

No. 671,379.

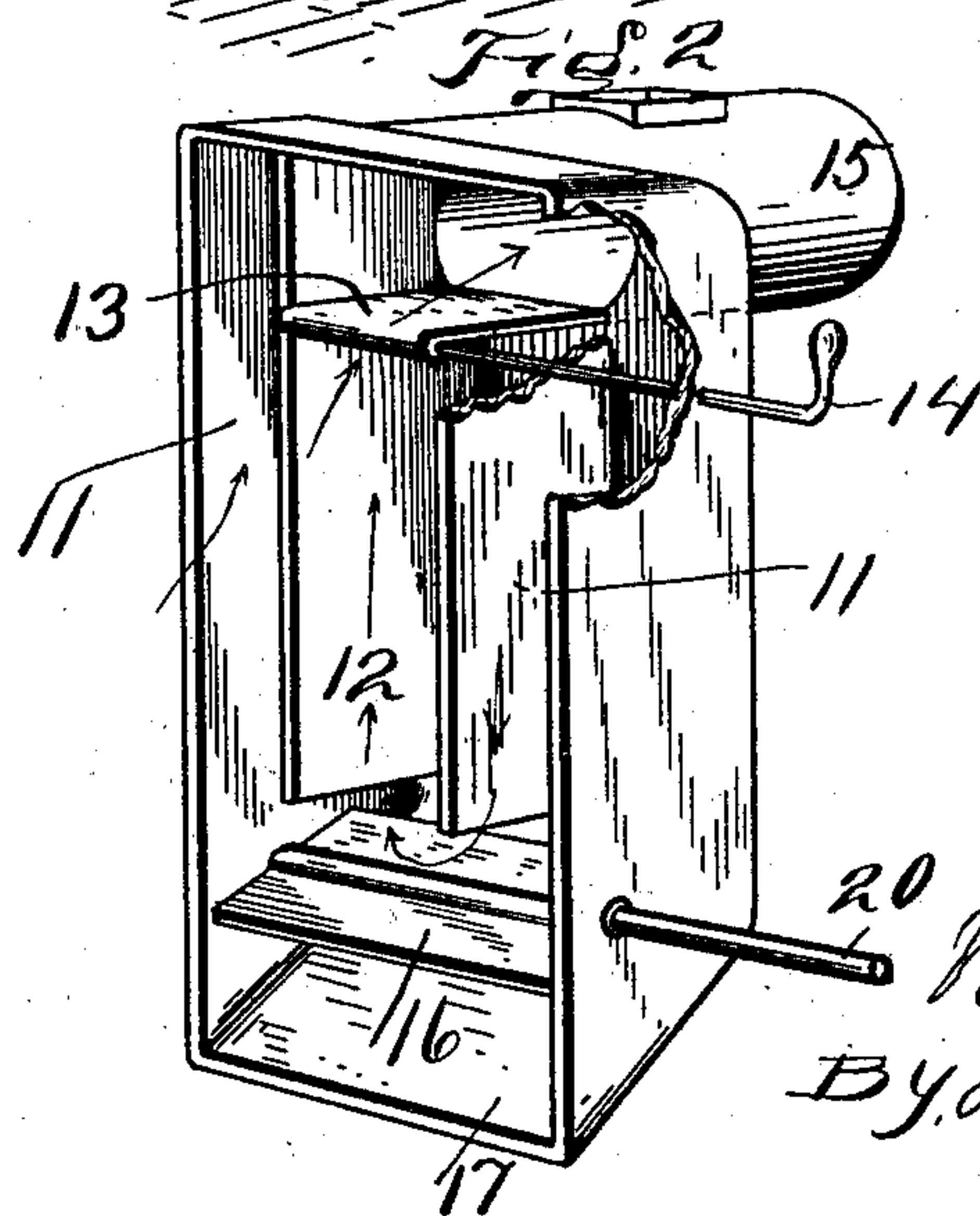
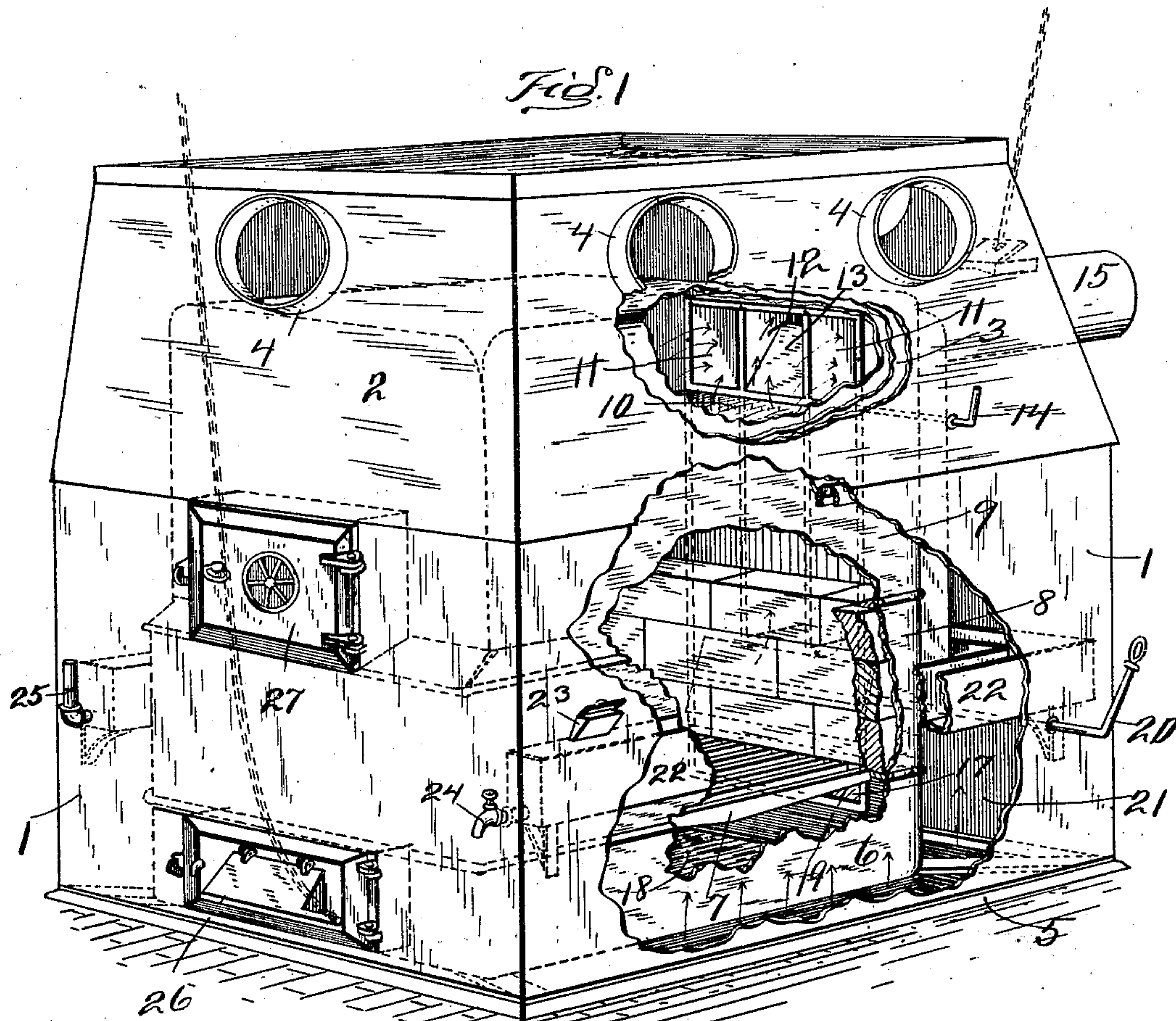
Patented Apr. 2, 1901.

W. H. HILLYER.
HOT AIR FURNACE.

(Application filed June 22, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
G. R. Bond.

Inventor:
William H. Hillyer
By J. W. Bond

Att'y.

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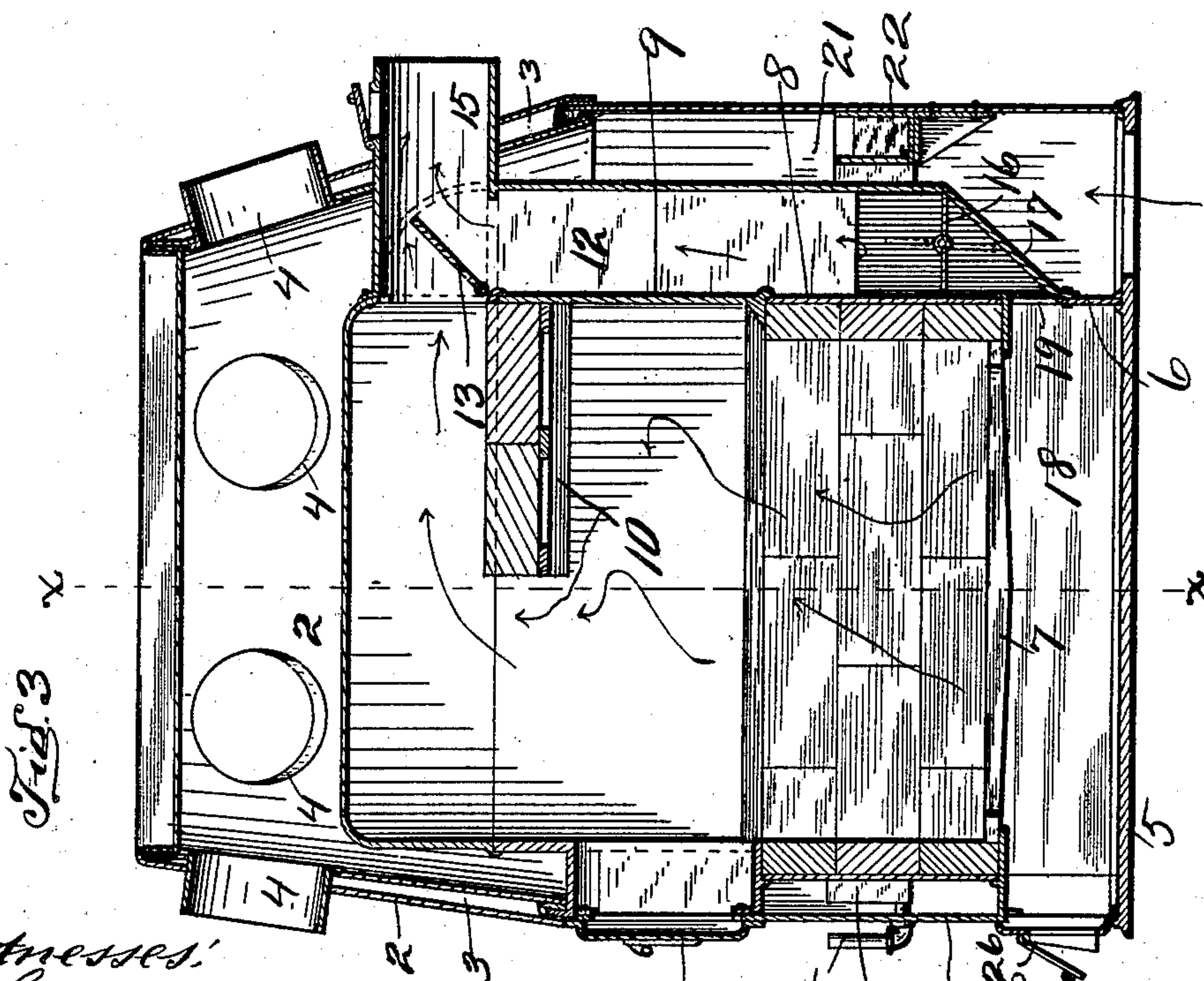
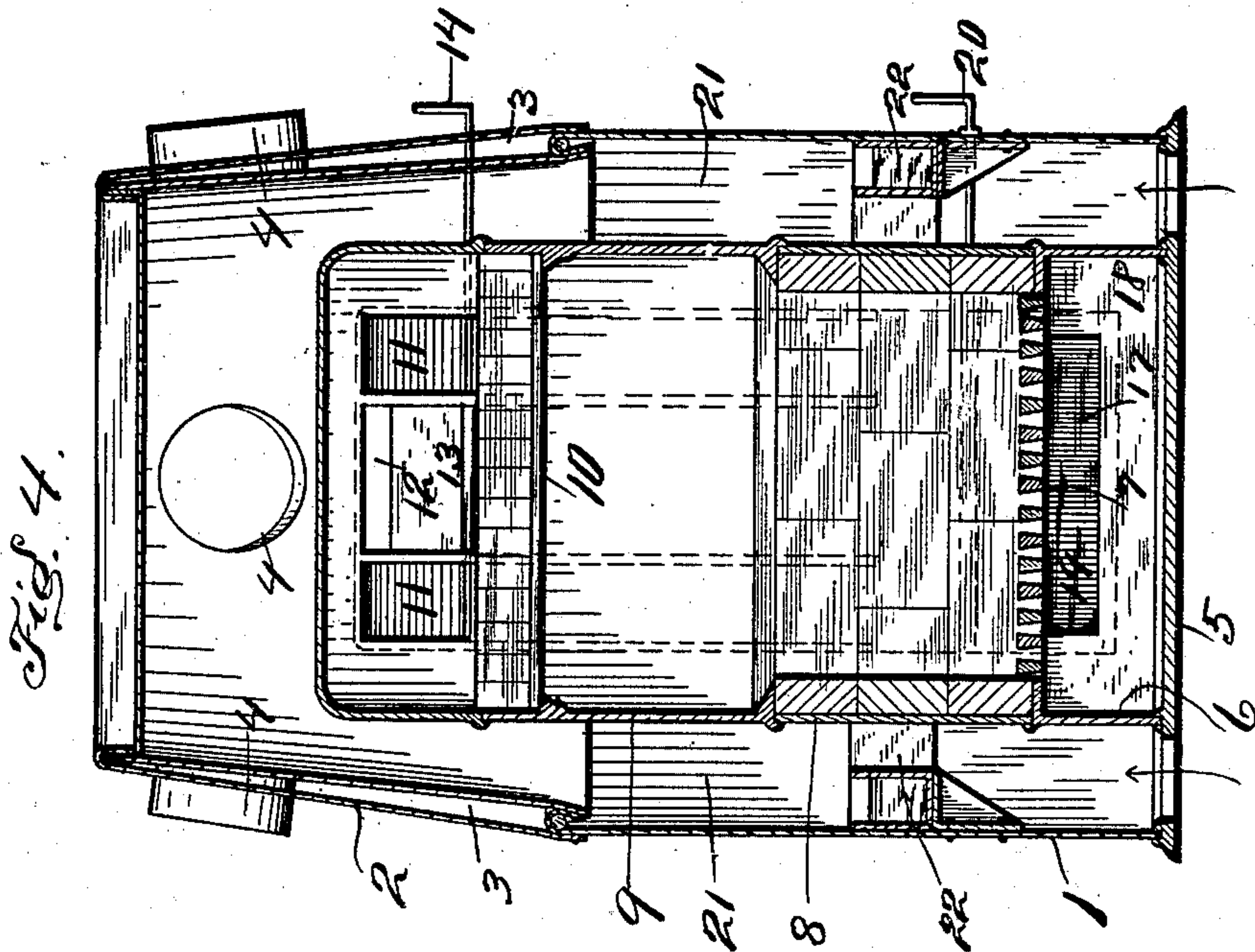
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

WILLIAM H. HILLYER, OF FREEPORT, OHIO.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 671,379, dated April 2, 1901.

Application filed June 22, 1900. Serial No. 21,180. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HILLYER, a citizen of the United States, residing at Freeport, in the county of Harrison and State of Ohio, have invented certain new and useful Improvements in Hot-Air Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a perspective view showing parts broken away. Fig. 2 is a view illustrating the chimney-flue and the direct and down draft passages. Fig. 3 is a horizontal vertical section. Fig. 4 is a transverse section through line *x x*, except that the furnace is shown full.

The present invention has relation to hot-air furnaces; and it consists in the different parts and combinations of parts hereinafter described, and particularly pointed out in the claims.

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

In the accompanying drawings, 1 represents the base-section, which is preferably formed of galvanized sheet metal and may be substantially of the form shown in the drawings.

To the top of the base-section 1 is connected the hot-air dome or section 2, which section is provided with the dead-air space 3.

For the purpose of properly attaching air-pipes to the dome 2 any desired number of collars, such as 4, are provided, it being understood that the number of collars 4 is to correspond with the number of hot-air pipes designed to be connected.

To the base-section 1 is attached the base-plate 5, to which base-plate is attached the ash-pit section 6, said section being located and arranged substantially as shown, and, as shown, its top or upper portion is provided with the grate-bars 7, said grate-bars being located and arranged in any convenient and well-known manner.

Upon the ash-pit section 6 is located the fuel-chamber or casing 8, which casing is provided with suitable brick lining, which brick lining is arranged substantially as shown in

the drawings. Above the casing 8 is located the section 9, which section is connected to the section 8 in any convenient and well-known manner.

For the purpose of producing a better radiation the section 9 is provided with the bridge 10, which bridge extends from the rear side of the section 9 forward to a point above midway between the rear and front sides of said section 9. The bridge 10 is preferably constructed of suitable cross-bars and upon which may be located brick, it being understood that the brick in all instances should be suitable fire-brick.

To the rear of the sections 6, 8, and 9 are located the flues 11 and 12, said flues being located and arranged substantially as shown in Fig. 2.

Within the flue 12 is located the damper 13, which damper is operated by the handle 14, said handle being located and arranged substantially as shown in the drawings. When a direct draft is desired, the damper is turned into the position illustrated in Fig. 2, which gives a direct communication with the chimney-pipe 15, said chimney-pipe being connected in the usual manner. When a down-draft is required, the damper 13 is brought into a vertical position, which closes the flue 12, or, in other words, cuts off the draft from the fuel-chamber in a direct line with the chimney-pipe 15. When the damper 13 is brought into a vertical position, the draft will be downward through the upper portions of the flues 11 to a point below the bottom or lower end of the flue 12, and thence through said flue 12 and back of the damper 13, and thence to the chimney through the pipe 15. By this arrangement the flame will be retarded and the heat brought into direct contact with the inner faces of the fire-chamber sections.

For the purpose of withdrawing the dust from the ash-pit at a time when the ashes are removed the damper 16 is brought into a vertical position, or in the position illustrated in dotted lines, Fig. 3, by which arrangement a direct draft is had from the ash-pit to the chimney.

For the purpose of preventing an accumulation of soot at the bottom or lower ends of the flues 11 and 12 the plate 17 is inclined

downward toward the ash-pit 18, and for the purpose of providing a draft from the ash-pit to the flues 11 and 12, or more particularly to the flue 12, the opening 19 is provided, said opening being located and arranged substantially as shown in the drawings.

It will be understood that for the purpose of operating the damper 16 it should be provided with the operating lever or handle 20.

For the purpose of providing a chamber 21 between the outer sections 1 and 2 and the sections 6, 8, and 9 said outer sections are set away from the inner sections 6, 8, and 9, or, in other words, are formed of larger dimensions.

For the purpose of providing a means for giving moisture to the dry air as it ascends to the hot-air dome the open water-trough 22 is provided, which open water-trough is located in the chamber 21, being formed of such a size in cross-section that it will not occupy the entire space of the chamber 21, thereby allowing the air to pass the water-chamber, and as it passes it will take up a certain amount of moisture, which moisture will be carried with the hot air to the various rooms of the house or building through the hot-air pipes.

For the purpose of supplying the trough 22 from time to time as the water becomes evaporated the filling-spout 23 is provided, which filling-spout leads to the water-trough through the casing 1, substantially as illustrated in the drawings.

For the purpose of removing the water from the trough for any purpose the faucet 24 is provided, which may be located substantially as shown in the drawings, or it may be differently located, as its only object and purpose is to provide a means for removing the water from the trough 22.

For the purpose of determining the amount of water in the trough a gage, such as 25, is provided. It may be an ordinary water-gage and requires no specific description, inasmuch as it within itself forms no particular part of the present invention.

It will be understood that the front or forward

plate of the casing 1 should be provided with the doors 26 and 27, which doors may be located and arranged substantially as shown.

It will be understood that by lining the furnace-chamber with fire-brick it will prevent the flames from coming in direct contact with the metal portion of the fire-chamber, and thereby prevent a cracking or breaking of the metal from overheating and also prevent the escape of gas from the fuel-chamber into the hot-air chamber and at the same time make the furnace proper dust-proof.

It will also be understood that by providing the dome or section 2 with the dead-air space 3 the heat will be better retained and at the same time prevent the sudden cooling of the dome, and thereby reduce the temperature of the air contained in the dome.

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

1. The combination of the sections 1 and 2, a fuel-chamber located within the sections and spaced therefrom, downdraft-flues located at the rear of the fuel-chamber and an updraft-flue located between the downdraft-flues and provided with a damper, a damper located in the lower portions of the up and down flues, and a chimney-pipe leading from the flue located between the downdraft-flues, substantially as and for the purposes specified.

2. In a hot-air furnace, the combination of the outer sections 1 and 2, a fuel-chamber located within the outer casings and spaced therefrom, a water-trough located between the outer casing and the fuel-chamber casing and up and down draft flues located at the rear of the fuel-chamber and said flues provided with an inclined bottom and an opening located between the inclined bottom and the ash-pit all arranged, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM H. HILLYER.

Witnesses:

N. M. GRAY,
V. M. REAVES.