

No. 713,760.

Patented Nov. 18, 1902.

J. E. HAMMONS.

INTERDEPENDENT HEATING AND VENTILATING DEVICE.

(Application filed Aug. 9, 1902.)

(No Model.)

2 Sheets—Sheet 1.

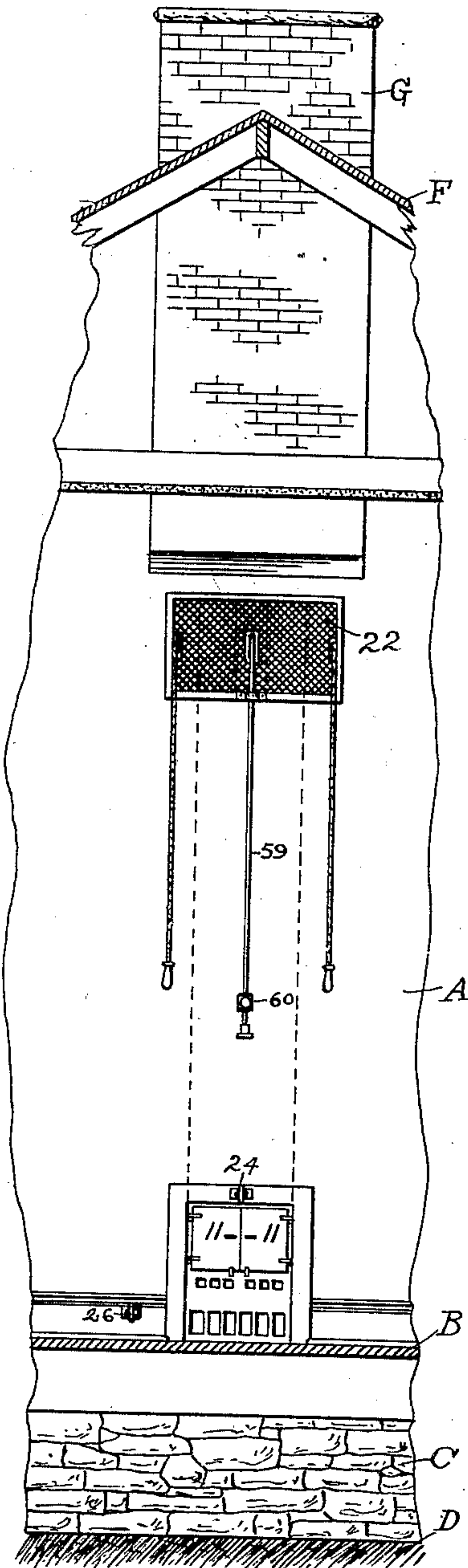


Fig. 1.

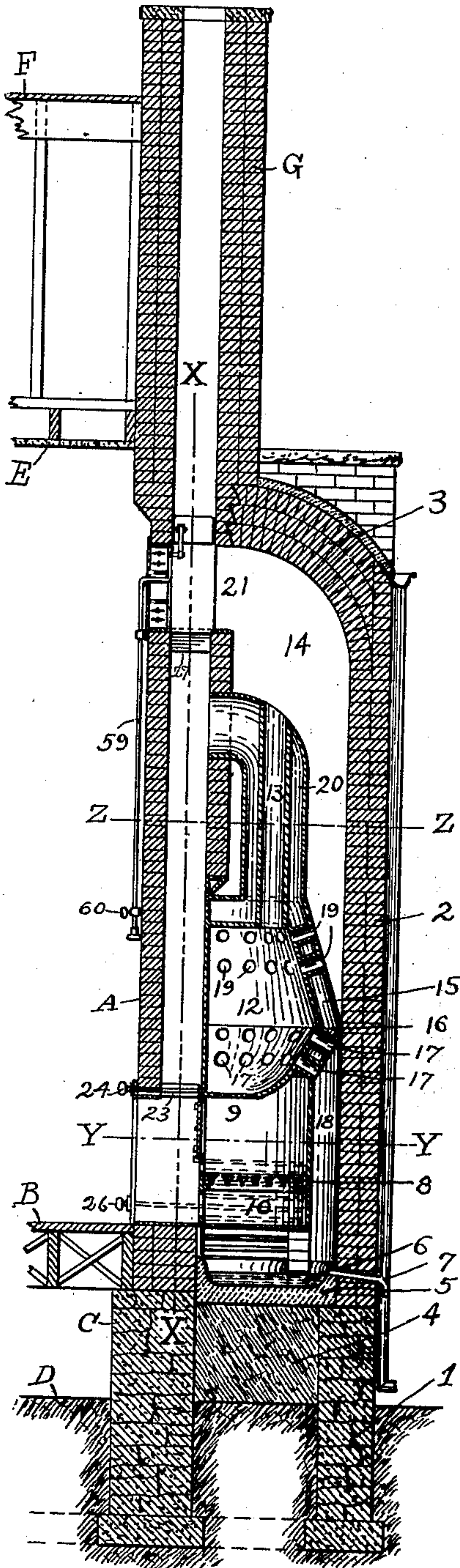


Fig. 2.

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2 Sheets—Sheet 2.

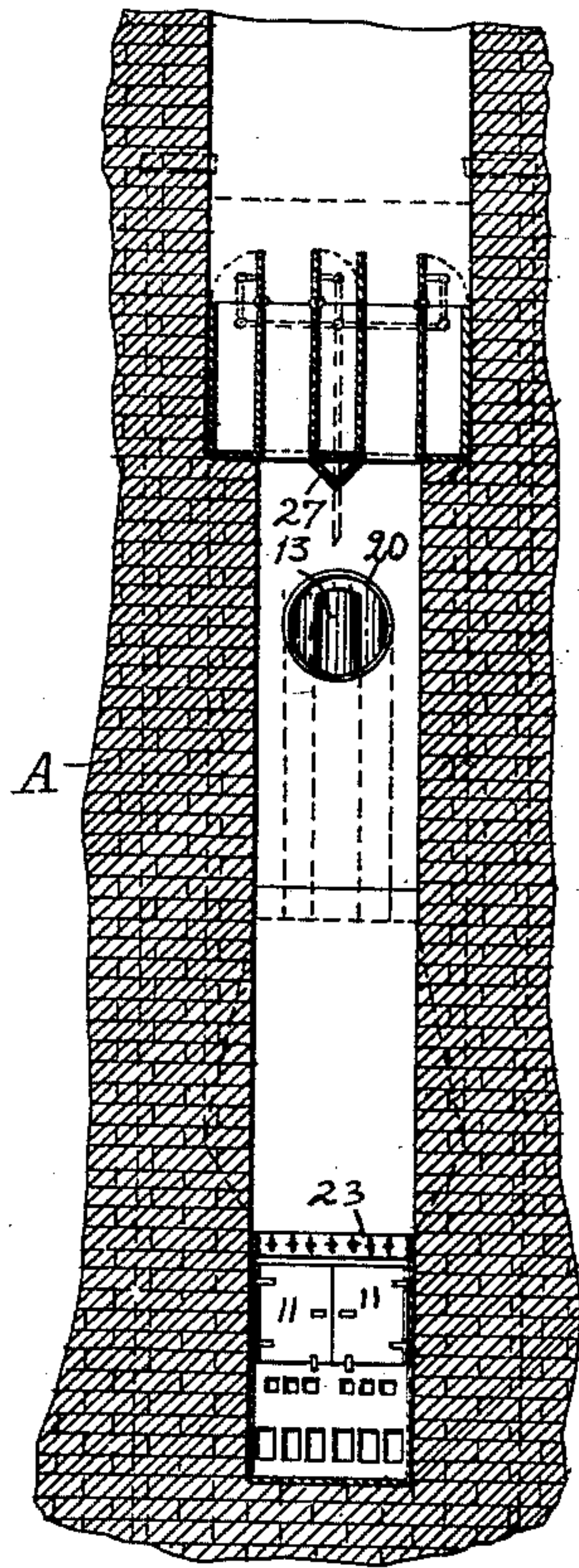


Fig. 3.

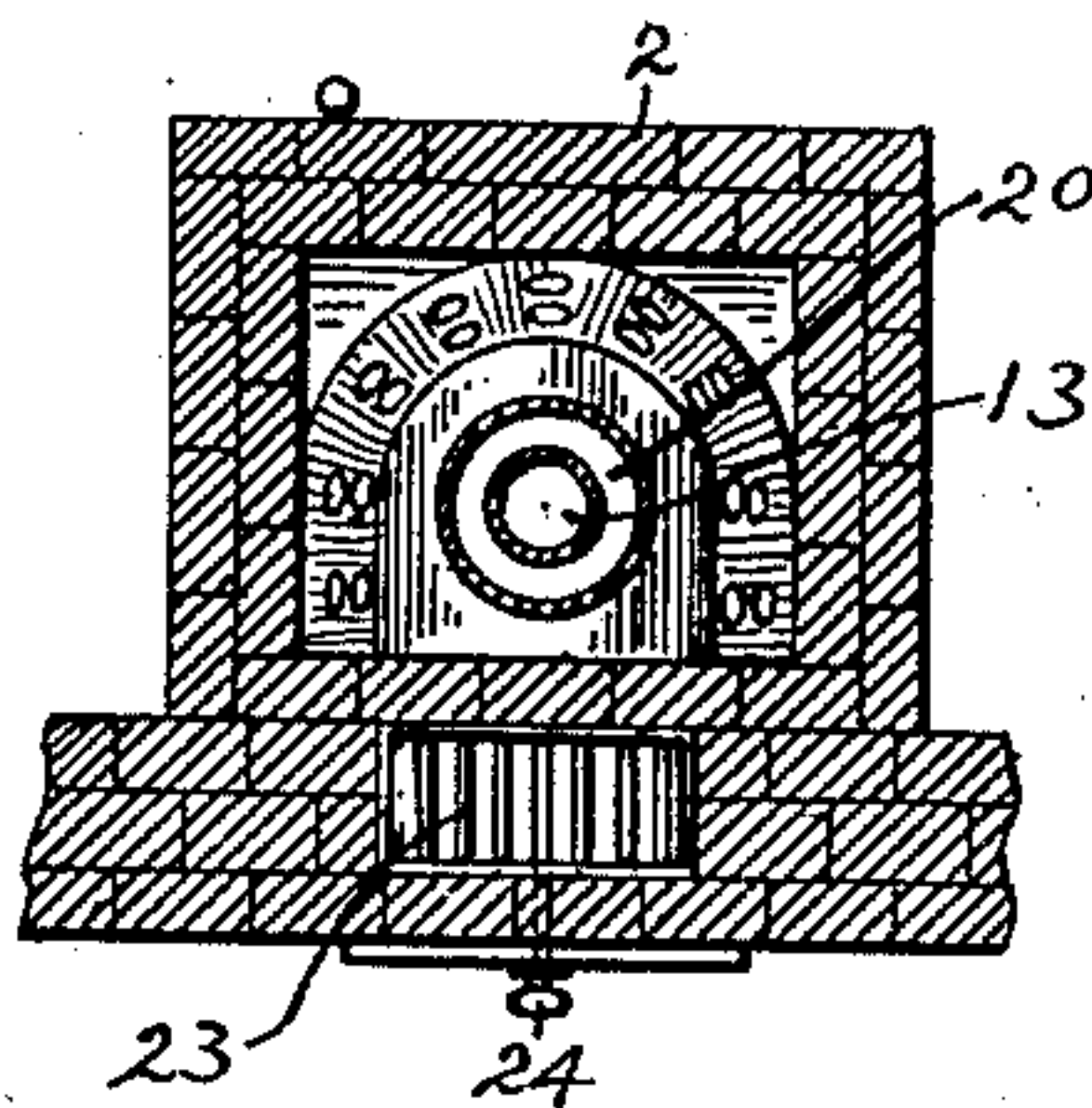


Fig. 4.

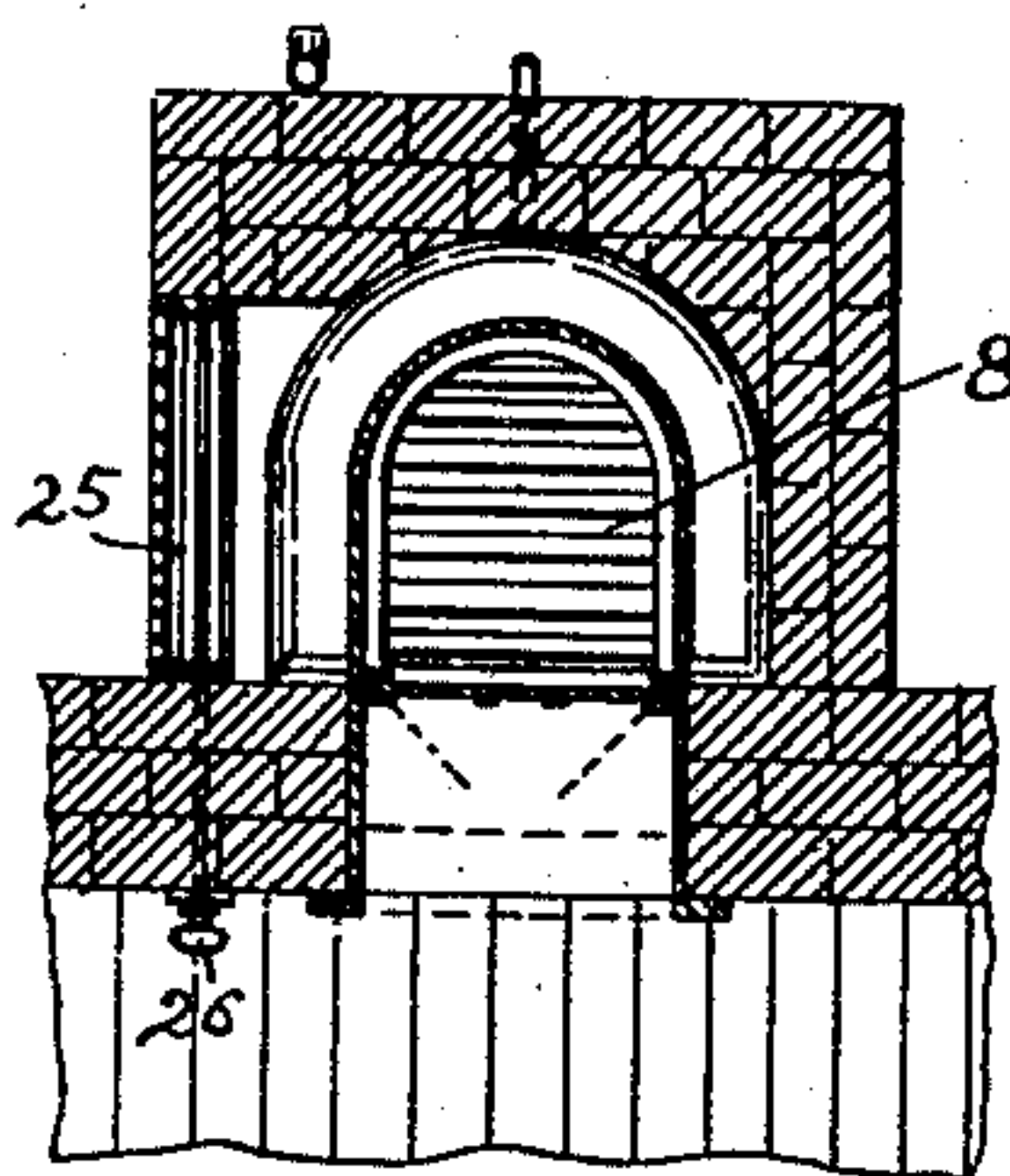


Fig. 5.

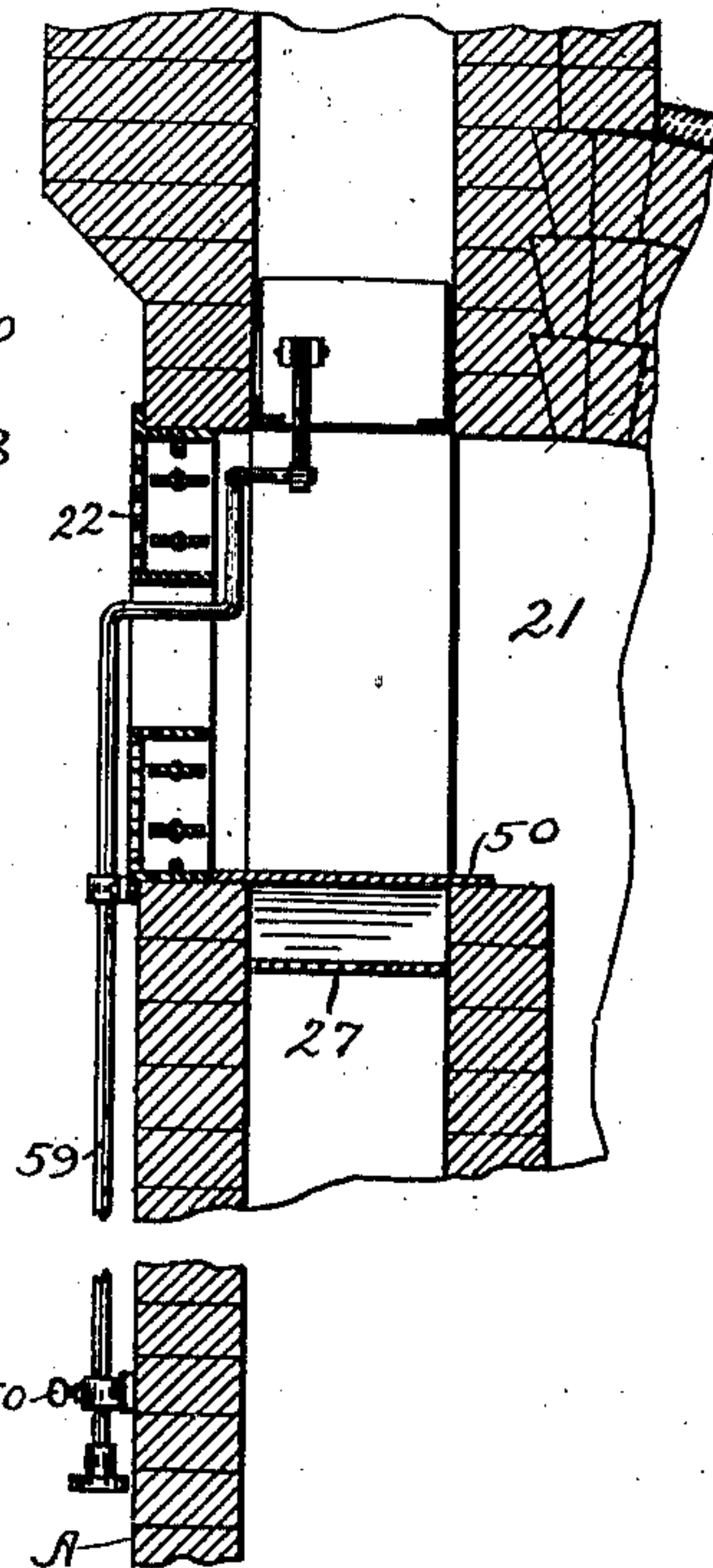


Fig. 6.

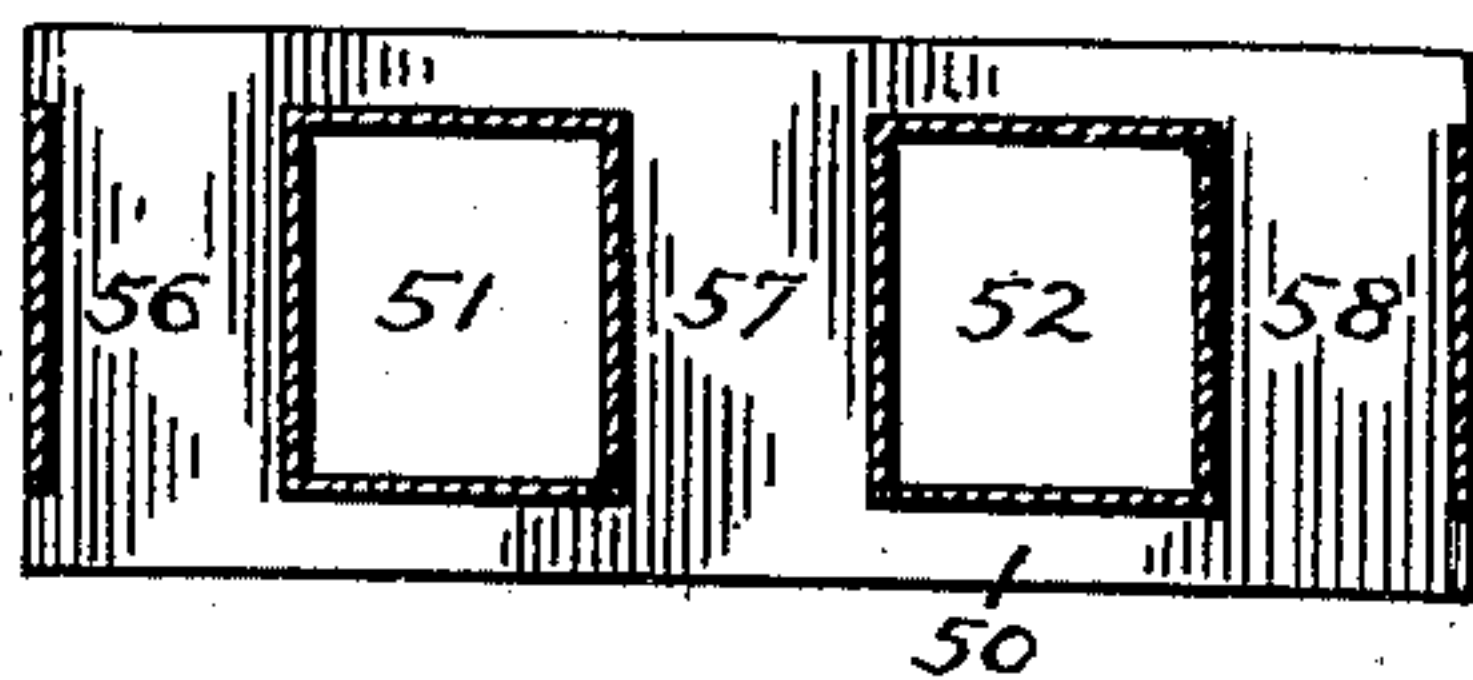


Fig. 7.

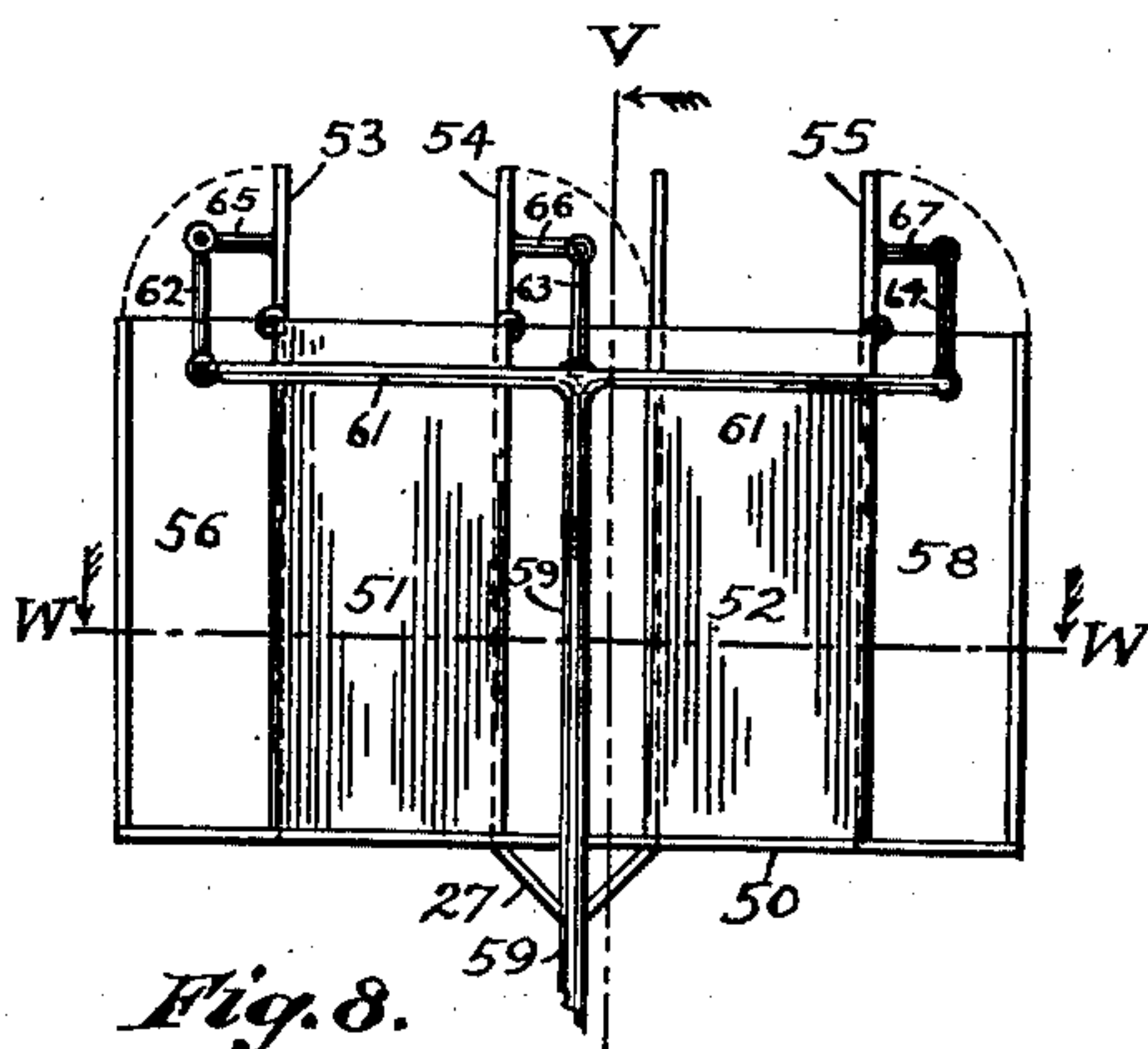


Fig. 8.

Witnesses;
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UNITED STATES PATENT OFFICE.

JAMES E. HAMMONS, OF PORTLAND, INDIANA.

INTERDEPENDENT HEATING AND VENTILATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 713,760, dated November 18, 1902.

Application filed August 9, 1902. Serial No. 119,137. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. HAMMONS, a citizen of the United States, residing in the city of Portland, in the county of Jay and State of Indiana, have invented new and useful Improvements in Interdependent Heating and Ventilating Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to improvements in interdependent heating and ventilating devices, or more particularly to a heating device of novel construction, means for tempering and admitting heated pure air to the room, means for withdrawing the impure air from the room, and novel mechanisms for regulating the currents of air to and from the room at the will of the operator; and, primarily, my invention is intended to heat a single room not provided with a basement—such, for instance, as a country school-house.

The object of the invention is to provide heating devices adapted to be located without the room to be heated and preferably on a level with or above the floor-line thereof.

Another object is to provide a heating and ventilating device whereby the heat derived from a single fire may be transmitted and diffused throughout the room to be heated and in a pure and wholesome condition, and at the same time the impure air may be withdrawn from the room.

Another object is to provide means whereby all the heat from the fire in the furnace may be utilized in heating the room and whereby the temperature of the room may be maintained at a uniform degree, at the same time withdrawing from the room the impure air and conducting it up the flue.

A further object is the provision of heating and ventilating registers in connection with my device whereby the temperature of a room may be easily and quickly controlled at the will of the operator.

Another object is to provide an interdependent heating and ventilating device which will be simple in character, compact in form, easily operated and maintained, in which only

a minimum of fuel will be required to heat a given space, and by which the various objects stated may be attained with certainty and precision; and another object is the provision of a new article of manufacture in an interdependent heating and ventilating device which can be manufactured and sold at a comparatively low price.

Other objects and advantages of my invention will appear from the following specification and from the drawings forming a part thereof. The invention also contains other features and advantages which are specifically set forth in the claims hereunto appended.

By means of my improvements the movements of the different parts and the accomplishment of the objects stated are easily, automatically, and quickly controlled, accomplished, and maintained with certainty and precision without any other supervision than that required to supply the furnace with fuel and to adjust the registers to the desired temperature.

The terms "upward," "downward," "right," "front," "rear," and other similar terms, as will hereinafter appear, are simply used for convenience of description, and it is not intended by the use of such terms to limit the invention or its operation to the positions indicated.

In detail the invention consists of interdependent heating and ventilating devices constructed, preferably, in the manner substantially as shown in the accompanying drawings, in which—

Figure 1 shows a front elevation taken from the interior of a room to which my invention is connected, showing the exposed parts of the heating and ventilating devices. Fig. 2 shows a vertical central section of my invention in connection with a portion of a room designed to be heated and ventilated thereby. Fig. 3 is a longitudinal vertical section taken on the line X X of Fig. 2. Fig. 4 is a cross-section taken on the line Z Z of Fig. 2. Fig. 5 is a cross-section taken on the line Y Y of Fig. 2. Fig. 6 is a detail showing an enlarged vertical elevation of the regulating apparatus, taken on the line V V of Fig. 8. Fig. 7 is a

detail plan of the regulating apparatus, taken on the line W W of Fig. 8. Fig. 8 is a detail front elevation of my regulating apparatus.

Similar indices refer to and denote like parts throughout the several views.

In the drawings, A indicates the inner face of one of the walls of a room; B, the floor; C, the foundation; D, the earth-line; E, the ceiling of the room; F, the roof, and G the chimney, the above-named parts being shown to illustrate the connection and relative disposition of the various parts of my invention therewith.

My invention contemplates the construction of a heating-furnace located without the room to be heated, for which the numeral 1 represents the foundation, on which is constructed a wall 2, which wall extends up to near the ceiling-line E and is then curved inward and joined to the chimney G. Said curved portion (represented by 3) forms a roof for the furnace and the inner face forms a deflector for the heat rising from the furnace. Between the foundations C and 1 is filled in with clay or the like (represented by 4) to approximately on a line with the lower edges of the joists, on which rests the floor B. The filling 4, of clay, should be well tamped, and on this is placed a layer of cement 5, with its upper outer edges extending upward, forming a basin in which may be placed water, (represented by 6.) From the basin leads an overflow-pipe 7 through and beyond the wall 2. Space is provided for the entry of fresh air, which passes over the water 6 and then up back of the grate through the fresh-air space 18 into the hot-air chamber 12.

3 represents the grate, which forms the floor of the combustion-chamber 9, and below the grate 8 is an ash-pan space 10. Opening into the chamber 9 from the room through the wall A are one or more fuel-doors 11, through which fuel may be admitted to the chamber 9. Located above the chamber 9 is the hot-air chamber 12, with a caliduct 13 leading therefrom to the hot-air reservoir 14. Passing up around and below the chamber 12 is a smoke-space 15, the outward swell 16 of which should engage the wall 1, as shown. Passing through the smoke-space 15 are a number of conduits 17, which lead from the fresh-air space 18 into the chamber 12, and leading from the upper portion of the chamber 12 are a number of conduits 19, which lead into the hot-air reservoir 14. The smoke-space 15 leads into the smoke-pipe 20, which at the top is turned at right angles and enters the chimney G at substantially the point shown in Fig. 2. Leading from the hot-air reservoir 14 into the chimney is an opening 21, and an oppositely-disposed opening leads from the room through the wall A into the chimney. In and between these spaces is located a regulating device, (shown in detail in Figs. 3, 6, 7, and 8,) which I will now describe.

50 represents the bottom plate, placed horizontal on a line with the lower edge of said opening through the wall A, with spaces and conductors 51 and 52 rising therefrom, which consists of sheet-metal apertures extending to the top edge of said opening. Hinged to the top edges of the opening 51 are the valves 53 and 54, and hinged to one edge of the opening 52 is the valve 55, the radial movements of said valves being shown by the respective dotted lines extending therefrom. On the face of the wall A is provided a register 22 of any well-known construction adapted to be opened and closed and to thus open and close the opening through the wall A.

It is apparent that the smoke from the pipe 20 and the foul air from the lower part of the chimney will be carried up the chimney through the openings or pipes 51 and 52 and that three spaces 56, 57, and 58 will be provided between the reservoir 14 and the room. It is also apparent that if the valves 53, 54, and 55 be perpendicular, as shown in Fig. 8, the hot air from the reservoir 14 and the hot air from the room will be allowed to pass up the chimney with the smoke. Should the register 22 now be closed, then the hot air from the reservoir 14 only will be drawn up the chimney; but should the register 22 now be opened and the valves 53, 54, and 55 be closed—that is, placed at right angles to their position shown in Fig. 8—then the hot air from the reservoir 14 will pass into the room. The valves 53, 54, and 55 are adapted to be operated by the rod 59, which extends down the wall A within reach of a person standing on the floor B, where it can be locked in either position by the guide-catch 60. The upper portion of the rod 59 is bent inward at right angles and then upward behind the register 22 and is adapted to operate in a space provided for that purpose. The upper end of the rod 59 is secured to a cross-bar 61. To the center and each end of the latter are pivoted the respective upwardly-extending rods 62, 63, and 64. To the upper end of the latter are pivoted the respective arms 65, 66, and 67, which latter are permanently secured to the respective valves 53, 54, and 55, by which it is apparent that if the rod 59 be pushed up the valves will be opened and if the rod 59 be pulled down the valves will be closed, as and for the purposes above set forth. Extending from below and between the spaces 51 and 52 is the V-shaped deflector 27, by which the smoke passing up the chimney is divided to pass up the two spaces 51 and 52.

In the throat of the chimney just above the fuel-doors 11 is placed a register 23 of any well-known construction adapted to be opened and closed by the knob 24 by which the foul air from the room may be allowed to be drawn up the chimney or deflected into the combustion-chamber, as desired.

Located at one side of the wall 2 of the furnace-housing I place a fresh-air register

25 of any well-known construction adapted to be opened and closed by the knob 26.

Operation: By the above - described arrangements it is apparent that a fire being
5 placed in the chamber 9, the chamber 12 will become heated thereby, the fresh air will be drawn in from the register 25 passing over the water 6 it will be moistened, then passing up the space 18 it will pass through
10 the conduits 17 and will be delivered in the chamber 12, where it will become heated and will then pass out through the conduits 19 into the reservoir 14 and from there will pass through the openings 56, 57, and 58 into the
15 room, or deflected up the chimney, as desired. At the same time the foul air may be withdrawn from the room through the register 23 and pass up the chimney, as shown. Should the room become too warm, the rod 59 may be
20 pushed up, thus opening the valves, and the register 22 may be closed, which will cause the warm air to pass up the chimney from the reservoir 14, and should it be desired to cool the room more rapidly then the register 22
25 may be opened, which will allow the warm air to be drawn from the room up the chimney.

By the arrangements shown and described it is apparent that I have provided a heating and ventilating arrangement which will be
30 interdependent, which can be cheaply and quickly constructed, in which the consumption of fuel will be reduced to a minimum, that the various devices can be easily and quickly operated, and by which the other objects above stated are attained.

While I have illustrated and described the best means now known to me for carrying out the objects of my invention, I wish it to be understood that I do not restrict myself
40 to the exact details of construction shown, but hold that any slight changes or variations in such details as would suggest themselves to the ordinary mechanic would clearly fall within the limit and scope of my invention.

45 Having now fully shown and described my invention and the best mode for its construction and use to me known at this time, what I claim as new, and desire to secure by Letters Patent of the United States, is—

50 1. In combination, for heating and tempering the air of a room, a furnace located without the room to be heated, a fresh-air register, a warm-air space leading from the furnace to the upper portion of the room, a foul-air register leading from the lower portion of the
55 room to the smoke-flue, a mechanism for ad-

mitting the hot air to the room or for conducting it up the chimney and for withdrawing the warm air from the room and conducting it up the chimney, means for moistening the
60 fresh air to be heated, and means for regulating the various mechanisms at will, all substantially as shown and for the purposes set forth.

2. In an interdependent heating and ventilating device, in combination with a room
65 and a chimney connected thereto, of a furnace located without the room and on a line therewith, a housing-wall surrounding the furnace and means for supplying fuel thereto, of the
70 combustion-chamber with smoke-space leading therefrom to the chimney, of the hot-air chamber with conduits and a caliduct leading therefrom to a hot-air reservoir, of the regulating device located in the chimney near the
75 upper part of the room, means whereby the hot air may be admitted from the hot-air reservoir into the room or conducted up the chimney, means for conducting the warm air from
80 the room up the chimney, means for drawing the foul air from the room and conducting it up the chimney, and means for conducting the smoke and gases from the furnace to the chimney, all substantially as shown and described.
85

3. In an interdependent heating and ventilating device, in combination with a room provided with a chimney a furnace located without the room and on a line therewith, of
90 a regulating device within the chimney communicating with the room on one side and with the hot-air reservoir on the other, of the bottom plate 5, of the smoke-conductors 51 and 52 rising therefrom, of the valves 53, 54 and 55 hinged to the top of the conductors 51
95 and 52, of the rod 59 extending down from said valves and pivotally connected thereto by the cross-bar 61, of the cross-bar 61 secured to the upper end of the rod 59, of the connecting-rods 62, 63 and 64 pivoted to the cross-bar
100 61 and to the arms extending out from said valves, of the arms 65, 66 and 67 attached to the valves 53, 54 and 55 and to the rods 62, 63 and 64 respectively, all substantially as shown and for the purposes specified.
105

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

JAMES E. HAMMONS.

Witnesses:

C. F. HENDINGTON,
C. C. CARTWRIGHT.