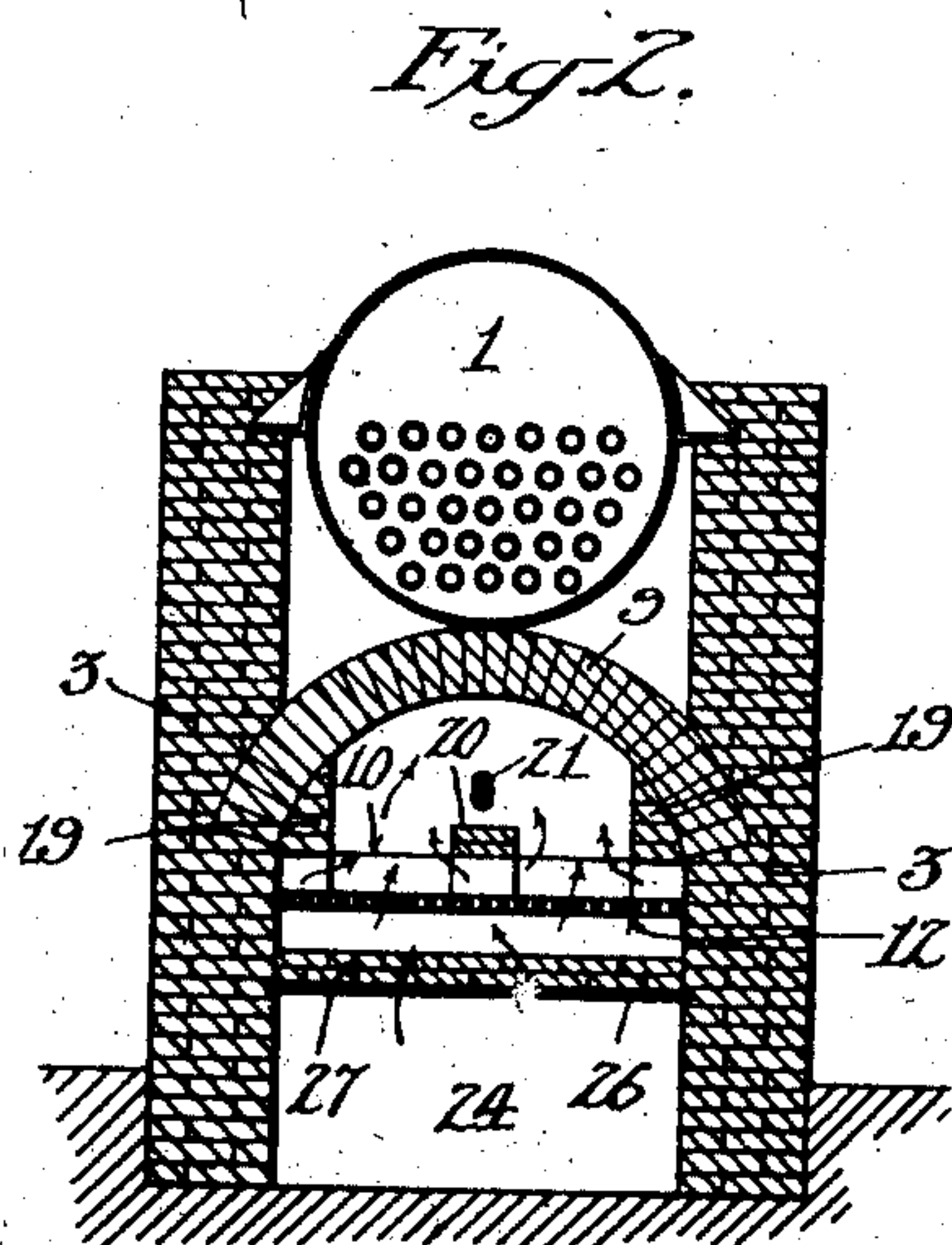
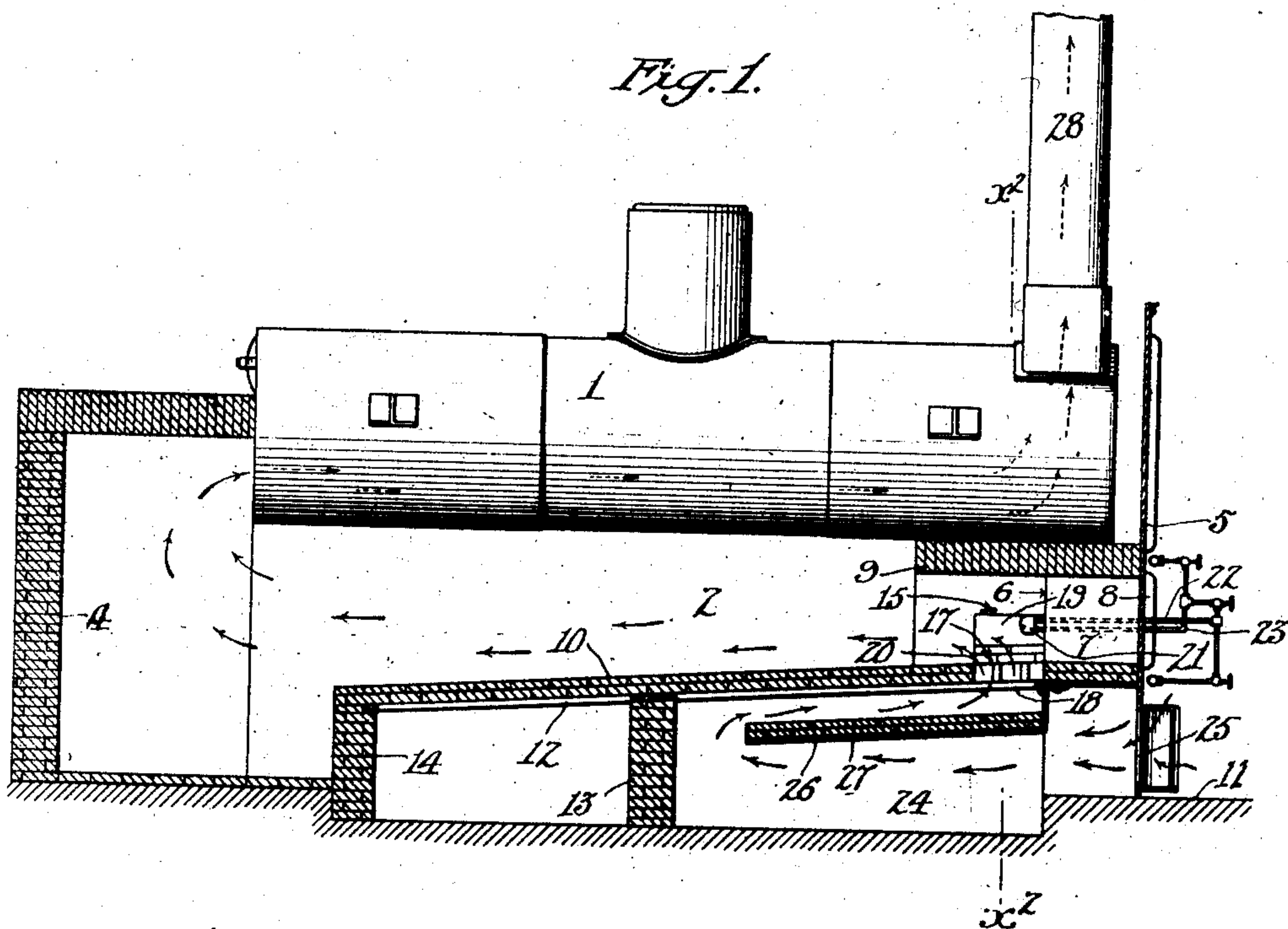


T. C. MASON.
OIL BURNING FURNACE.
APPLICATION FILED JAN. 9, 1907.

905,550.

Patented Dec. 1, 1908.



Witnesses:
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his Attorneys

UNITED STATES PATENT OFFICE.

THOMAS C. MASON, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO MASON SMOKELESS COMBUSTION COMPANY, OF CARSON CITY, NEVADA, A CORPORATION OF NEVADA.

OIL-BURNING FURNACE.

No. 905,550.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed January 9, 1907. Serial No. 351,541.

To all whom it may concern:

Be it known that I, THOMAS C. MASON, a citizen of the United States, residing at the city of Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Oil-Burning Furnace, of which the following is a specification.

The main object of the present invention is to provide an oil burning furnace of extreme efficiency, while being smokeless in operation.

Another object of the invention is to provide an oil burning furnace which will be practically noiseless.

Another object of the invention is to provide for regulation or control of the supply of heated air to effect combustion.

Another object in boiler furnaces, is to prevent wear of the boiler by contraction due to exposure to cold air; the present invention providing for supply of air uniformly warmed, before it reaches the burner.

In the accompanying drawings:—Figure 1, is a vertical section of a boiler setting embodying the invention constituting my present invention. Fig. 2, is a transverse vertical-section on the line x^2 , x^2 , Fig. 1.

An externally fired and tubular steam boiler 1, is placed over the fire chamber or combustion chamber 2, which is contained in brick setting consisting of the side walls 3, and a rear wall 4. The space at the front of the boiler or furnace is closed by a front plate 5, and opening and closing doors, such as are usually employed. Adjacent to this front plate there is built or formed under the boiler a front wall 6, having openings 7, communicating with the door 8, of the front plate 5, and an arch 9, of fire brick, which extends from one side to the other of the chamber and from the front of the boiler part way to the rear of the same. The upper part of this arch 9, is in contact with the bottom of the boiler 1, as shown at Figs. 1, and 2.

A floor 10, extends under the front part of the combustion chamber 2, but preferably at a higher level, than the outside floor 11, of the boiler room, said floor being preferably formed of fire brick and supported on a grate or frame 12, resting on cross walls 13, 14. This floor extends at a slight angle downwardly toward the rear, and its front

end extends part way under the arch 9, terminating, however, short of the front walls 6, of the burner chamber 15, beneath said arch, so that this portion of the burner floor is perforated, leaving between said front walls and the floor 10, an opening 17, for the passage of air, this opening being divided by grate bars 18, which may form part of the supporting grate or frame 12, aforesaid. At each side of this part of the furnace, adjacent to the abutments of the arch 9, there are built over the portion 18, walls 19, which extend inwardly from the side walls 3, somewhat above the portion 18, so as to serve as directors for causing the air, as it rises from between the grate bars beneath them, to flow inwardly toward the burner. At the mid-width of this part of the furnace there is an extension 20, from the front wall 6, of the furnace extending rearwardly over the grate portion 18, and a burner 21, extends rearwardly above this wall extension and is served by pipes 22, and 23, respectively, extending through the wall portion 6, aforesaid, and delivering oil and steam to the interior of the burner 21. Below this portion of the combustion chamber there is a space 24, serving as an air inlet space and communicating with the outer air at the front of the furnace through the lower furnace doors 25. A partition is secured within this space, being, for example, formed as a pan or plate 26, attached to the bottom of the grate member or support 12, extending first downwardly and then forwardly and downwardly parallel to the floor 10, and somewhat separated therefrom so as to form a flue or passage leading from the air inlet chamber 24, upwardly between the ends of the partition 26, and the cross walls 13, and then rearwardly between the partition 26, and floor 10, and then upwardly between the grate bars 18, to communicate with the combustion chamber. This partition 26, is preferably protected or covered by fire brick as indicated at 27. The stack or outlet is indicated at 28.

The operation is as follows:—The oil having been turned on and ignited, is continually injected into the burner chamber and forms a jet, the burner being preferably so directed as to cause the flame to pass at a slight downward angle while moving rearwardly under the boiler, and directly above

the floor 10, into the tubes within the boiler 1, to the stack 28. This action draws in the air from the air supply chamber 24, the lower furnace doors 25, being opened sufficiently to admit the proper quantity of air, and this air flowing into the air supply chamber forwardly beneath the partition 26, then upwardly between said partition 26, and the cross wall 13, then rearwardly over the partition 26, and below the floor 10, then upwardly through the grate portion 12, thus coming into the burner chamber directly beneath and in front of the burner. The heat of the furnace soon warms all these parts in such manner that the air in thus passing to the burner is warmed before it reaches the burner, and it is found in practice that, with this construction, smokeless combustion is secured in a manner that is not possible with a burner in which the air has direct access from the front of the furnace to the burner. Moreover, the irregular character of the passage prevents, in a large degree, undulatory action of the air such as is caused when there is free or direct passage of air to the burner from the front of the furnace, and such little noise as may occur is deadened by having to pass through this irregular passage.

By opening or closing the lower front doors of the furnace it is possible to accurately adjust or control the amount of air admitted so as to furnish just sufficient for perfect combustion either with a small flame or with a large flame. As the air is uniformly warmed in traversing the passage aforesaid, and as the burner chamber above it is in contact with the boiler, it follows that the boiler is not subjected to currents of cold air which would be liable to cause contraction, warping and straining of the parts, and deterioration of the boiler.

What I claim is:

1. An oil burning furnace comprising a combustion chamber, a burner chamber at

the front end of said combustion chamber, a rearwardly directed burner in said burner chamber, the floor of the burner chamber having openings therein to supply air, deflectors at the sides of the burner chamber, a partition beneath said openings, an air inlet chamber beneath the partition.

2. An oil burning furnace comprising a combustion chamber, a burner chamber at the front end of said combustion chamber, a rearwardly directed burner in said burner chamber, the floor of the burner chamber having openings therein to supply air, deflectors at the sides of the burner chamber, a partition beneath said openings, an air inlet chamber beneath the partition, and means for controlling the passage of air into said air inlet chamber from the outside, substantially as set forth.

3. An oil burning furnace comprising a combustion chamber, a burner chamber at the front end thereof, a rearwardly directed burner in said burner chamber, deflectors at the sides of the burner chamber, said combustion chamber having a rearwardly inclined floor, said burner chamber having an opening at the forward end of said floor, a partition extending from the bottom of the combustion chamber downwardly, then rearwardly under the floor of the combustion chamber and an air inlet chamber beneath said partition communicating with the burner through the passage formed between said partition and the floor of the combustion chamber and through the opening in the floor of the burner chamber, substantially as set forth.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 28th day of December 1906.

THOMAS C. MASON.

In presence of—

ARTHUR P. KNIGHT,
FRANK L. A. GRAHAM.