

No. 742,424.

PATENTED OCT. 27, 1903.

M. HENNINGS.
BAKE OVEN.

APPLICATION FILED MAR. 19, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

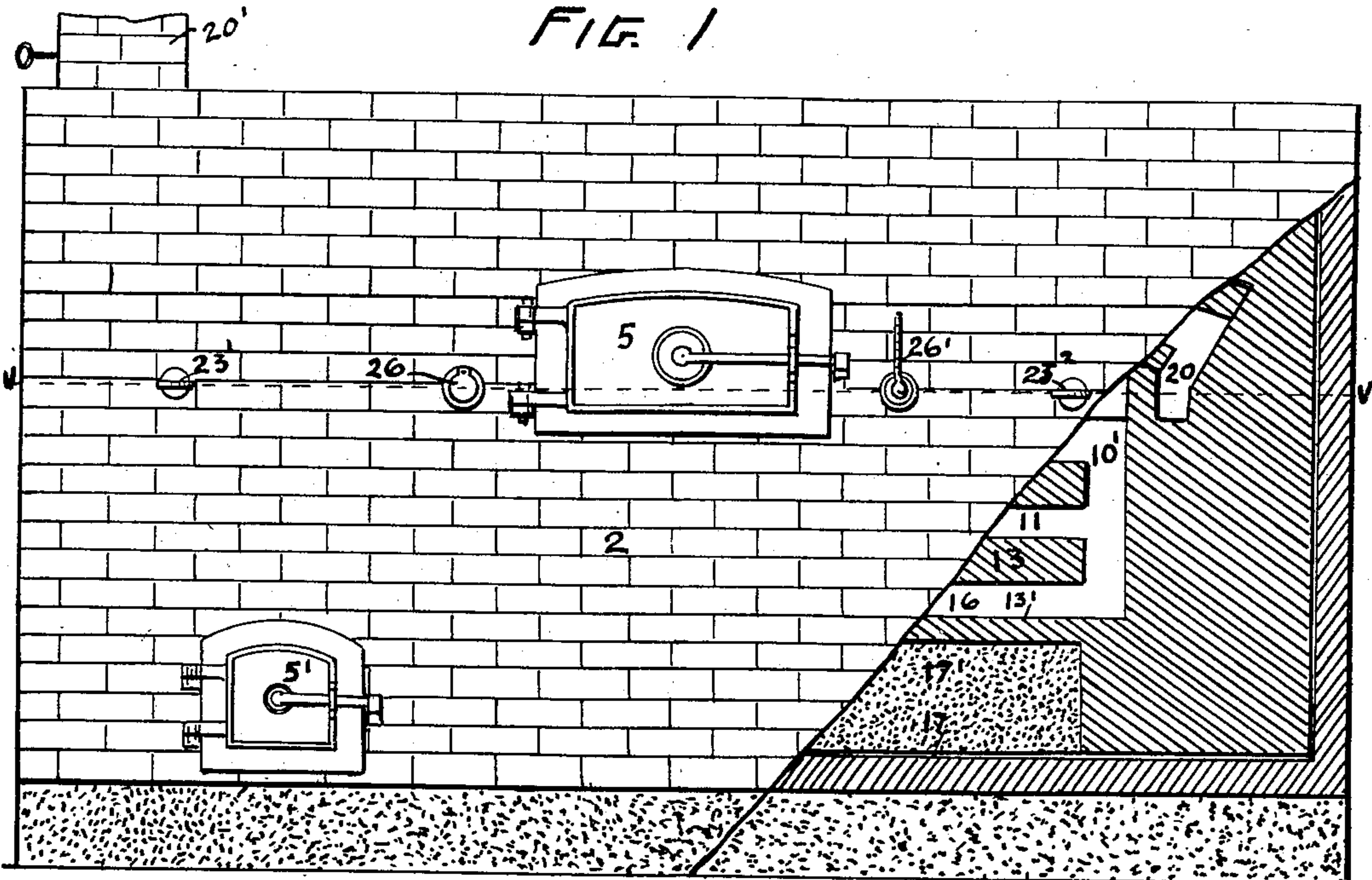
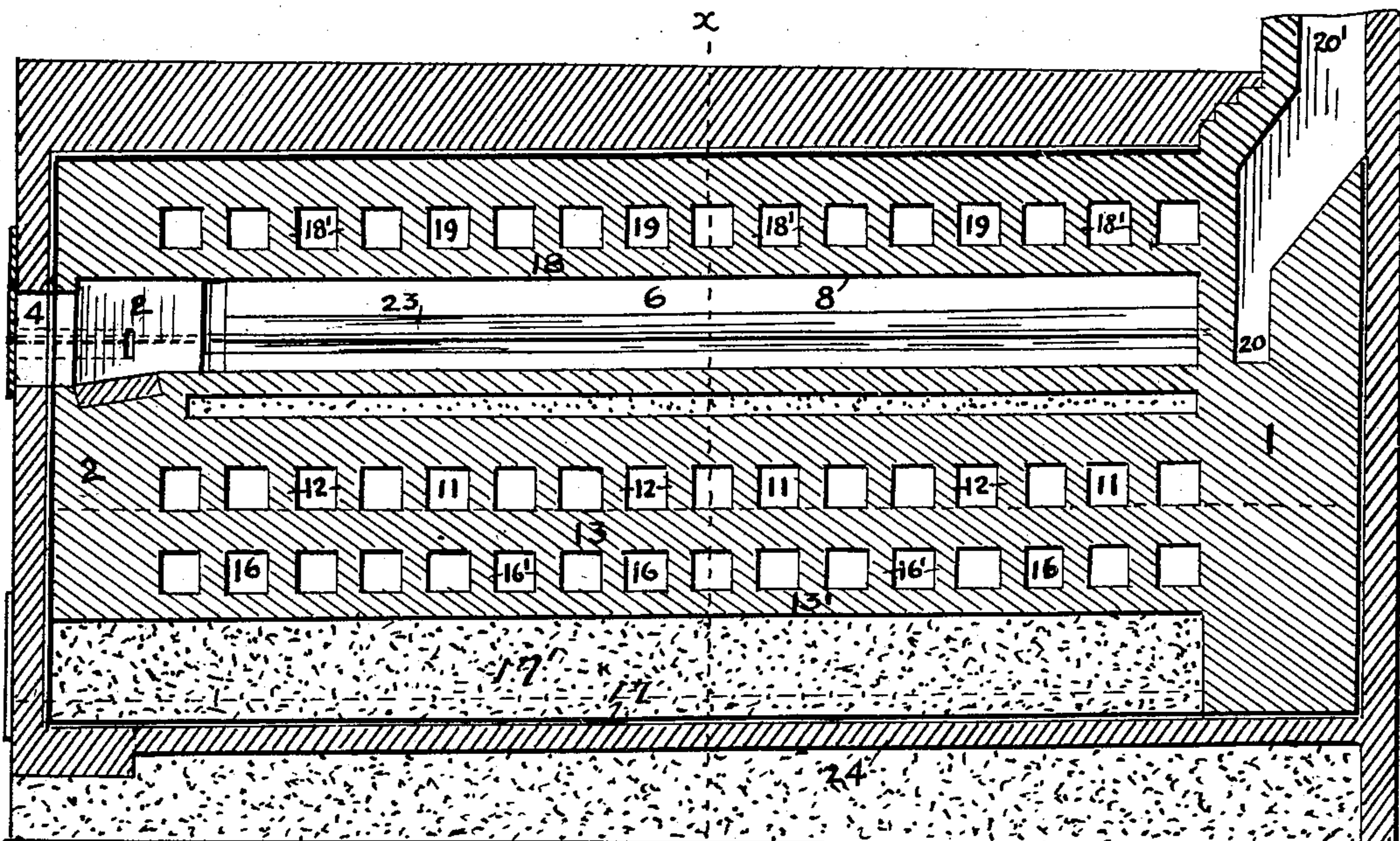


FIG. 2



WITNESSES:

Walter E. Vane.
Leon Boillot

INVENTOR: 24
Marius Hennings
by N. Acker
Solicitor

No. 742,424.

PATENTED OCT. 27, 1903.

M. HENNINGS.
BAKE OVEN.

APPLICATION FILED MAR. 19, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

FIG. 4

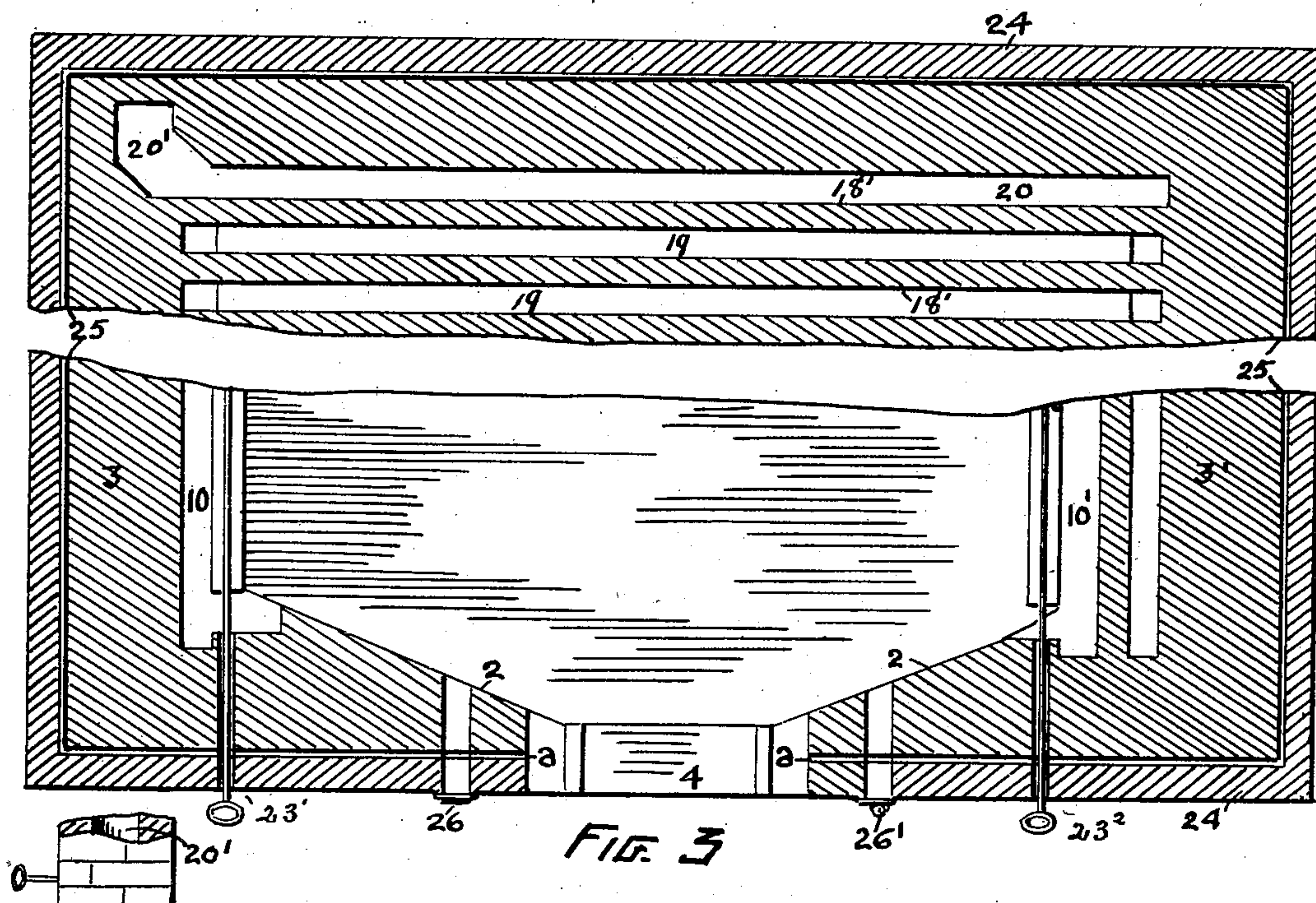
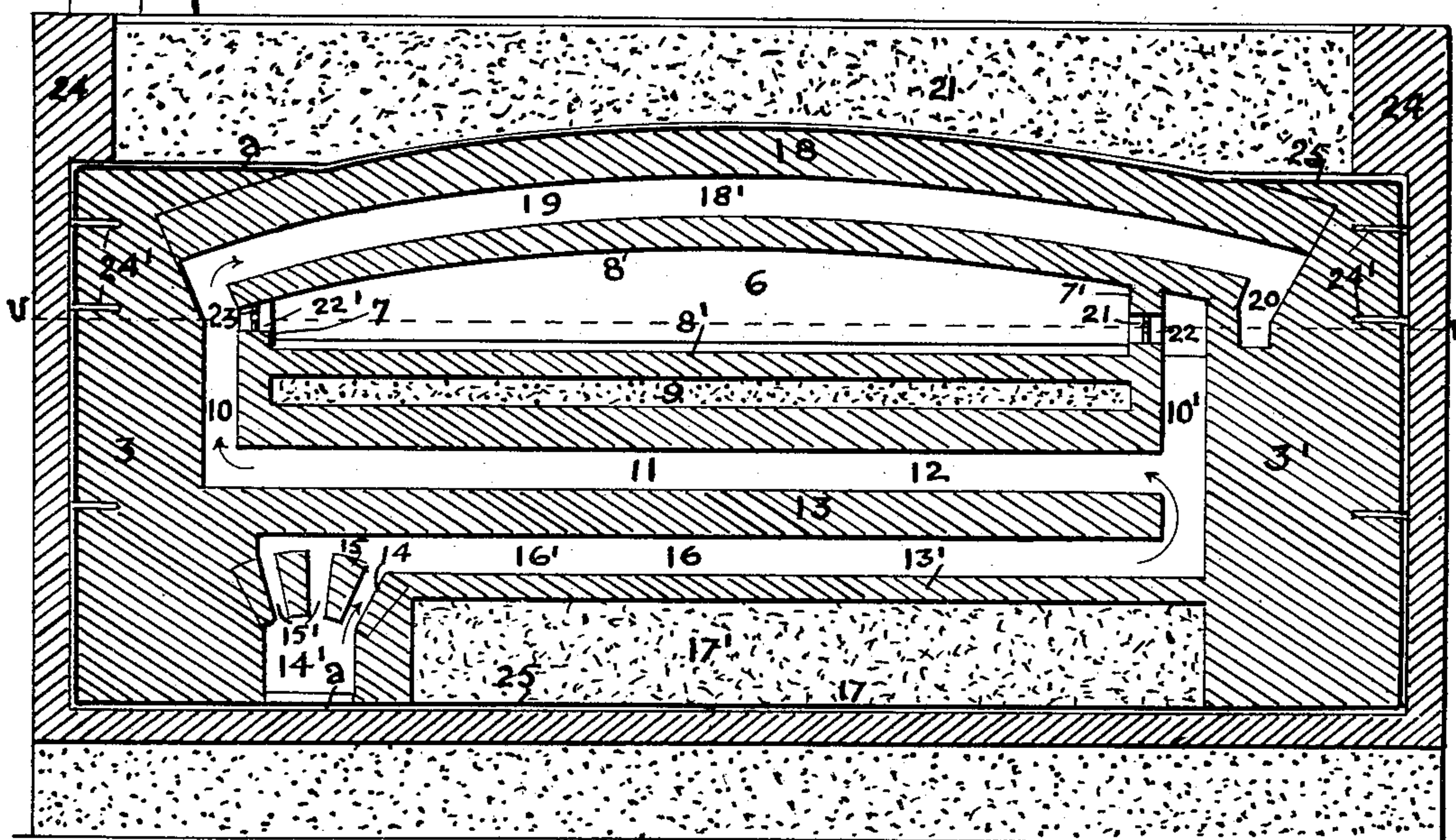


FIG. 3



WITNESSES:

Walter F. Kane.
Leon Boillot

INVENTOR:
Marius Hennings
by N. A. Lacker
his atty.

UNITED STATES PATENT OFFICE.

MARIUS HENNINGS, OF SAN FRANCISCO, CALIFORNIA.

BAKE-OVEN.

SPECIFICATION forming part of Letters Patent No. 742,424, dated October 27, 1903.

Application filed March 19, 1903. Serial No. 148,466. (No model.)

To all whom it may concern:

Be it known that I, MARIUS HENNINGS, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Bake-Ovens; and I do hereby declare the following to be a full, clear, and exact description of the same.

The present invention relates to an improved construction of oven for use in connection with the baking of bread, or what is known as a "baker's" oven, the object of the invention being to cause the hot products of combustion to thoroughly envelop the baking-chamber and to be evenly distributed throughout the entire length thereof as conveyed from the fire-box to the stack or chimney for the oven, the purpose being to give a uniform temperature to the interior of the said baking-chamber, to provide means whereby a "flash" heat may be admitted to the interior of the baking-chamber for the purpose of ventilating the same or to remove moisture therefrom, and to so construct the oven that the heat will be maintained in the walls thereof for a longer period than in the ovens as at present constructed, thereby requiring less fuel to maintain the oven at the proper degree of heat.

To comprehend the invention, reference should be had to the accompanying sheets of drawings, wherein—

Figure 1 is a front view of the oven with its front wall partly broken away. Fig. 2 is a longitudinal sectional view in side elevation. Fig. 3 is a cross-sectional view in elevation taken on line *x x*, Fig. 2, of the drawings. Fig. 4 is a horizontal sectional plan view taken on line *v v*, Fig. 1, of the drawings.

The end wall 1, front wall 2, and side wall 3 3' of the oven are preferably constructed of brick of suitable thickness, in the front wall there being formed openings 4 4'. These openings are closed by the doors 5 5', the upper door controlling the inlet-opening or mouth 4 of the baking-chamber of the oven, while the lower door 5' controls the opening 4' of the fire-chamber.

Within the oven-walls is built or constructed the baking-chamber 6, which is formed by

the longitudinal side walls 7 7' and curved or arched top wall 8. These walls, likewise the floor 8', are formed of brick, there being incorporated within the floor-wall 8' a layer or bed 9 of sand. The inner face of the oven-wall 2, which forms the front of the baking-chamber, is made inwardly flared or inclined from the sides of the oven-mouth 4 toward the side or longitudinal walls 7 7'. The purpose of thus inclining the front of the baking-chamber toward the mouth thereof is to enable the loaves of bread as drawn from the oven to be directed to the mouth thereof.

Between the side walls of the baking-chamber and the side walls of the oven the longitudinal flues 10 10' are formed, which flues are connected by means of a series of transverse flues 11. These flues extend throughout the depth of the oven, being formed by the partition walls or ribs 12, uniting the under the face of the bottom or floor wall 8' to the upper face of the transverse division-wall 13. This transverse division-wall 13 "springs," so to speak, from the side wall 3 and extends crosswise of the oven, a slight distance below the floor of the baking-chamber, flush with the outer face of the side wall 7' of the baking-chamber.

The longitudinal flue 10' extends a slight distance below the opposite longitudinal flue 10, the bottom of the flue 10' being formed by the transverse division-wall 13', extending from the oven side wall 3'. This division-wall extends to and connects with the top of the inner side wall 14 of the fire-chamber 14'. The top wall of the fire-chamber 14' is formed by a series of longitudinal ribs 15, which leave a series of heat-openings 15', through which the hot products of combustion escape from the fire-chamber 14'.

The hot products of combustion escape into the lower portion of the longitudinal side flue 10' through a series of transverse flues 16, which flues are formed by a series of transverse rib-walls 16' uniting the under face of the division-wall 13 to the upper face of the division-wall 13'. These transverse flues 16 correspond in construction with the transverse flues 11.

The space existing between the division-wall 13' and the bottom or floor 17 of the oven

is filled with a bed 17' of sand or other suitable heat-retaining material.

Above the top wall 8 of the baking-chamber 6 is arranged the oven-roof 18, the shape of which conforms to that of the wall 8. This roof connects the side walls of the oven and is a slight distance above the top wall 8 of the baking-chamber. The space existing between the wall 8 and the oven-roof 18 is divided by a series of transverse rib-walls 18' into a series of transverse flues 19, each of which connects with an upwardly-extending longitudinal escape-flue 20. This escape-flue communicates with stack 20'. Above the oven-roof 18 is placed a bed 21 of sand or other suitable material.

The beds of sand located below the floor of the oven, between floor-wall of the baking-chamber and above the roof of the oven, serve to retain the heat for a longer period than solid walls of masonry.

The hot products of combustion pass from the fire-box into the side flue 10' through the series of connecting transverse flues 16, thence passing or traveling beneath the floor 8' of the baking-oven through the transverse flues 11 and entering the longitudinal flue 10. From this flue the products of combustion are conveyed above the top wall 8 of the baking-chamber into the outlet or escape flue 20 through the series of transverse flues 19.

By the described construction the baking-oven is enveloped by the hot products of combustion, the same being evenly and uniformly distributed throughout the length of the heat-circulating transverse flues. The baking-chamber is thus maintained at an even or uniform temperature throughout.

At times it is required that a flash heat be admitted to the interior of the baking-chamber 6, the purpose of which is to dry or clean the same of steam or moisture which may have accumulated therein or to ventilate the said baking-chamber to remove from the same any odor that may remain after baking. This ventilating or flash heating is permitted by means of an inlet-damper 21, which controls an inlet-opening 22, establishing communication between the side flue 10' and the interior of the baking-chamber. An outlet-opening 22' is formed in the opposite side wall 7 of the baking-chamber, which opening establishes communication with the longitudinal flue 10. This opening is controlled by a damper 23. These dampers are operated from the outside of the oven by means of the damper-rods 23' 23². The opening of damper 21 and damper 23 permits a quantity of heat to suddenly enter the baking-chamber and to make its escape therefrom.

To protect the oven from outside moisture or from becoming chilled, an exterior wall 24 may be constructed alongside the side and end walls of the oven, so as to leave a circulating-space α therebetween. This wall is closed at its top, bottom, and front and is attached to the side and rear or end wall of the oven

by anchors 24'. A layer of asbestos 25 is inserted against the outer side face of the oven-walls to provide against moisture penetrating the oven-walls.

The essential feature of the present invention resides in the separation of the baking-chamber from the oven-walls by means of longitudinal flues, one of which flues is connected to the fire-box by a series of transversely-arranged distributing-flues, and the said connected longitudinal flue communicating with the opposite longitudinal flue by a series of distributed flues arranged below the baking-chamber, the said longitudinal flue with which the mentioned transversely-arranged flues connect being in turn connected with an escape-flue by means of a series of transversely-arranged heat-distributing flues located above the baking-chamber, whereby the baking-chamber is enveloped by the heat-distributing flues, so as to impart a uniform temperature to the interior of the baking-chamber throughout its length.

For an inspection of the interior of the baking-chamber a cover sight-opening 26 is provided at one side of the door 5, while to note the temperature of the interior of the said baking-chamber a thermometer 26' is arranged in a front wall of the oven at the opposite side of the door 5 to that at which the sight-opening is located.

Having thus described the invention, what is claimed as new, and desired to be protected by Letters Patent, is—

1. The combination with a bake-oven, of a baking-chamber arranged therein, side flues extending the length of the baking-chamber and separating the side walls thereof from the side walls of the oven, a fire-box within the oven, a series of longitudinal flues communicating with the fire-box immediately above the same, communication between said longitudinal flues and one of the side flues, said side flue connecting with the opposing side flue by a series of transverse flues arranged below the baking-chamber, and a series of transversely-arranged distributing-flues connecting the last-mentioned side flue with an outlet-flue for the heat, said transversely-arranged connecting-flues being located immediately above the baking-chamber.

2. The combination with a bake-oven, of a baking-chamber located therein, vertically-disposed longitudinal side flues extending the length of the baking-chamber, a fire-box within the oven, a series of longitudinal flues communicating with the fire-box immediately above the same, a series of transversely-arranged flues forming connection between the last-mentioned longitudinal flues and one of the side flues, communication between said side flue and the opposing side flue, and communication between said last-mentioned side flue and an outlet-flue for the hot products of combustion, the communicating passages conveying the products of combustion from one side

flue to the other and to the outlet-flue being arranged immediately below and above the baking-chamber.

3. The combination with the bake-oven, of
5 the baking-chamber, vertically-disposed longitudinal heat-flues separating the baking-chamber from the oven, a fire-box adjacent one of the sides of the oven, flue connection between said box and the side flues at the op-
10 posite side of the oven, a series of flues arranged immediately below the baking-chamber and forming connection between the connected side flue and its opposing side flue, said flues extending over the fire-box, a series

of flues connecting the last-mentioned side 15 flue with an outlet-flue for the hot products of combustion, openings establishing communications between the interior of the baking-chamber and the side flues, and means operated from the outside of the oven for control- 20 ling the openings between the side flues and the interior of the baking-chamber.

In witness whereof I have hereunto set my hand.

MARIUS HENNINGS.

Witnesses:

N. A. ACKER,

WALTER F. VANE.