

(No Model.)

C. G. SHORT.
WARMING AND VENTILATING ROOMS.

No. 464,830.

Patented Dec. 8, 1891.

Fig. 1. x

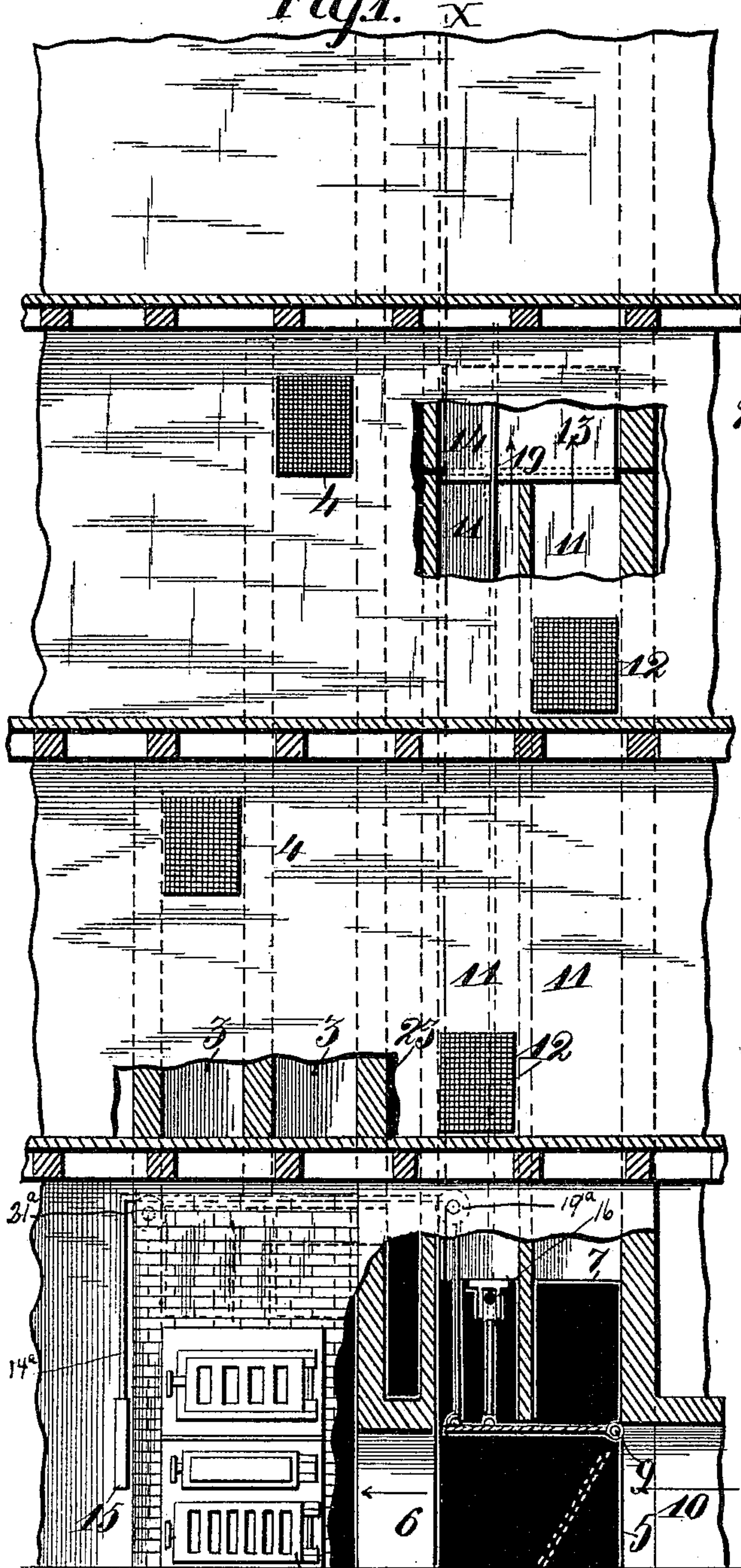
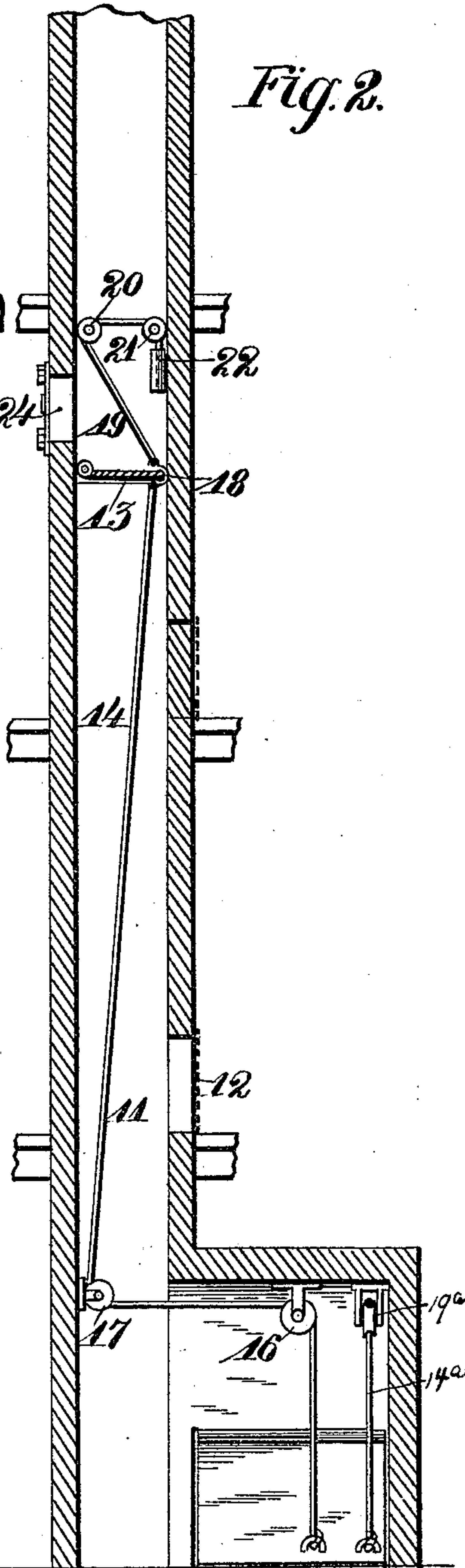


Fig. 2.



WITNESSES: 1 2 x 8

W. O. Soller.
E. E. Snygar

INVENTOR
Charles G. Short.
BY *Higdon & Higdon*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES G. SHORT, OF ST. LOUIS, MISSOURI.

WARMING AND VENTILATING ROOMS.

SPECIFICATION forming part of Letters Patent No. 464,830, dated December 8, 1891.

Application filed December 13, 1890. Serial No. 374,654. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. SHORT, of the city of St. Louis, and State of Missouri, have invented certain new and useful Improvements in Means for Warming and Ventilating Rooms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in a means for warming and ventilating rooms; and it consists in the novel arrangement and combination of parts, as will be more fully hereinafter described, and designated in the claims.

In the drawings which serve to illustrate my invention, Figure 1 is a front elevation of my invention with parts broken away. Fig. 2 is a vertical longitudinal section taken on the line $x x$ of Fig. 1, showing the location of the valves and their connection.

The object of my invention is to construct a device extremely simple in its application and thoroughly practical in its functional operation and essentially designed to be used in connection with the warming apparatus of school-houses, churches, and other large buildings, in order at times to utilize the air that is being conducted from the rooms, thereby saving fuel and more positively warming the rooms and making it possible to introduce a larger supply of fresh air for ventilating purposes.

Referring to the drawings, 1 represents a warm-air furnace suitably constructed and located in a building and is incased in the usual brick structure for such purposes. Said furnace is provided with an air-chamber 2, through which the air passes and is warmed by contact with the furnace. Leading from this warm-air chamber 2 are flues 3 or any number of flues, corresponding to the number of rooms which are to be warmed, one flue passing up in the wall and communicating with each room.

4 represents warm-air registers, through which said warm air finds an exit into the rooms.

5 represents a cold-air box, which has its

inlet 6 opening into the hot-air chamber 2. Said cold-air box 5 is adapted to be divided into two compartments 7 and 8 by means of a horizontal valve 9, which is hinged at its rear edge to one wall of the box and is adapted to swing down and close the opening 10, which admits the fresh air. Leading from said cold-air box are cold-air flues 11 which communicate with the rooms and also with the outside air at the top of the building.

12 indicates cold-air registers, through which the cold air in the room finds an egress to the outer air through flues 11 when a valve 13, located in said flues, is elevated and open. Said valve 13 is hinged to one side of the flue and is adapted to be operated by means of a chain or cord 14 brought to bear upon its undersurface, assisted by chain 19, and weight 22, attached to the cleat 18, which passes over the edge of said valve. Said cord is also attached to the upper surface of the horizontal valve 9. Said cord, and consequently said valve, may be operated by means of a weight 15, provided with a handle, which cord, attached to said weight, passes over the furnace, as shown in Fig. 1, and is operated from the furnace-room. Cord 14 as it passes from its connection to valve 9 passes over a suspended pulley 16, then horizontally across and upwardly under a similar pulley 17, secured to the wall of the cold-air flue, and then upwardly and diagonally across and is attached to the lower end of cleat 18, where it terminates. To the other end of said cleat a shorter cord 19 is secured, which passes diagonally across the shaft of the cold-air flue and then under and over a pulley 20, secured to the wall of said flue, and over a pulley 21 in the wall of the hot-air chamber 2, and then is attached to a gravity-weight 22, which operates said valve 13 when the chain 14 is loosened by the raising of valve 9. The curved portion of cleat 18 fits over the edge of valve 13, in which curved portion the edge of said valve is free to move when it is in an elevated or in its normal position.

23 indicates a smoke-flue for carrying off the products of combustion from the furnaces.

24 indicates an opening in one of the cold-

air flues, through which the inner mechanism—such as pulleys, cord, and valve 13—can be attended to if they should perchance get out of functional operation.

5 Having fully described the mechanical construction embodied in my invention, I will now proceed to describe the manner in which the air is warmed and conducted to the rooms and returned for new warming, and also the
10 manner of ventilating the rooms.

The outside or fresh air finds an ingress through passage 10, as shown by arrows, into compartment 8 of cold-air box 5 when valve 9 is elevated. From said compartment the
15 air passes through said inlet 6, as shown by arrows, into hot-air chamber 2. There it is warmed and passes upwardly through flues 3, as shown by arrows, and emerges into the room through warm-air registers 4. The two
20 flues 11, combined at the top, form a ventilating-flue, which is warmed by its contiguity to smoke-flue 23 or by a heater placed in its base, and thereby generates the force which exhausts the air from the rooms through cold-
25 air registers 12 into the cold-air flues 11, which air is conducted out at the top of said flues when valve 13 is in an elevated or open position. Whenever valve 9 is depressed by
30 the mechanical construction, as herein described, the valve 13 is also simultaneously closed, and the air contained in said flues 11 is not permitted to find an exit into the outer air, but passes downwardly, as shown by ar-
35 rows, and again by a circumfluent motion into the warm-air chamber 2, and is there warmed and passes on, as on its original course. By this means none of the partially-
40 warmed air in the room is permitted to escape when valve 13 and consequently valve 9 are closed. However, when valve 13 is open valve 9 is also simultaneously elevated and the fresh air passes in and is warmed and the air con-
45 tained in the room passes out of flues 11, which communicates with the outer air at the top of the building. When the valves are open, the room can be warmed and at the same time ventilated, and when the valves are closed the supply of fresh air that finds an ingress through passage 10 is cut off, and also the
50 volume of cold air that is contained in the rooms is not permitted to escape, but is re- strained and compelled to pass again through

the warm-air chamber and the heat units are utilized, as above stated.

Having fully described my invention, what I claim is— 55

1. The combination, with a warm-air furnace, of warm-air flues leading from said furnace and communicating with the rooms to be warmed, vent flue or flues likewise communi- 60 cating with said rooms, and a valve located in the upper portion of said flue or flues and one located in the lower portion of the same, both of which are adapted to be simultaneously operated and the upper when closed cutting off 65 the escape of cold air contained in said flues and the lower when closed throwing said restrained air in communication with the warm-air furnace, substantially as set forth.

2. The combination, with an air-heating 70 chamber, of hot-air flues leading therefrom to the rooms to be warmed, a flue connected to the same rooms, a cold-air box communicating with the said heating-chamber and with the base of the said flue, a cold-air-induction 75 passage connected with the said cold-air box, a valve located in the upper portion of the said flue, and a valve located in the said cold-air box, the last-named valve when in an opened position being adapted to close the 80 lower end of the said flue and open the induction-passage and when closed to open the lower end of the said flue and close the induction-passage, and means whereby the said valves may be simultaneously opened or 85 closed, as described.

3. The combination, with an air-heating chamber, of hot-air flues leading therefrom to the room to be warmed, a flue connected to the said rooms, a cold-air box communicat- 90 ing with the said heating-chamber and with the base of the said flue, a cold-air-induction passage connected with the said cold-air box, and a valve located in the said cold-air box and adapted to open the base of the said flues 95 and to close the said cold-air-induction passage or to close the said flues and open the cold-air-induction passage, as described.

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

CHARLES G. SHORT.

Witnesses:

C. F. A. MUELLER,
C. F. KELLER.