No. 781,827. PATENTED FEB. 7, 1905.

L. HOUZE.

CONTINUOUS HEATER FOR FURNACES OF HIGH TEMPERATURE.

APPLICATION FILED OCT. 12, 1904.

4 SHEETS—SHEET 1.

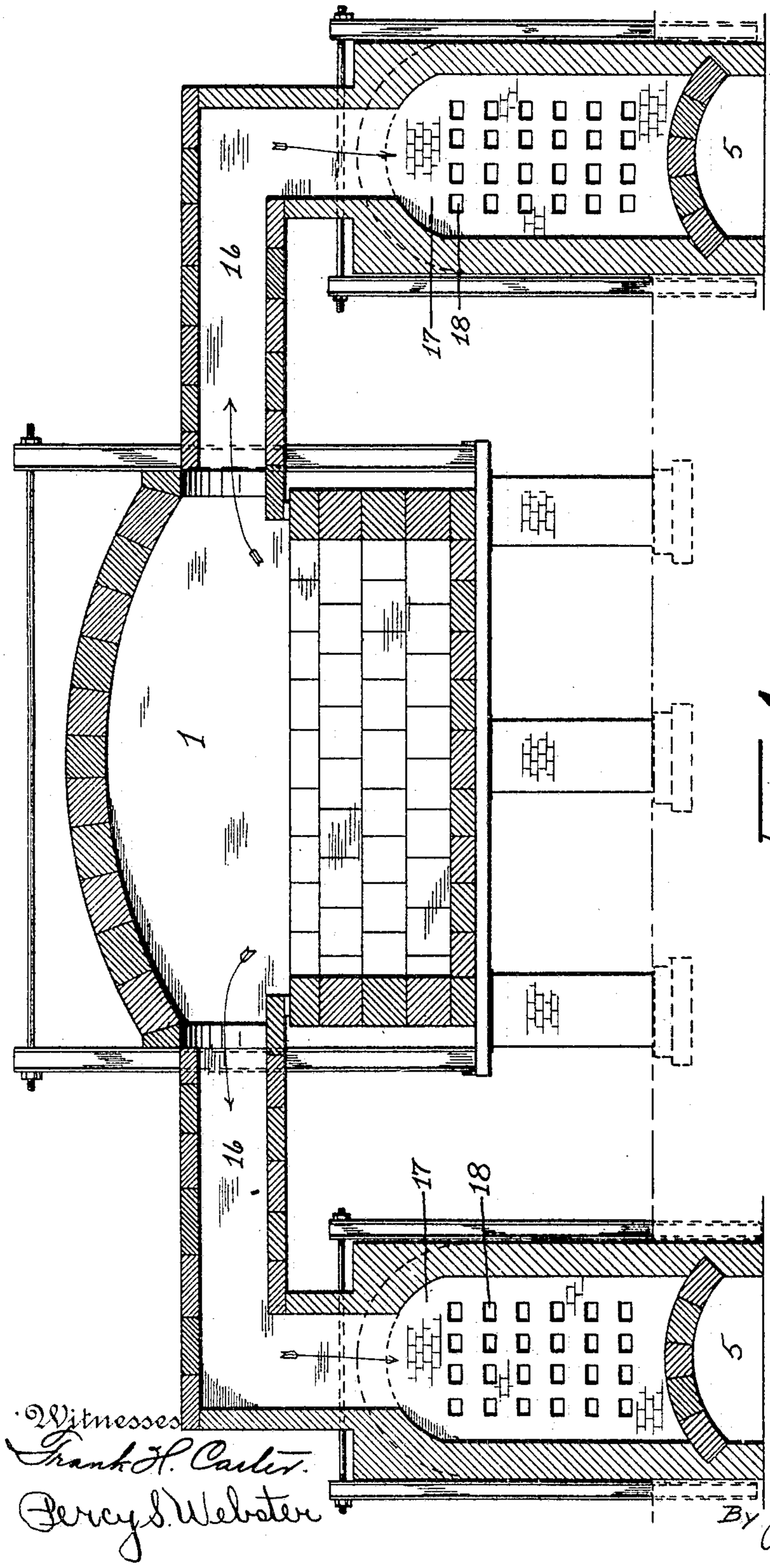

Fig. 1.

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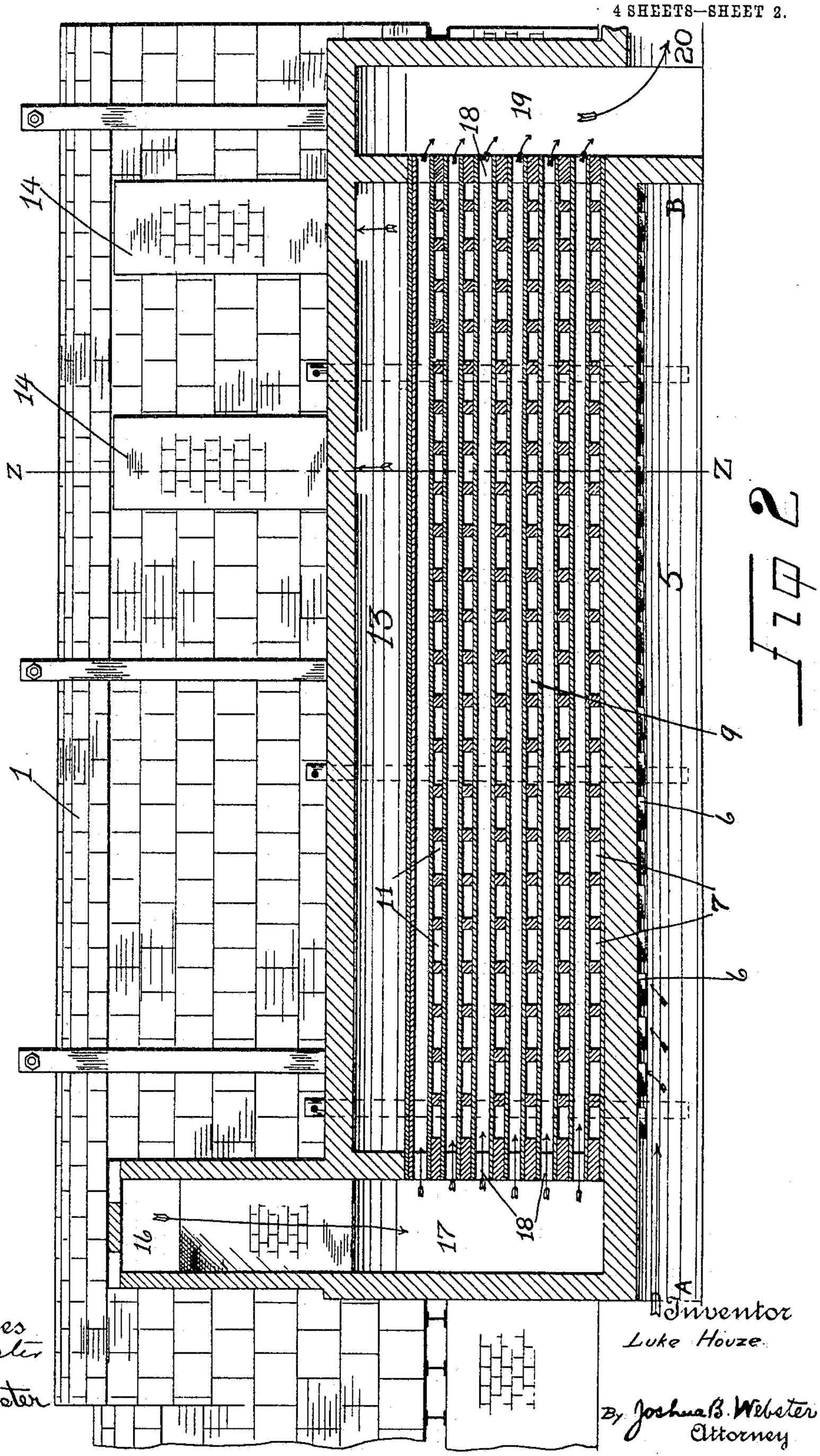
4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

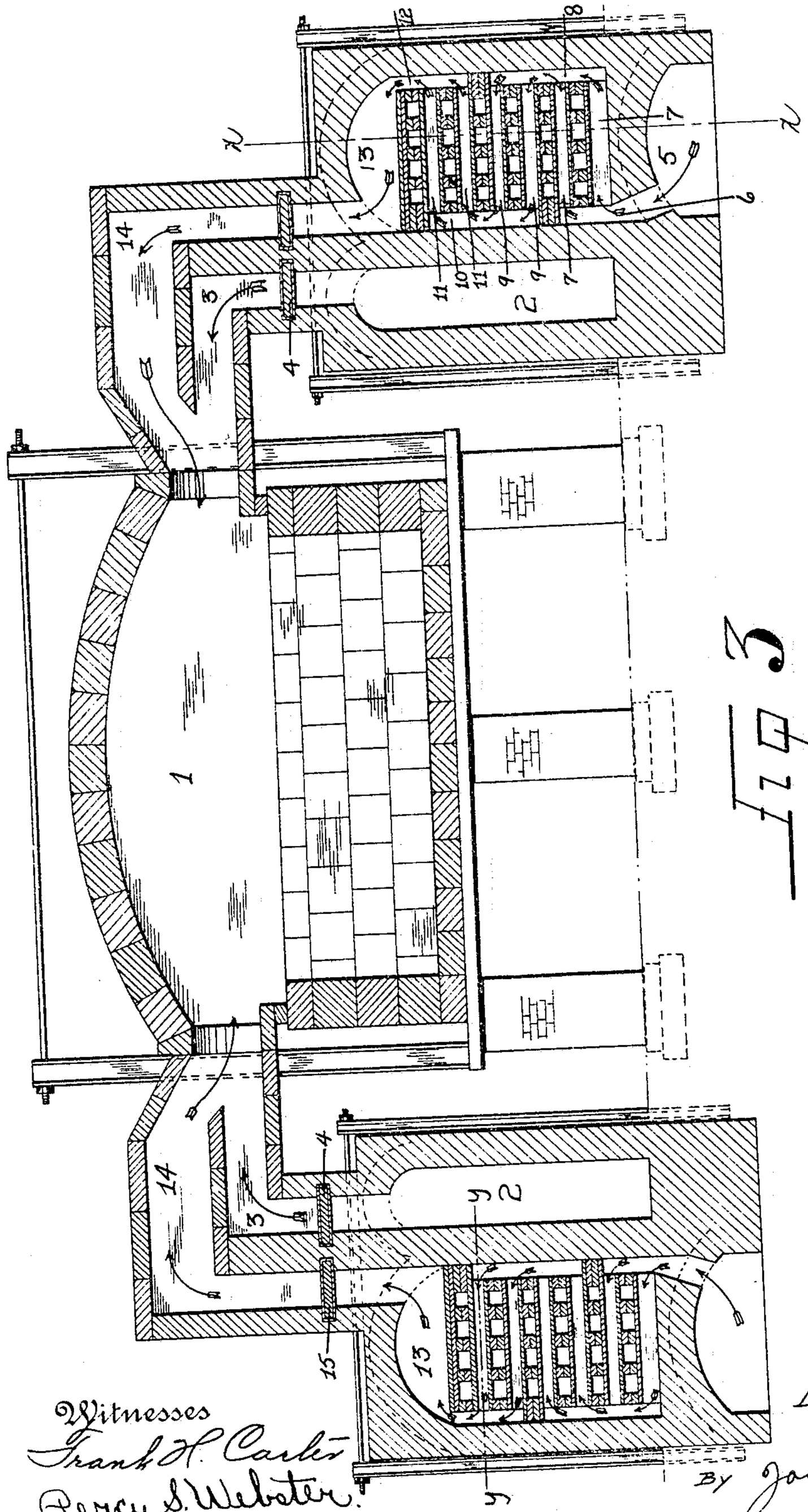

Fig 3

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4 SHEETS—SHEET 4.

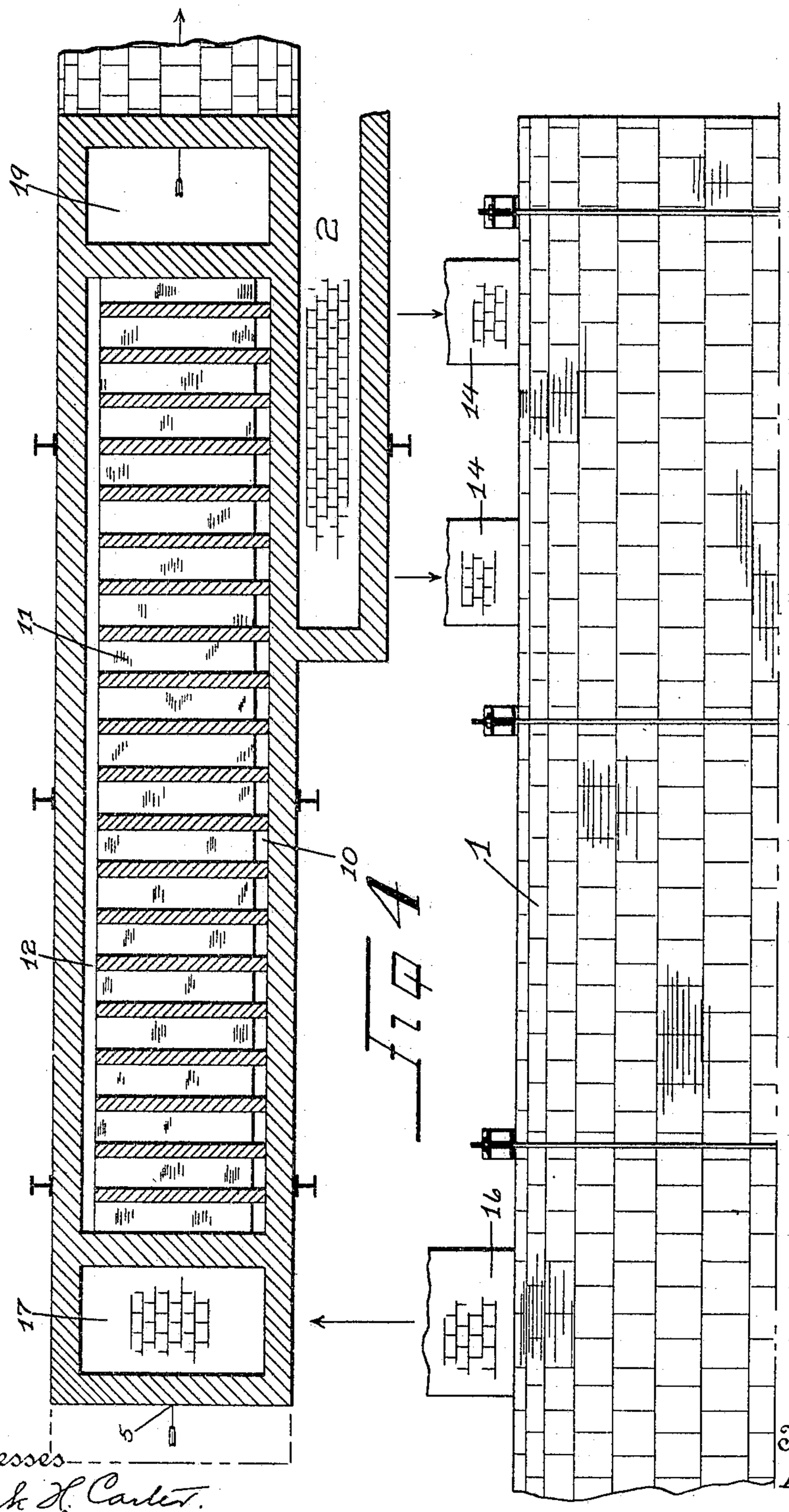

FIG 4

Witnesses
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No. 781,827. Patented February 7, 1905.

UNITED STATES PATENT OFFICE.

LUKE HOUZE, OF STOCKTON, CALIFORNIA, ASSIGNOR OF ONE-HALF TO CHARLES J. HURRLE, OF STOCKTON, CALIFORNIA.

CONTINUOUS HEATER FOR FURNACES OF HIGH TEMPERATURE.

SPECIFICATION forming part of Letters Patent No. 781,827, dated February 7, 1905.

Application filed October 12, 1904. Serial No. 228,116.

To all whom it may concern:

Be it known that I, LUKE HOUZE, a citizen of the United States, residing at Stockton, in the county of San Joaquin and State of California, have invented certain new and useful Improvements in Continuous Heaters for Furnaces of High Temperature; and I do 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, reference being had to the accompanying drawings, and the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements for furnaces of high temperature, and particularly to that class used in glass-making and the like; and it consists in the effective construction herein set forth.

My object is to produce a continuous heater for said furnaces by means of which I may have a steady heat without the necessity of reversing the fire at stated intervals, as is now the case with most furnaces of the class mentioned.

A further object is to reduce the amount of help required and also the amount of fuel.

These objects I accomplish by the peculiar construction and relative arrangements of parts herein fully described, and particularly pointed out in the claims appended.

Reference is to be had to the accompanying drawings, in which similar characters of reference indicate corresponding parts in the several views.

Figure 1 is a vertical sectional view of a glass-tank, showing my improved heater applied thereto. Fig. 2 is a vertical section through a line X X of Fig. 3. Fig. 3 is a sectional view of my device, taken on a line Z Z of Fig. 2. Fig. 4 is a horizontal section through a line Y Y of Fig. 3.

1 designates an ordinary glass-tank.

2 represents main gas flues or ducts located at the sides of the tank 1 near the rear thereof and adapted to receive gas from the producers or tanks, and 3 are outlets or flues leading from said ducts or flues 2 or for allowing the insertion of oil or other fuel burners into the tank 1 near the rear edges thereof.

4 represents dampers for the purpose of regulating the amount of gas introduced from the ducts 2 into the tank 1.

5 represents cool-air chambers lying alongside the gas-flues 2 and open at the front end A and closed at the rear end B. From these chambers a series of outlets 6 lead to a series of slots 7, which in turn are connected to a similar series 9 above by means of connecting-slots 8. Slots 10 connect said slots 9 with a series of slots 11, arranged above said slots 9.

12 represents slots leading from the slots 11 to chambers 13, and 14 are flues or outlets leading from said chambers 13 into the flues 3 just back of where they discharge into the tank.

15 is a damper in the flues 14 for the purpose of regulating the amount of air passing through said flues.

16 represents flues or outlets leading from the tank 1 near the front thereof and into chambers 17, from whence slots 18 extend transversely between the slots 8, 9, and 11 and thence into chambers 19, which lead into flues 20, which extend to the draft-stack.

The operation is as follows: The fire is started at the junction of flues 3 and 14 and the heat passes directly into the tank 1. The force of the said heat rushing into the said tank and the draft from the stack draws the air with great force from the flues 14, and as the heat from the tank is drawn through the slots 18 the air passing back and forth between said slots becomes superheated, and thus as it rushes into the tank and mixes with the fire it forms an intense heat, as is required by furnaces of this character.

From the above description it will readily be seen that by means of my improved device a continuous and intense heat may be maintained with small expense, as it does away with the necessity of reversing the fire at stated intervals, as is the case with most heaters now in use. The introduction of the heated air, as above stated, also reduces the amount of fuel consumed, thus lessening the cost of

production. Under my improved arrangement the fire must remain and travel the longest distance of the tank by entering at one extremity through the flues 3 and being drawn from the other extremity, thus keeping the heat in the tank the longest possible time. Another great advantage of my device is that the fire from both sides being concentrated in the center of the tank does away with the abrasion on the opposite walls produced by the violence of the fire injected from opposite burners, as is the case in the old style of tanks.

The gas-flue 2 is only used in conjunction with gas; but where oil or other fuel is used it will be suppressed and the fuel-burner injected directly into the flues 3 from above or from the side.

The dampers 4 and 15, respectively, are for the purpose of regulating the amount of fire and hot air, respectively, passing into the tank.

I have now entered into a detailed description of the construction and relative arrangement of parts embraced in the present and preferred embodiment of my invention. I do not desire, however, to be understood as confining myself to such specific detail, as many changes and modifications may be made in practice as fairly fall within the scope of my claims.

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

1. A continuous heater for glass-tanks and the like consisting essentially of a gas-duct located on each side of said tank, flues leading from said gas-duct into the said tank near the rear thereof, flues leading from said tank near the front thereof, small horizontal slots leading from said last-named flues, means for connecting said slots with the draft-stack, an air-chamber open at one end and closed at the other, located beneath said slots, small vertical slots extending from said air-chamber at the sides of said first-named slots, transverse slots connecting said vertical slots and arranged between said first-named slots, and means for connecting said last-named slots with the tank at the same place as the fire enters, as specified.

2. In a device of the kind described the combination with the tank of a main gas-duct on each side thereof, the flues 3 leading from said ducts to said tank, the chambers 5 at the sides of said furnaces, the slots 6, 7, 8, 9, 10, 11 and 12 leading from said chambers 5, the chamber 13 into which the slots 12 open, the flues 14 leading from said chamber 13 into the flues 3 at points just back of where said flues 3 open into said tank, flues leading from said tank near the front thereof, and slots leading from said last-named flues extending between the slots 7, 9, and 11, and thence to the draft-stack, as specified.

3. In a continuous heater for glass-tanks the combination with the tank of the flues 16 leading from said tank near the front thereof, the chambers 17, the horizontal slots 18 leading therefrom, the chamber 19, the flues 20 adapted to lead from the chamber 19 to the draft-stack, the main gas-flues 2, the flues 3 leading from said gas-flues into the tank, the dampers 4, and slots extending transversely between the slots 18 and suitably connected with the open air at one end and the flues 3 at the other, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LUKE HOUZE.

Witnesses:
PERCY S. WEBSTER,
JOSHUA B. WEBSTER.