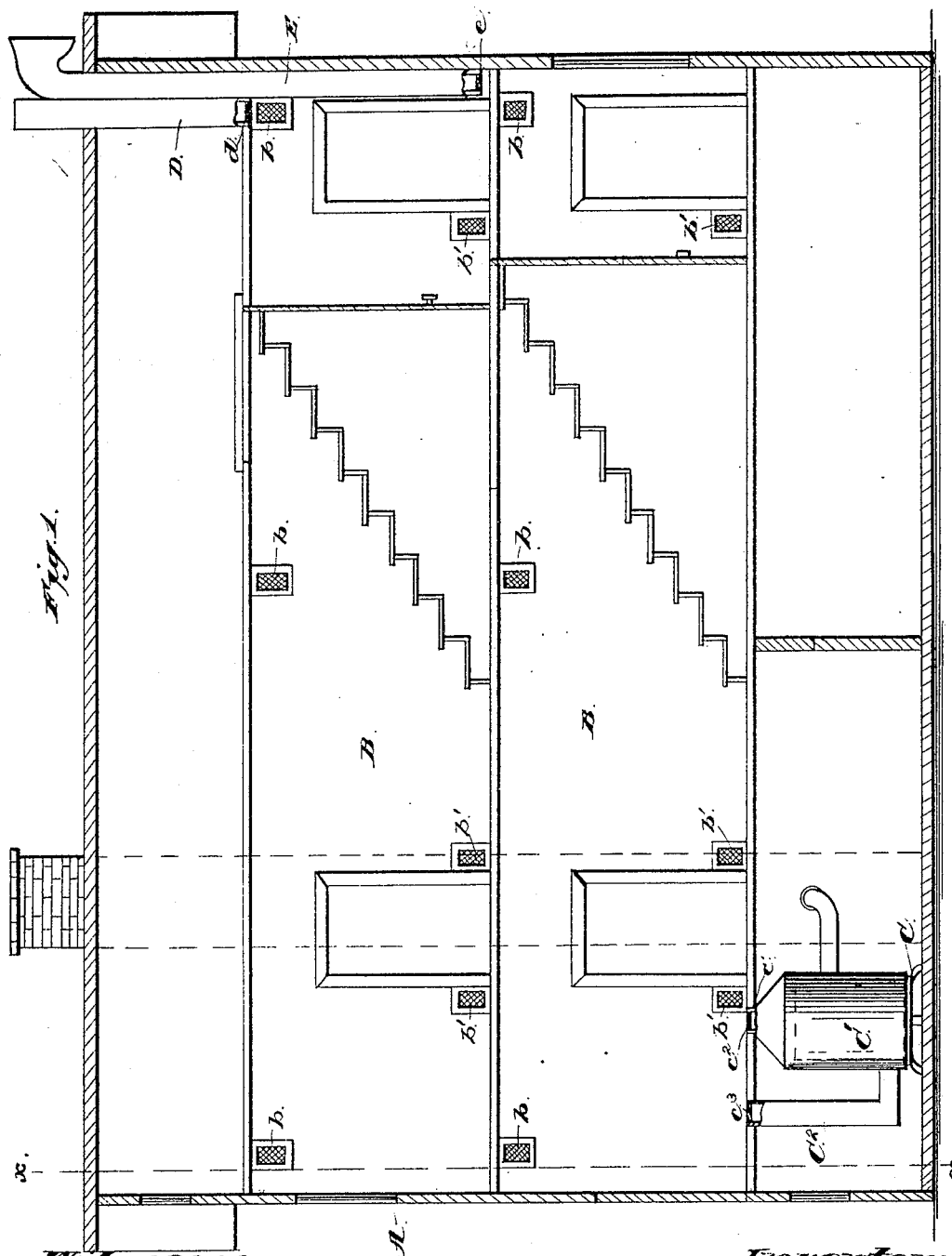
2 Sheets—Sheet 1.

H. C. STROUT.

HEATING AND VENTILATING SYSTEM.

No. 346,623.

Patented Aug. 3, 1886.



Witnesses:

Charles S. Hye
Edward L. Miller

Inventor:

Horace C. Strout.

By

Wm. Marble
Atty.

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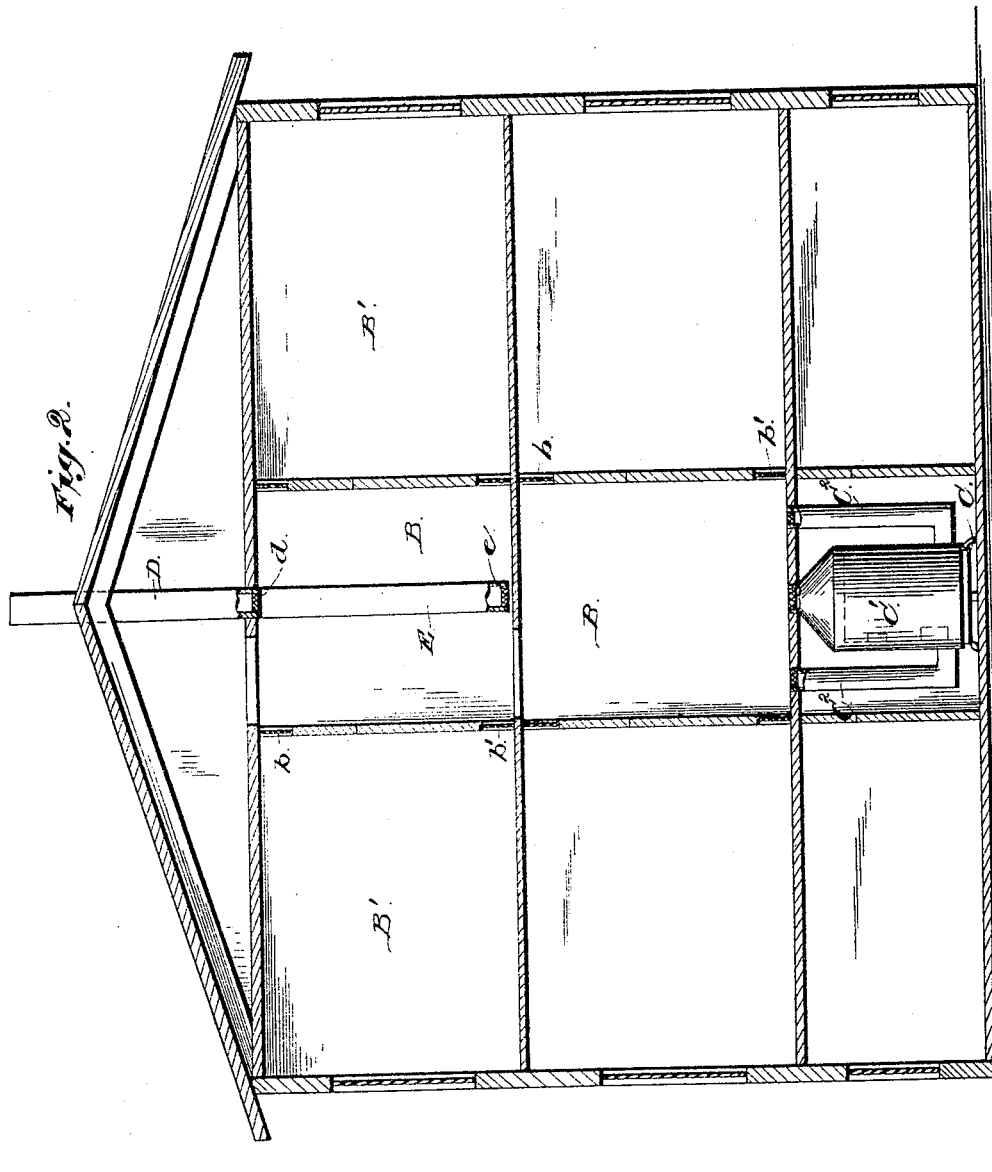
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UNITED STATES PATENT OFFICE.

HORACE C. STROUT, OF BROOKLYN, NEW YORK.

HEATING AND VENTILATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 346,623, dated August 3, 1886.

Application filed December 12, 1885. Serial No. 185,540. (No model.)

To all whom it may concern:

Be it known that I, HORACE C. STROUT, a citizen of the United States, residing at Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in Heating and Ventilating Systems, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a system of heating and ventilating buildings; and it consists in the arrangement in a building of suitable heating and ventilating means, which will be more fully hereinafter described, and definitely pointed out in the claims.

One object of my invention is to equalize by suitable means the temperature of buildings uniformly throughout and avoid direct drafts, or an unequal distribution of hot air, by means which are simple in construction, easily operated, and controlled.

A further object of my invention is to cause an equal circulation of hot air through the apartments of buildings, so that both the upper and lower portions of said apartments shall be of the same temperature, being regulated by a continuous intermingling and comingling of cold and heated air, which enters rooms and escapes therefrom through registers situated in different parts of the apartments.

A still further object of my invention is to so arrange the ventilating means that cold air has ingress from the top of the building, and is carried down close to the flooring of the uppermost hallway by a suitable duct, and thence circulate down through the remaining hallways, and eventually enter a duct leading to a furnace.

I attain these objects by the construction illustrated in the accompanying drawings, wherein like letters of reference indicate similar parts in the several views, and in which—

Figure 1 is a longitudinal vertical section of a building with my improved heating and ventilating devices applied thereto. Fig. 2 is a transverse vertical section on the line $x x$ of Fig. 1.

A indicates a building, which, as illustrated, has hallways B B and apartments B' B'. These apartments have suitable heating-registers, b , arranged in their uppermost parts, and cold-air registers b' in their lowermost parts.

These registers b and b' are arranged in different portions of the room, one above the other, and connect with the hallways B B.

On the ground-floor, as illustrated in the drawings, a suitable furnace, C, is situated, which is surrounded by a heating-jacket, C'. This jacket C' has a conical top, c , which, by means of a short pipe, c' , passes through the flooring above it into the lower hallway, B. The jacket C' is open at its lowermost part, and has a cold-air duct or ducts, C², which also run up to and through the flooring of the lower hallway, B. The short pipe c' of the jacket C' and the cold-air duct C² are each provided at their upper ends with suitable registers, c^2 and c^3 .

At the rear of the building and extending downward through the roof are two ducts, D and E. The duct D extends downward to and through the uppermost ceiling in the upper hallway, B, and has a register, d , in the lower end thereof. The duct E passes downward within a short distance of the flooring of the uppermost hallway, B, and has a register, e , situated in its lower end. The duct D is an egress-passage for the surplus heat, and extends somewhat above the level of the duct E on the outside of the building, the said duct E being an ingress-passage for cold air.

This construction having been fully carried out, the operation of my improved heating and ventilating system will be as follows: The fire having been previously started in the furnace C, the registers c^2 and c^3 are opened and the heat admitted into the lower hallway, B. By a well-known law of physics it then ascends to the highest point or uppermost hallway by means of the staircase-openings. The heat continues to ascend, passing in through the upper registers, b , of the upper apartments, and forcing the cold air out through the lower registers, b' , into the hallways. The heated current continues to circulate through the upper apartments, and gradually forcing the cold air down from floor to floor until the first floor is reached, and the same process of circulation goes on until the heat of the entire building has become equalized. The cold air that has been forced downward by the heated current gradually flows out into and along the hallways until it reaches the first floor and enters the duct C², and is conducted

to the furnace C, and again directed into the hallways in a heated state. When the heat has become equalized and has all passed through the furnace C once, the oxygen will have been more or less destroyed, and to ventilate and ameliorate the building the register *e* in the cold-air duct E is opened, a quantity of cold air supplied to the building, which again furnishes a renewed supply of oxygen. When the heat becomes too excessive, the register *d* in the escape-duct D is opened and allowed to remain open until there is an equalization of both heat and oxygen. If it is desired to heat only a portion of the building, the registers are closed, when necessary. By this continuous circulation through the apartments a uniform temperature is established and retained in all of the apartments, rendering the lower portions of the rooms or hallways of equal temperature with the upper portions thereof. The building is not only heated in an ameliorated manner, but is at the same time supplied with oxygen by the admission of cold air through the duct E, so necessary to respiration, and, consequently, health. This system of heating and ventilating can be applied to buildings which are without hallways, the heat circulating in the same manner from apartment to apartment; or if used to heat churches or large single rooms the same mode of construction and operation would be employed. It is also evident that any form of furnace or stove can be used. It is obvious that many minor details of construction could be made and substituted for those shown and described without in the least departing from the nature and principle of my invention.

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

1. In a heating and ventilating system, the combination, with a building having a series of communicating rooms, of a heater provided with circulating-pipes located below and connecting with one of said rooms, and suitable egress and ingress ventilators situated in the uppermost part of the building and communicating with one of the rooms most remote from the heater, substantially as described.

2. In a heating and ventilating system for buildings, the combination of a building having a series of communicating rooms, of a jacketed furnace, a cold-air duct connected to the lower part of the jacket, the upper portions of the jacket and cold-air duct being supplied

with registers passing through the flooring above, an egress-duct for the escape of hot air and an ingress-duct for entrance of cold air, situated in the rear uppermost portion of the building, and upper and lower registers in the apartments, whereby the heated air is allowed to ascend into the uppermost portion of the building and circulate downward, forcing the cold air into contact with the furnace, ameliorating the temperature by the admission of cold air, substantially as described.

3. In a heating and ventilating system for buildings, the combination of a building having a series of communicating rooms, of a heating-furnace, a jacket surrounding the same having a short pipe in the top passing through the floor above the furnace, a cold-air duct connected to the lowermost part of the jacket and extending up through the floor above, suitable registers in the said jacket and air-duct, suitable ventilators for the egress of hot air and ingress of cold air situated in the uppermost part of the building, and upper and lower registers in the apartments, substantially as described, and for the purposes specified.

4. In a heating and ventilating system for buildings, the combination of a building having one or more rooms, of a heating-furnace surrounded by a jacket and connected with the floor above, a cold-air duct connected to the lower part of the jacket and extending up through the floor above, cold and heat ventilating ducts in the upper portion of the building, and suitable means, as shown and described, for controlling and regulating the temperature, substantially as described.

5. In a heating and ventilating system, the combination of a building having one or more apartments, of a heating-furnace, C, a jacket, C', surrounding the same and connecting with and passing through the floor above, a cold-air duct, C², connected with the floor above and the lower portion of the jacket C', ventilating-ducts D and E, situated in the upper portion of the building, upper and lower registers, *b* and *b'*, in the apartments, and means, as shown and described, for controlling and equalizing the temperature, substantially as described.

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

HORACE C. STROUT.

Witnesses:

CHARLES S. HYER,
EDWARD L. MILLS.