

(No Model.)

I. A. KNAPP.
GARBAGE CREMATION FURNACE.

No. 532,971.

Patented Jan. 22, 1895.

FIG. 2.

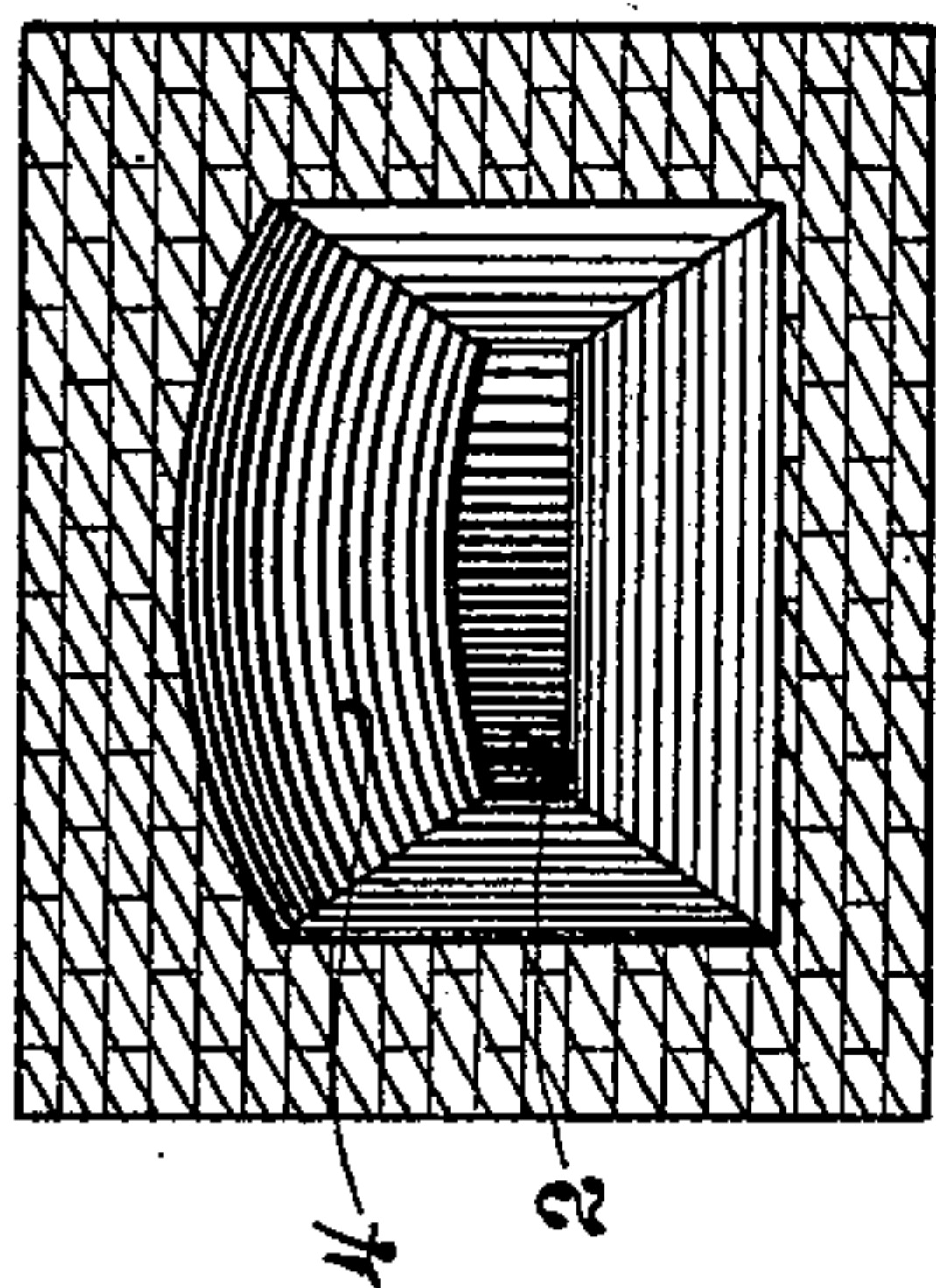
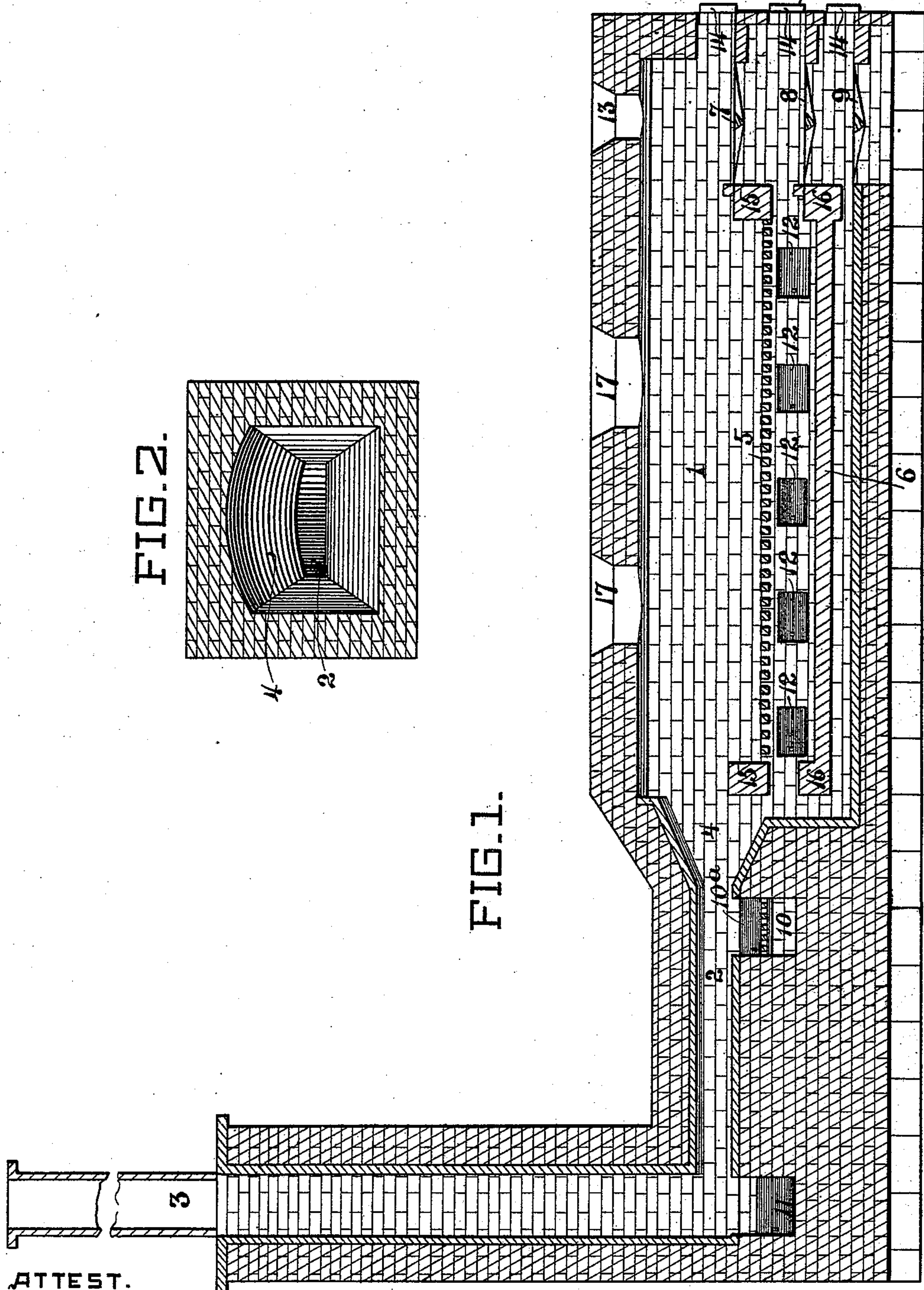


FIG. 1.



ATTEST.

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GARBAGE-CREMATATION FURNACE.

SPECIFICATION forming part of Letters Patent No. 532,971, dated January 22, 1895.

Application filed April 11, 1894. Serial No. 507,174. (No model.)

To all whom it may concern:

Be it known that I, ISRAEL A. KNAPP, a citizen of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented certain new and useful Improvements in Garbage-Cremation Furnaces; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, is a full, clear, and exact description of my improvements, which will enable those skilled in the art to make and use the same.

The object of my invention is to provide a simple and durable furnace which will effectively consume garbage and other offensive matter and the offensive or noxious fumes arising therefrom at a small expense and by the use of little fuel.

Numerous furnaces have been designed for the purpose of cremating garbage, but these have met with indifferent success. They have been objectionable either by reason of the large quantity of fuel required to satisfactorily consume the garbage, or by reason of the failure to consume the offensive and noxious fumes or gases resulting from the imperfect combustion.

I have discovered that one of the main reasons for failure in the construction of this class of furnaces lies in the fact that it has been attempted to consume the noxious gases as they pass upward from the furnace in the open chimney, in which it is almost impossible to get enough heat.

In my improved furnace I provide a main chamber for the reception of the solid and liquid parts of the garbage or other offensive matter to be consumed, three furnaces arranged in a vertical tier at the front end of the main chamber to consume the matter in said main chamber, a contracted horizontal passage for gathering and condensing the products of combustion leading from the main chamber into a smaller horizontal flat auxiliary chamber which leads to the chimney, and a secondary furnace arranged in said smaller auxiliary chamber behind the contracted passage for consuming the noxious gases while they are passing in a horizontal direction through the said auxiliary chamber to the chimney.

In order that my invention may be fully understood I will first describe the same with reference to the accompanying drawings and afterward more particularly point out the novelty in the annexed claim.

In the said drawings, Figure 1 is a central longitudinal sectional view of my improved furnace. Fig. 2 is a transverse detail sectional view looking from the main chamber into the contracted passage.

My improved furnace is constructed mainly of brick with the main longitudinal chamber 1, the smaller horizontal auxiliary chamber 2, and the chimney 3.

4 is the contracted or funnel-shaped horizontal passage leading from the main chamber 1, to the horizontal auxiliary chamber 2.

5 is a main grate extending nearly the whole length of the main chamber 1, and 6 is a pan supported under the grate 5.

The garbage or other matter is thrown into the furnace through the manholes 17 at the top and falls onto the grate 5 where the solid parts are retained, while the liquid portion drains through into the pan 6 and is evaporated.

7, 8, and 9 are a tier of three fire grates or furnaces at the front end of the main chamber, which are arranged to pass their heat and products of combustion over the grate 5, and between the grate 5 and pan 6 and under the pan 6 respectively, for consuming the solid matter on the grate and evaporating the liquid matter in the pan. The top fire-grate communicates directly with the main chamber. The middle fire-grate communicates directly with the space between the main grate and the pan. The bottom fire-grate communicates with the space beneath the pan which conducts the products of combustion issuing from the bottom fire-grate directly to the vertical space in advance of the pan and main grate inner walls at the entrance to the contracted passage.

From the chamber 1 the products of combustion and evaporation pass through the contracted or funnel-shaped horizontal passage 4 into the long and horizontal flat auxiliary combustion chamber 2. Just back of the contracted horizontal passage 4 in the combustion chamber 2 is an auxiliary fire grate or

furnace 10 which consumes all gases and offensive odors which enter said auxiliary chamber while they are passing along toward the chimney, and as said noxious gases are passing along in said horizontal direction the heat is confined to a great measure and the gases are entirely consumed, so that by the time the products of combustion reach the chimney all of the noxious odors will have been destroyed.

11 is a small door at the bottom of the chimney and at the end of the auxiliary combustion chamber 2 for the purpose of removing the ashes which may accumulate therein.

10^a is another door affording access to the grate 10.

12 are doors in one side of the furnace for removing the ashes of the cremated garbage from the pan 6.

13 is a man-hole or opening in the main fire pit 7 for the purpose of feeding the fuel. Boxes or other combustible material sorted from the garbage may also be thrown into the fire through this opening for fuel, instead of being thrown onto the garbage grate and wasted. All of the openings 17 and 13 are provided with iron covers or doors in order that the furnace may be securely closed.

14 are suitable doors at the front of the furnace which give access to the three fire grates 7, 8, and 9.

15 are fire-clay bridge walls for confining the garbage on the grate 5.

The pan 6 is a solid brick hearth having the end walls 16 for confining the liquid matter.

The fire 9 may be called an emergency fire for the purpose of helping to heat the pan or hearth 6, for this fire will not be necessary

except when the furnace is being taxed to its fullest capacity.

The contracted horizontal passage 4 gathers all the products of combustion issuing from the three furnaces, condenses them, holds them down and delivers them directly over the furnace at the entrance to the auxiliary chamber.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

A garbage cremation furnace comprising a main longitudinal chamber 1, a main grate 5 having end walls 15, a pan 6 located beneath the main grate having end walls 16, a contracted horizontal passage 4 at the inner end of the main chamber for gathering and condensing the products of combustion, the top fire grate 7 at the front of the furnace connected with the main chamber, the middle fire-grate 8 beneath the top fire-grate connected with the space between the main grate and the pan, the bottom fire-grate 9 beneath the middle fire-grate and connected with the space beneath the pan and the vertical space in advance of the inner walls of the pan and main grate at the entrance to the contracted passage, the long horizontal broad flat auxiliary chamber in advance of the contracted passage, the chimney at the end of the auxiliary chamber, and the auxiliary fire-grate beneath the auxiliary chamber at the exit of the contracted passage; substantially as described.

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Witnesses:

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