

No. 710,284.

Patented Sept. 30, 1902.

J. W. LEWELLEN.
OVEN OR FURNACE.

(Application filed Nov. 12, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2.

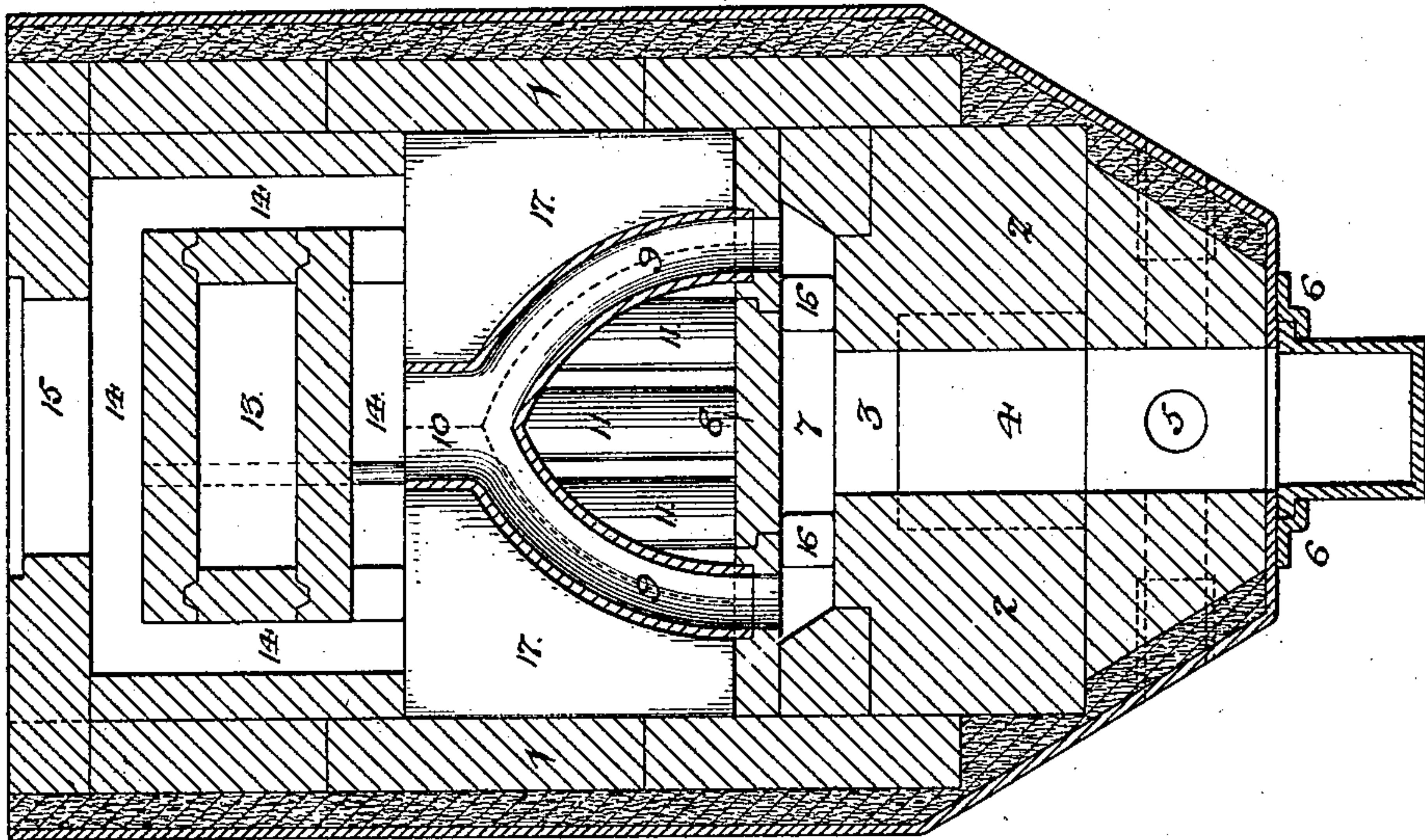
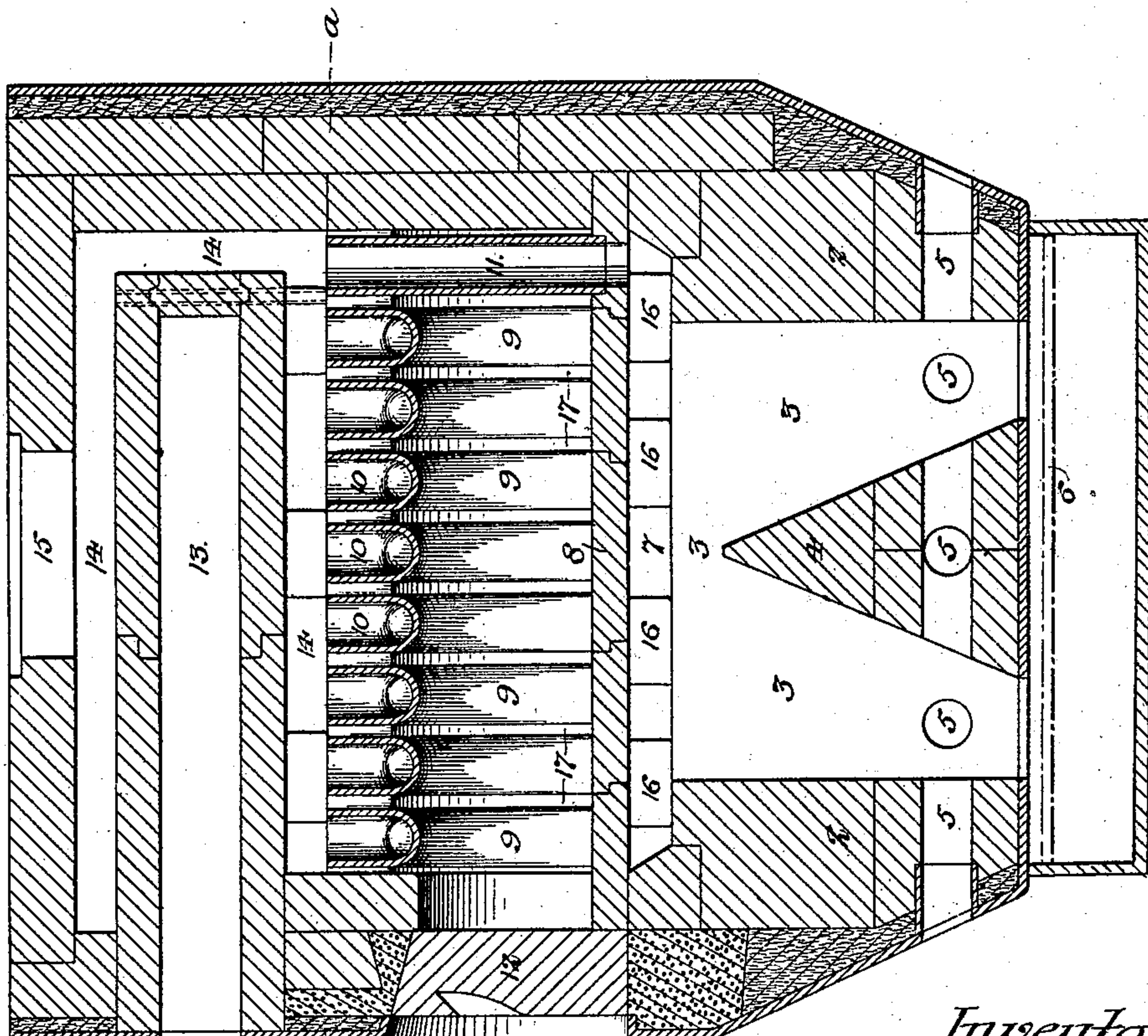


Fig. 1.



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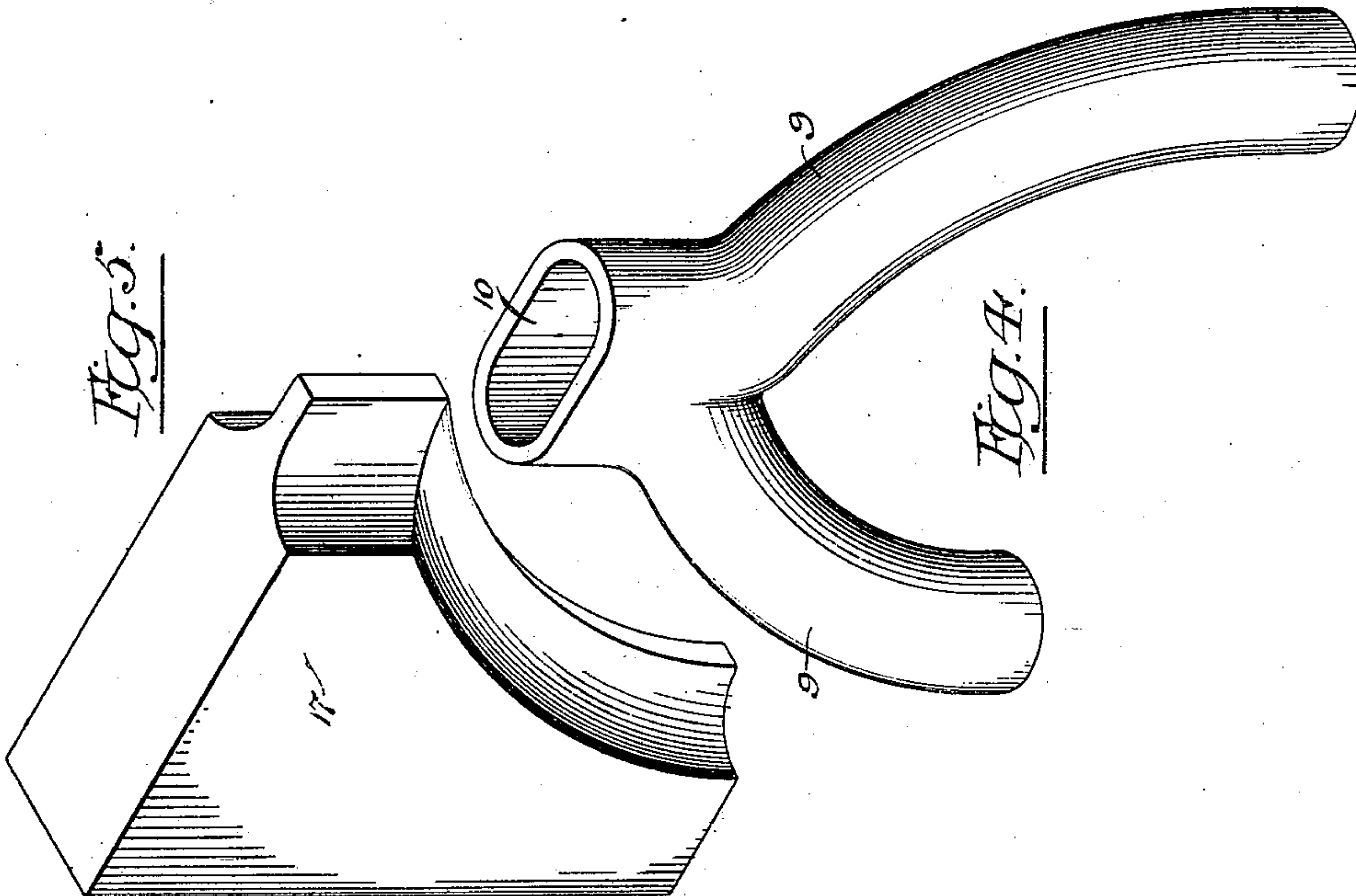
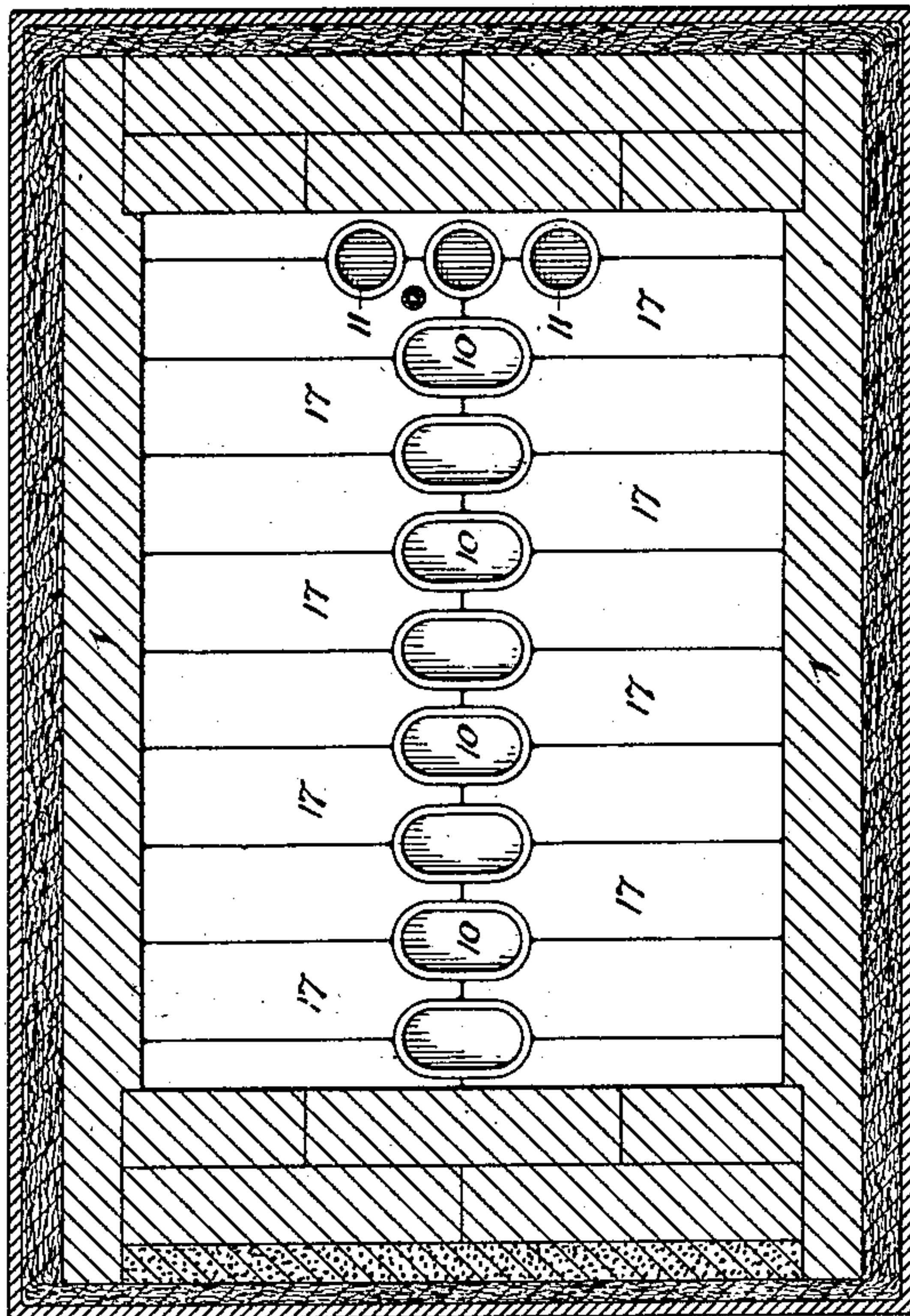


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN WESLEY LEWELLEN, OF PHILADELPHIA, PENNSYLVANIA.

OVEN OR FURNACE.

SPECIFICATION forming part of Letters Patent No. 710,284, dated September 30, 1902.

Application filed November 12, 1900. Serial No. 36,244. (No model.)

To all whom it may concern:

Be it known that I, JOHN WESLEY LEWELLEN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Ovens or Furnaces, of which the following is a specification.

The object of my invention is to so construct a furnace or oven for firing artificial teeth, for assay purposes, or for other uses where high temperature and perfect combustion are required that said furnace or oven can be effectively heated by the combustion of oil without the necessity of a forced blast or draft. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a furnace or oven constructed in accordance with my invention. Fig. 2 is a transverse section of the same. Fig. 3 is a sectional plan view on the line *a a*, Fig. 2; and Figs. 4 and 5 are perspective views of different elements of the furnace.

The furnace is built up of tiles or slabs suitably shaped and fitted so as to form an outer casing or shell 1 and a combustion-chamber casing 2, which may have as many vertical combustion-chambers 3 as may be desired, two such combustion-chambers being shown in the present instance separated from each other by a transverse partition 4, the tiles composing the latter being preferably so shaped that each combustion-chamber flares or widens from the bottom toward the top.

Each combustion-chamber receives air on all four sides through suitable air-ducts 5, formed in the tiles constituting the sides and ends of the combustion-chambers and in the tiles forming the partition 4, so that an abundant supply of oxygen is supplied to each combustion-chamber to effect without forced draft or blast the thorough combustion of the ignited gases or vapors ascending from a vessel of burning oil suitably located below the furnace and in line with the lower end or receiving-mouth of each of the combustion-chambers, hangers 6 being, if desired, provided on the bottom of the furnace for the support of such oil vessels. By reason of the purity of the flame resulting from this construction of the furnace there is no deposit of carbon in any of the flues or passages and

no access of carbonic oxid to the heating-chamber, a feature of importance in many cases—as, for instance, when the furnace is used for burning artificial teeth, which would be discolored by contact with carbonic oxid.

The two combustion-chambers 3 unite at the top in a chamber 7 immediately beneath a horizontal partition-plate 8, from which rise a series of arched flue structures, Fig. 4, each comprising a pair of hollow legs 9, communicating at their lower ends through openings in the partition 8 with the combustion-chamber 7, the upper end of each pair of legs terminating in a single discharge branch 10, which has an area at least equal to the combined areas of the hollow legs.

That portion of the horizontal partition 8 which is contained between the hollow legs 9 of the arched structure constitutes the body of the heating-chamber of the furnace, the arched legs constituting the crown of said heating-chamber, so that the latter is completely surrounded by the highly-heated products of combustion, and therefore becomes intensely hot.

The horizontal partition 8 is supported upon suitably-disposed blocks 16, resting upon the combustion-chamber 2, and the spaces between the arched legs 9 and between the latter and the casing 1 are filled with blocks or slabs 17, Fig. 5.

The back end of the heating-chamber is closed by a series of vertical tubes 11, through which the products of combustion pass upwardly from the chamber 7, the front of the heating-chamber being open and the front wall of the casing 1 having a suitable removable slab or stopper 12 for closing said opening except when the work is being introduced into or removed from the heating-chamber of the furnace.

Above the arched flue structure of the furnace is a supplementary heating furnace or oven 13, composed of slabs of refractory material suitably secured together and surrounded by flues 14, the lowermost of these flues receiving the products of combustion from the arched structures and tubes 11 and the uppermost of said flues 14 communicating with the outlet 15, which leads to the chimney or stack. This supplementary furnace or oven is thus heated by the waste

products of combustion from the main furnace and serves for the preliminary heating of the work, whereby the same is raised to a comparatively high temperature before being introduced into the main heating-chamber below. When the use of such preliminary heating-oven is not desired, I simply use a slab similar to the bottom slab of the oven for the purpose of equalizing the draft through the hollow legs 9.

Small furnaces may have but one combustion-chamber 3, and large furnaces may have more than two combustion-chambers represented, it being optional whether the combustion-chambers are increased in size or number to accord with the increased size and capacity of the furnace.

Having thus described my invention, I claim and desire to secure by Letters Patent—
1. A furnace having means for supporting an oil-receptacle and provided with a combustion-chamber above said supporting means, a wedge-shaped partition within said combustion-chamber, the walls of said combustion-chamber having within their lower portions lateral openings in communication

with the atmosphere through which a free flow of air by natural draft is permitted into the flame as it passes upwardly through the flaring combustion-chamber, substantially as described.

2. A furnace having means for supporting an oil-receptacle and provided with a combustion-chamber above said supporting means, said chamber having openings in its bottom whereby flame from the receptacle is admitted into said chamber, a wedge-shaped partition within the combustion-chamber, said partition and also the walls of the chamber having within their lower portion lateral openings in communication with the atmosphere through which a free flow of air by a natural draft is permitted into the flame as it passes upwardly through the flaring combustion-chamber, substantially as described.

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

JOHN WESLEY LEWELLEN.

Witnesses:

F. E. BECHTOLD,
JOS. H. KLEIN.