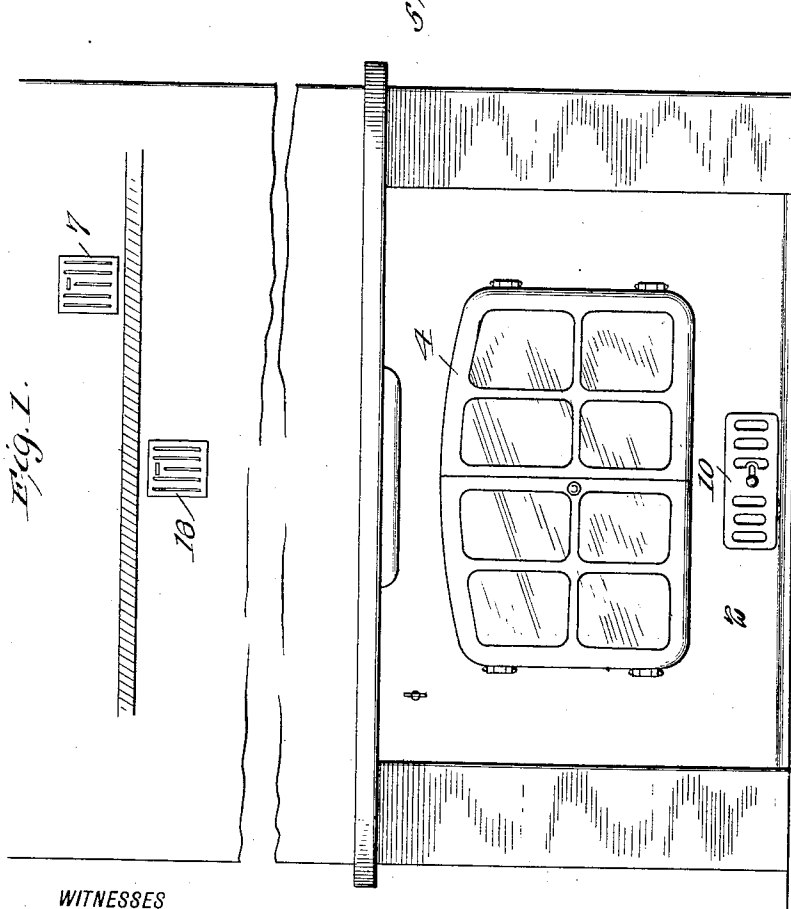
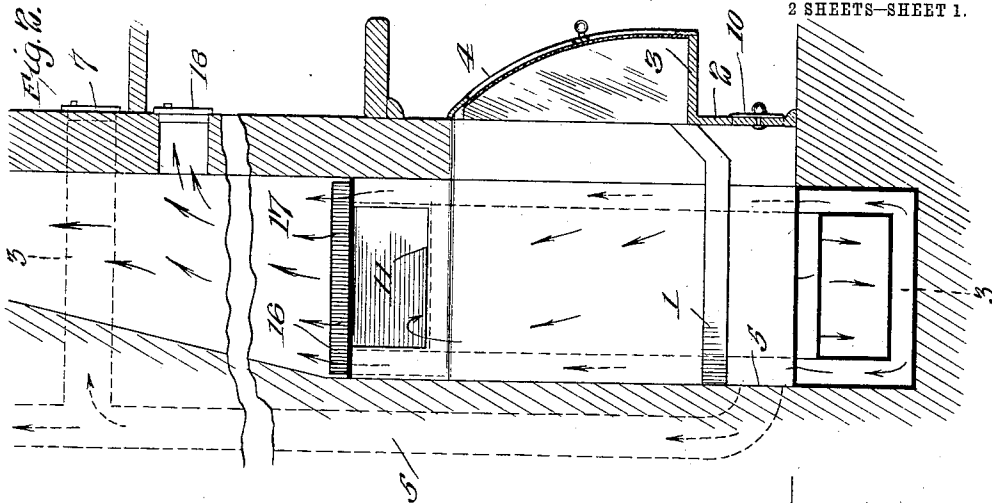


C. W. EDGAR.
HEATING AND VENTILATING APPARATUS.
APPLICATION FILED JAN. 6, 1912.

1,039,664.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.



WITNESSES
Ed. Callaghan
L. Stanley

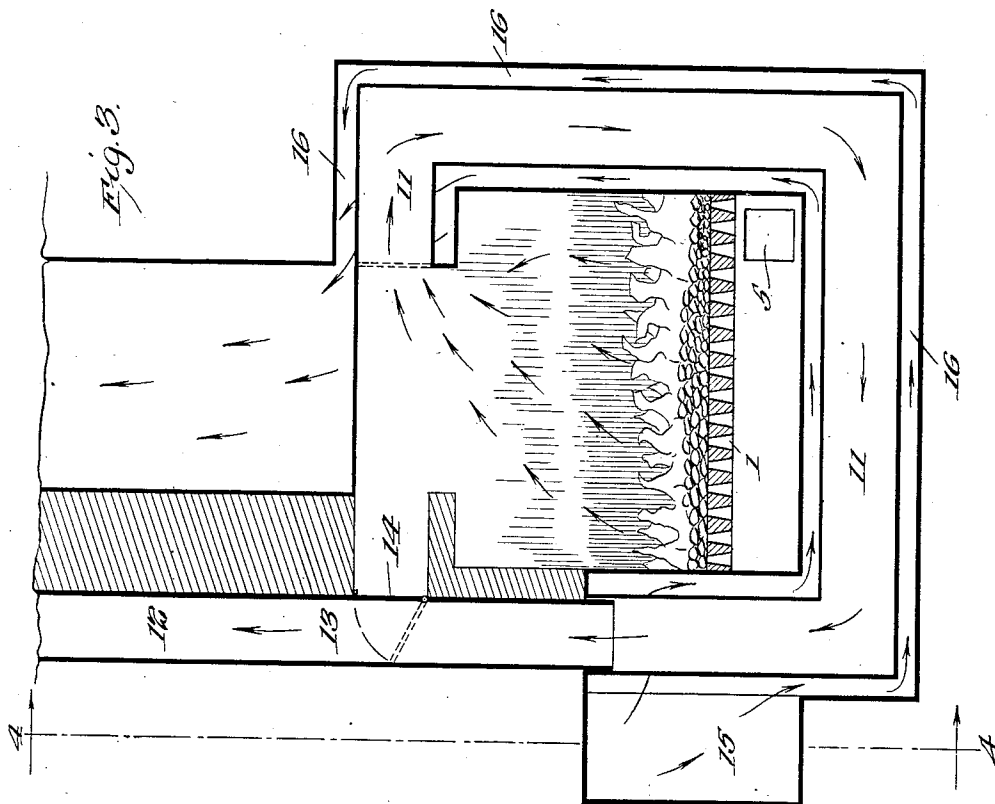
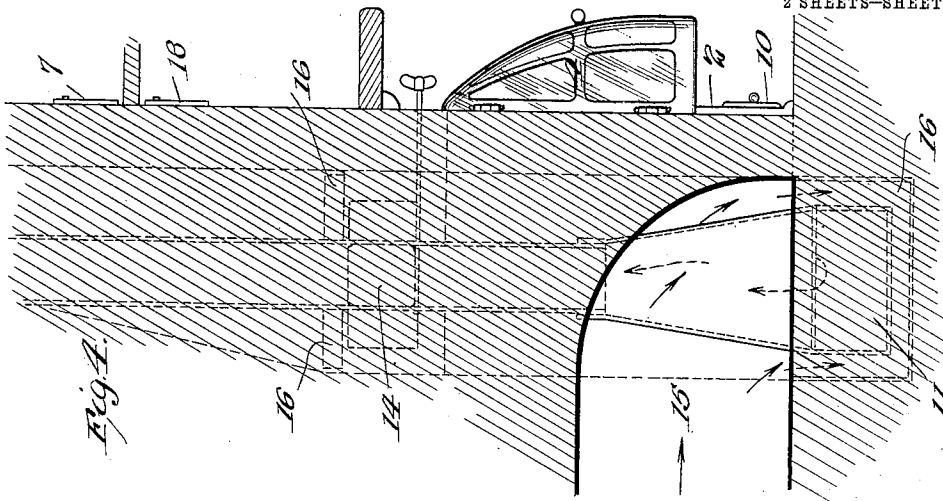
INVENTOR
CLARENCE W. EDGAR
BY *Wm. & Co.*
ATTORNEYS

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UNITED STATES PATENT OFFICE.

CLARENCE WILLIAM EDGAR, OF LOS ANGELES, CALIFORNIA.

HEATING AND VENTILATING APPARATUS.

1,039,664.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed January 6, 1912. Serial No. 669,760.

To all whom it may concern:

Be it known that I, CLARENCE W. EDGAR, a citizen of the United States, and a resident of Los Angeles, in the county of Los Angeles and State of California, have made certain new and useful Improvements in Heating and Ventilating Apparatus, of which the following is a specification.

My invention relates to improvements in heating and ventilating devices, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device having the form and appearance of an ordinary grate which may be used for heating air which is subsequently discharged into the room containing the grate, or which may be supplied to other rooms for heating them.

A further object of my invention is to provide a device which will not only give a greater amount of heat than the ordinary grate, but which will cause a circulation of air and the consequent ventilation of the room.

A further object of my invention is to provide means whereby the air for maintaining combustion is prevented from entering above the grate in the ordinary manner, whereby it lessens the heat of the gases in the uptake or chimney, but instead is drawn from the coldest and foulest part of the room to be heated, under and through the grate and fire and is discharged at the highest available temperature into the flues and chimney.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this application, in which similar reference characters indicate like parts in the several views, and in which—

Figure 1 is a front view of the device, Fig. 2 is a central section through the device, Fig. 3 is a section along the line 3—3 of Fig. 2, and Fig. 4 is a section along the line 4—4 of Fig. 3.

In carrying out my invention I provide a series of grate bars 1 which are somewhat similar to the bars of an ordinary grate and which are supported at their forward ends by the front plate 2. Secured to the front plate is an extension 3 (see Fig. 2) which

forms the bottom of a transparent screen 4. The latter may be made of mica, or any suitable transparent, heat-resisting material. The top and sides of this screen completely inclose the ordinary opening of the grate so that the air cannot enter therethrough. The grate is provided with a damper 10 for admitting air directly from the room underneath the grate bars. As an auxiliary means for supplying air for combustion, I may arrange a pipe 5 which communicates with another room or rooms, the air being taken from the lowest part of the room, thereby draining the latter of the foul air.

Referring now to Fig. 3, it will be seen that the side and bottom walls of the grate are of metal. At one side of the upper part of the grate is a passage 11 which leads downwardly, thence underneath the grate, and thence upwardly to the chimney or flue 12. A passage 13 communicates directly between the top of the grate and the flue 12, and this passage is controlled by a damper 14. An inspection of Fig. 4 will show the inlet passage 15 for fresh air. This may be drawn from any suitable place, and communicates with the passage 16 which surrounds the passage 11 and leads underneath the grate, thence upwardly, and is in communication with a hot air passage 17 which may be provided with a register 18 leading directly into the room in which the grate is situated, the upper part of the passage 17 leading to a room or rooms above the room in which the grate is situated, such rooms being connected at the lowest part, *i. e.*, near the floor with the pipe 5.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

The air for supporting combustion is drawn, as stated, through the damper 10 from the room in which the grate is located, or through the pipe 5 leading from another room or rooms, when the flow of air may be regulated by the dampers 10 or 7. When the fire is first started the damper 14 may be turned to the dotted line position shown in Fig. 3 to permit the draft to ascend directly into the flue 12. When the fire is started the damper 14 is turned to its full line position shown in Fig. 3 and the products of combustion then take the course indicated by the arrows around the sides of the grate underneath the bottom, and up the flue 12.

The fresh air enters the pipe 16 which surrounds the passage 11, thus flowing in a counter direction to the products of combustion, and becoming more and more heated since the air is passing in the direction in which the products of combustion are hottest. The heated air passes out through the register 18, or to an upper room or to other rooms by means of the air passage 17, as described.

The device thus constructed tends to conserve the heat by supplying the rooms with hot air, heated by exchanging the heat from the flue gases to fresh air drawn from a pure supply by utilizing the counterflow principle, thereby securing the greatest available exchange, also by limiting the supply of air to the fuel in the grate to the amount required for proper combustion. The provision of the transparent screen 4 not only allows the direct radiation of light and heat from the fire to the room wherein it is located, but also provides the means of avoiding the diluting effect that air commonly admitted above the grate has on the products of combustion in the uptake flues or section of a grate. The transparent screens also prevent the air in the room from entering the device except through the register 10, thus enabling the cold, foul air from an adjacent room to be drawn through the pipe 5 and used in maintaining combustion, thereby ventilating the rooms as desired.

I claim:

1. In a heating and ventilating device, a grate provided with conducting side walls and having a transparent air-tight covering, a pipe for supplying air underneath the

grate, a damper for regulating the air supply, an exit pipe communicating with the top of the grate and extending down one side thereof, underneath and up on the other side of the grate, an air passage surrounding said exit pipe and the conducting side walls and having its intake on the side of the grate opposite the point of communication of the exit pipe with the top of the grate, and a hot air flue communicating with said air passage and being provided with registers for permitting the exit of hot air.

2. In a heating and ventilating device, a grate provided with conducting side walls, an exit pipe communicating with the top of the grate and extending down one side thereof, underneath, and up on the other side of the grate, an air passage surrounding said exit pipe and the conducting side walls and having an inlet and an outlet, the outlet being above the point of communication of the exit pipe with said grate, and the inlet being below said point of communication, thereby causing a current of heated air to flow in the opposite direction to the products of combustion.

3. In a heating and ventilating device, a grate provided with conducting side walls, an exit pipe communicating with said grate and extending down on one side thereof, underneath, and up on the other side of the grate, and a hot air pipe surrounding said exit pipe and the conducting side walls and provided with an inlet for fresh air and a register for the heated air.

CLARENCE WILLIAM EDGAR.

Witnesses:

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