

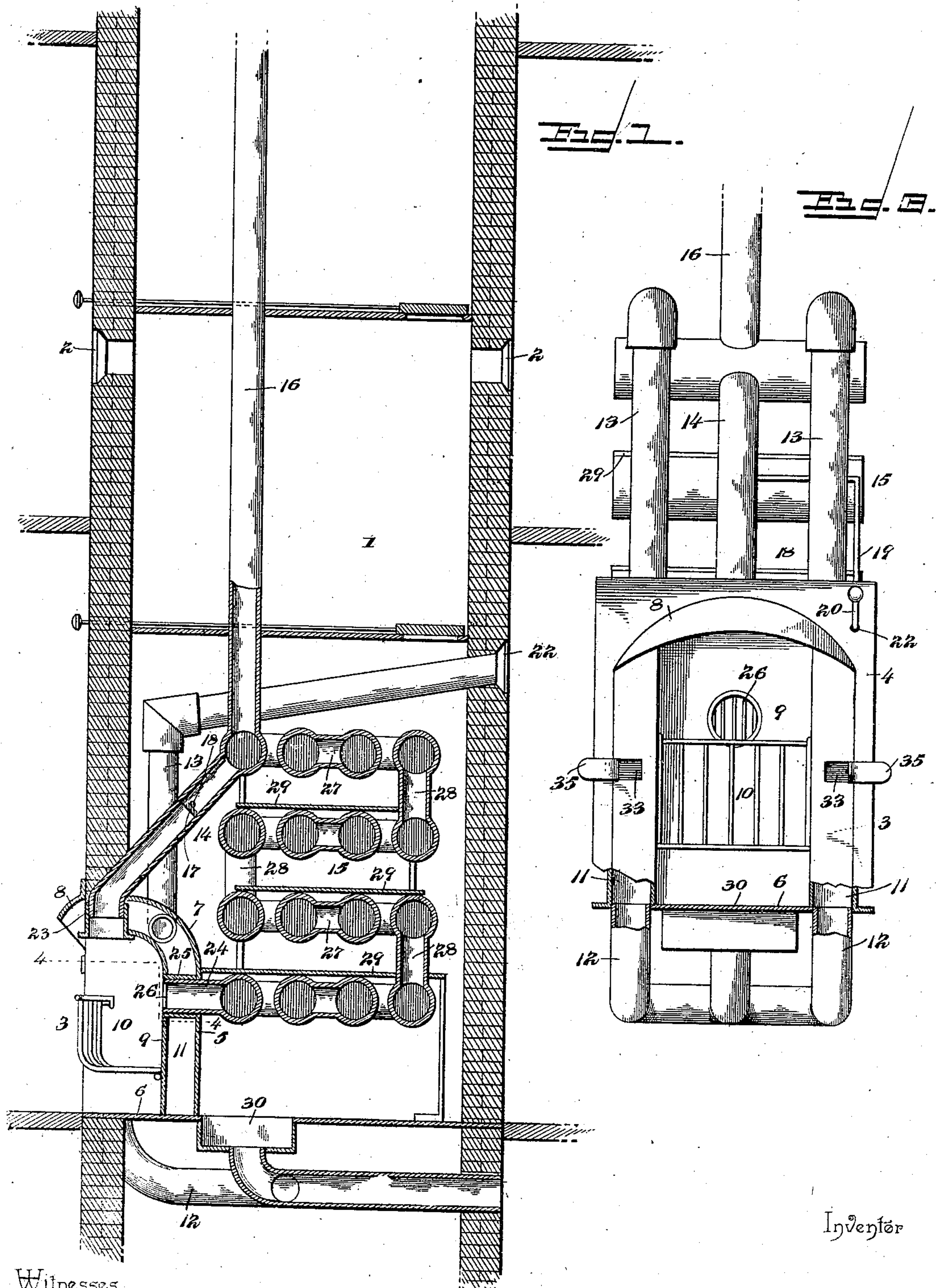
(No Model.)

2 Sheets—Sheet 1.

E. S. ROGERS.
FIREPLACE FURNACE AND VENTILATOR.

No. 557,231.

Patented Mar. 31, 1896.



Inventor

Witnesses

E. S. Rogers
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By *his* Attorneys,

Elbert S. Rogers

Chas. H. Co.

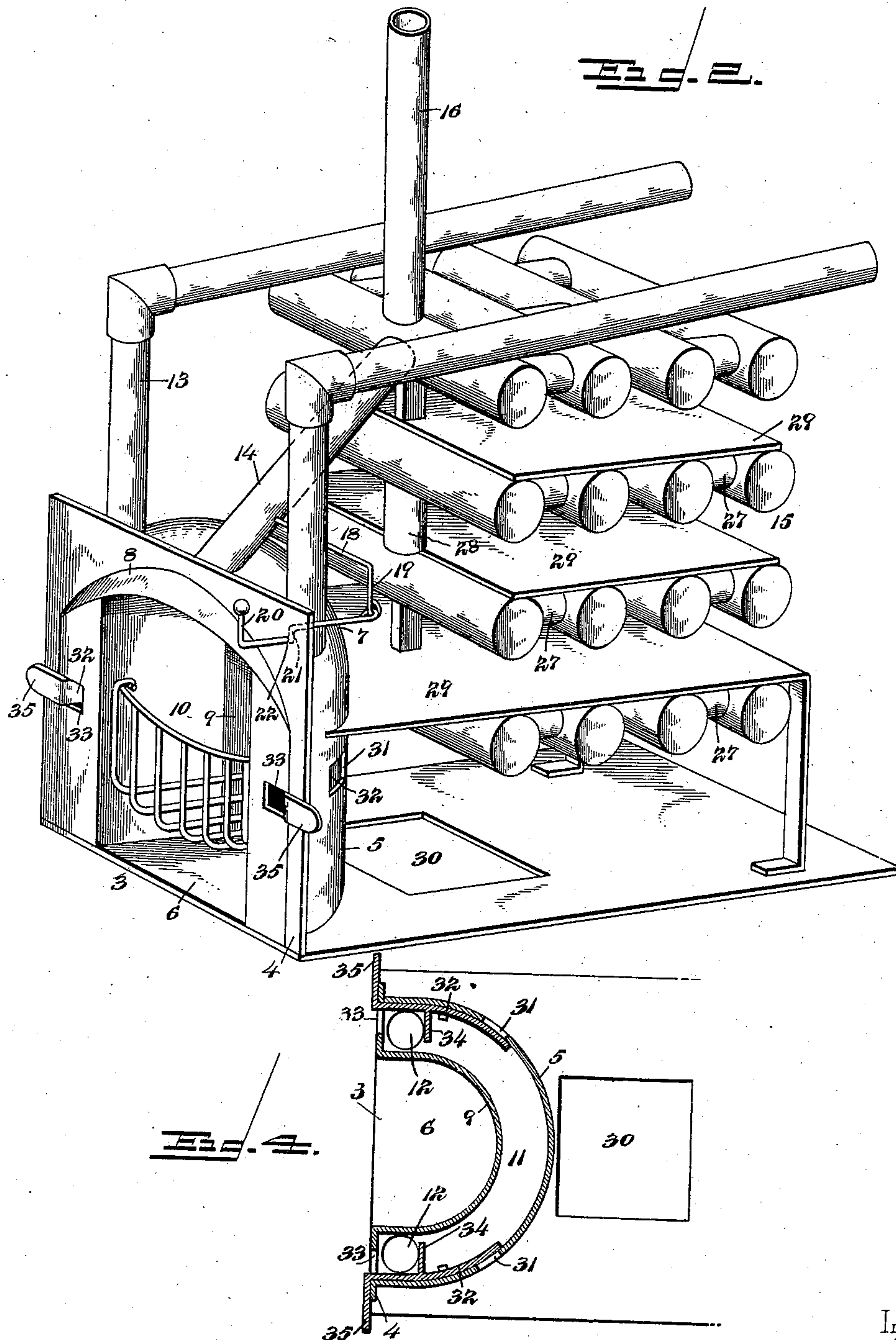
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Inventor

Elbert S. Rogers

Witnesses

E. S. Stewart
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UNITED STATES PATENT OFFICE.

ELBERT S. ROGERS, OF KNOXVILLE, TENNESSEE.

FIREPLACE FURNACE AND VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 557,231, dated March 31, 1896.

Application filed January 23, 1895. Serial No. 535,947. (No model.)

To all whom it may concern:

Be it known that I, ELBERT S. ROGERS, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Fireplace Furnace and Ventilator, of which the following is a specification.

My invention relates to fireplace-heaters constructed and adapted to heat rooms other than that in which the heater is arranged; and it has for its object to provide a grate-furnace of cheap and simple construction which will serve as a ventilating device to remove impure and supply a sufficient quantity of purified air to the apartments; to provide means for heating an apartment in the same plane or on the same floor as the furnace, said apartment being arranged upon the opposite side of the chimney with which the furnace communicates, and to provide simple and efficient means for controlling the convection of heat to the various rooms other than that in which the furnace is located, the same consisting of dampers and operating mediums, all of which may be manipulated from the room in which the heater or furnace is located.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a vertical longitudinal section of a heater constructed in accordance with my invention, the same being located in a flue by which heat is distributed to the various apartments of a building. Fig. 2 is a perspective view of the improved heater detached from the flue, the same being viewed from the front. Fig. 3 is a front view, partly in section, of the same. Fig. 4 is a horizontal section on the line 4 4 of Fig. 1.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In Fig. 1 I have shown a chimney or flue 1, with which communicate outlet-passages 2 to convey heat to the various apartments above the plane in which the improved heater or furnace 3 is located, said outlets being preferably provided, as in the ordinary practice, with registers. (Not shown.)

The heater or furnace embodying my inven-

tion is arranged in a fireplace-opening communicating with said chimney or flue and is provided with a face-plate or guard 4, an exterior shell 5, which consists of the floor 6 and a domed back, sides and top 7, a deflector 8, which partially closes the upper portion of the arched opening in the front of the heater, and an interior lining 9, which is spaced from the shell and forms the sides, back and top of the fire-box 10. This interior lining being spaced from the plane of the shell of the furnace forms an intermediate heat-chamber 11, which is continuous from one side of the fire-box to the other and extends in rear and above the same, and communicating with the bottom of the wings or side portions of said heat-chamber are the cold-air inlet-pipes 12. Communicating with the top or arched portion of this heat-chamber are the heat-pipes 13, which are adapted to convey heat from the heat-chamber to an opposite room upon the same floor as that in which the furnace is located, and communicating with the fire-box at the center of the arch is a smoke-pipe section 14, which is connected to the upper horizontal member of a multiple-cylinder drum 15 arranged in the chimney or flue in rear of the furnace-shell. The main smoke-pipe 16 communicates with said upper member of the drum at a point contiguous to the intermediate section 14, and when the controlling-damper 17, which is located in said section of the smoke-pipe, is open the products of combustion pass directly to the main smoke-pipe and thereby escape, this forming the direct draft of the furnace. Said damper is provided with a lateral spindle 18 having a terminal crank-arm 19 to which is connected a handle or operating-rod 20 projecting beyond the face-plate of the furnace. Said handle or operating-rod is preferably provided with a shoulder 21 to engage the opening 22, through which said rod extends, to lock the damper in its open position.

The section of the smoke-pipe which conveys the products of combustion from the fire-box to the upper member of the heating-drum communicates at its front end with a collar 23, which is arranged in the center of the arch formed by the heat-chamber and connects the shell with the lining.

Communicating with the lowermost cylin-

drical member of the above-mentioned heating-drum, which may consist of any desired number of members, is a conductor 24, which is connected to the furnace at the rear side of the fire-box and communicates therewith by means of a collar 25, which connects the shell with the lining, the inner end of said collar being protected, to prevent fuel from entering, by means of a screen 26. The drum, in the construction illustrated, comprises a plurality of horizontal tiers, each consisting of a series of parallel horizontally-disposed cylindrical members, which are connected in pairs by terminal elbows 27. The opposite terminal members of the several tiers are connected by vertical elbows 28, and flat metallic shields 29 are disposed between the tiers to serve as concentrators. This drum being arranged in the heat-flue of the chimney is designed to heat the fresh air admitted through the opening 30 in the bottom thereof, and also communicating with said flue, by means of openings 31 formed in the shell of the heater, are the side portions or wings of the heat-chamber which is located, as above described, between the exterior shell and the interior lining. These outlet-openings 31 are normally closed by means of dampers 32, which are mounted to slide in the heat-chamber, and formed in the front portions or jambs provided by the front ends of the wings of the heat-chamber are the registers or heat-openings 33, adapted to be closed by the same dampers 32, which are provided with plates 34 to cover the register-openings at the inner sides of the front walls of the heat-chamber. These dampers are provided with exterior handles 35, which project through the front walls of the wings of the heat-chamber, and when they are pushed to the rear, to close the outlet-openings in the shell of the furnace, the register-openings in the front, and which communicate with the room in which the furnace is located, are opened, and when the opposite motion is communicated to the dampers the said outlet-openings are opened to allow heat within the chamber to exhaust into the heat-flue, and the register-openings are closed.

This being the construction of the improved furnace, it will be seen that the portion of the heat which is usually absorbed by the side and rear walls of a fireplace is communicated to the heat-chamber which surrounds the fire-box with the exception of its front side, and that the heat-chamber thus formed is utilized to heat another apartment located opposite the one in which the furnace is placed, and upon the same plane therewith; and in addition thereto said chamber is constructed to discharge heated pure air into the apartment in which the furnace is located, whereby said apartment may receive heat both by radiation from the fire in the fire-box and by convection through the register-openings in the jambs of the heat-chamber. Furthermore, a direct draft may be established by opening the damper in the horizontal section of the

smoke-pipe to convey products of combustion directly to the smoke-pipe; but when the heat contained in the products of combustion is to be utilized the said damper should be closed, thus causing the products of combustion to pass through the various members of the drum which is located in the heat-flue to heat the column of air which is admitted from an exterior source of fresh-air supply, whereby other apartments in the building above the plane of that in which the furnace is located, and which communicate by means of registers with said flue, may be heated.

From the fact that the heat which is usually lost in products of combustion and through absorption by jambs or walls of a fireplace is utilized, it will be seen that the improved furnace minimizes the fuel consumed by giving a greater percentage of heat from the same fuel than would be obtained from an ordinary fireplace-heater, only ten per cent. of the heat produced by a given amount of fuel in an open fireplace being radiated into the room with which said fireplace communicates. Thus with the same amount of fuel a number of different apartments may be supplied with warm pure air by the provision of suitable means for distributing the heat. Furthermore, the construction described provides for the admission of pure cold air drawn from the exterior of the building, and also for the heating of such air before it is admitted to the apartments, whereby all germs by which disease might be carried are destroyed, and therefore the improved furnace serves as a ventilating device as well as an economical heater.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, I claim—

1. A fireplace heater and furnace having hollow walls forming a heat-chamber and provided with outlet-pipes to communicate with a room upon the same floor with and opposite to that in which the heater or furnace is arranged, a valved smoke-pipe communicating with the fire-box, a heating-drum arranged in rear of the fire-box below the plane of said pipes communicating with the heat-chamber and comprising a plurality of horizontal series of cylinders connected to form a continuous passage, one of the lowermost cylinders being in communication with the fire-box and one of the uppermost cylinders being provided with an outlet-flue, and horizontal flat metallic shields arranged, respectively, upon the horizontal series of cylinders and coextensive therewith, substantially as specified.

2. A fireplace heater and furnace having a hollow wall forming a heat-chamber, said hollow wall comprising inner and outer concentric shells, openings 33 and 31 formed, respectively, in the jambs of the heater and in the outer shell thereof in rear of the jambs,

the former openings communicating with the
room in which the heater is arranged and the
latter with a space or passage for conducting
heated air to other apartments, and slide-
5 dampers for controlling said openings, each
damper having a plate adapted to close the
opening 31 when the damper is moved rear-
wardly and a plate to close the front opening
33 when the damper is moved forwardly, the

front end of the damper being provided with 10
an exposed handle, substantially as specified.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

ELBERT S. ROGERS.

Witnesses:

A. J. MILLER,
M. K. McMILLAN.